INTERESTS, INSTITUTIONS, AND TRADE POLITICS IN DEMOCRACIES

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Political Science)
in The University of Michigan
2012

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To my parents, Eun-Kyung Lee and Hye-Ock Park,
with love and gratitude.

Acknowledgements

While writing this dissertation, I owe a debt of gratitude to many people. It is my great pleasure to acknowledge the contribution of these people to my dissertation research and my life.

I would like to express my heartfelt thanks and appreciation to my dissertation committee members: Robert J. Franzese Jr., William R. Clark, Allen D. Hicken, George Tsebelis, and Alan V. Deardorff. My dissertation would not have existed without their guidance and support. Rob Franzese has been my academic advisor since the second year of my Ph.D. at the University of Michigan and also served as the chair of my dissertation committee. During my coursework, Rob encouraged me to develop my research agenda in the field of comparative and international political economy. He was indispensable in answering my questions as a mentor and as an advisor, and gave me invaluable suggestions on my dissertation research. Bill Clark taught me how to conduct political science research and be the member of the academic community. He gave me a tremendous help in finding empirical patterns from a bunch of regression tables that I generated, and led me to think logically about causality that might be embedded in my preliminary findings. I would never forget his whiteboard in his office which were filled with my questions and his insightful comments. George Tsebelis was not here when I started my graduate program in Michigan. I was lucky enough to meet him and take his class before I defended my dissertation prospectus. His questions and constructive criticism not only helped me refine my ideas, but also encouraged me to think about values I need to add to my field of research. Allen Hicken was a constant source of support and encouragement during my graduate studies. His courses in electoral

institutions and comparative public policy motivated me to study the effects of electoral competition on trade policy outcomes in my dissertation project. While working as a research assistant and a teaching assistant for Allen over the past few years, I learned a great deal from him about how to become a good researcher as well as a good educator. Alan Deardorff taught me international trade policy. He read drafts of my dissertation thoroughly and gave me helpful comments and suggestions. I would like to thank him for bringing his insights on trade economics to my dissertation.

This dissertation research has greatly benefited from organizations that offered me financial support. I would like to thank for the Department of Political Science at the University of Michigan, the Horace Rackham School of Graduate Studies, and the Kwanjeong Educational Foundation in Korea.

I would like to thank the following people at the University of Michigan for their support and consideration during my time in graduate school: Professors Ken Kollman, John Jackson, Robert Salmond, and Jana von Stein; members of the Constituency-Level Election Archive (CLEA) Project, Sang-Jung Han, Rachel Potter, and Jill Wittrock. My fellow graduate students have offered me invaluable friendship and support in the course of writing this dissertation. I would like to thank Ella Gao, Hyeonho Hahm, Mihwa Hong, Nam Kyu Kim, Na-Youn Lee, Menna Demessie, Carolina De Miguel, Patrick O'Mahen, Jonson Porteux, Maria Reyero, Adrian Shin, Kharis Templeman, Michio Umeda, Yu-Jeong Yang, Jung-Won Yang, and Kwang-Il Yoon.

Many people outside Michigan have contributed to my dissertation research in important ways. I would like to thank Professors Daniel Y. Kono at the University of California, Davis and Peter K. Schott at Yale University for allowing me to use their data. I would like to thank Professors Lucy Goodhart at Columbia University, Sean Ehrlich at Florida University, and Byungwon Woo at Oakland University for their comments and suggestions on my research around the conference circuit.

I would like to extend my gratitude to the people I met at Korea University a long time ago. Professor Byung-Kook Kim greatly inspired me to continue to study political science and to pursue my Ph.D. at the University of Michigan. Along with Professor Byung-Kook Kim, Professors Jang-Jip Choi, Jai Kwan Jung, Joo-Youn Jung, Nae-Young Lee, Jiyeon Song, and Dr. Jung Kim provided valuable input on my research both on a professional and personal level. I would also like to thank my longtime friends who grew up together and studied political science together in Korea: Ga-Woon Ban, Han-Il Chang, Lorraine Jein Do, Hyunji Lee, Eugene Lee, and Ji-Won Yoon. They have provided me with emotional support during my time in graduate schools.

Most importantly, I would like to express my deepest love and respect to my parents and teachers, Eun-Kyung Lee and Hye-Ock Park. I would not be here without their love, support, and encouragement.

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Table of Contents

List of Figures

List of Tables

List of Appendices

Chapter 1

Introduction

Why do representative policymakers in democracies offer protection to particular groups of domestic interests, despite its well-known inefficiency in redistributing resources? Why are some domestic groups more successful in receiving higher levels of trade protection than others, even without coordinating collective lobbying? How do elected representatives choose the recipients of trade protection among many constituencies adversely affected by international competition?

For decades, indeed at least since Pareto (1927) and Schattschneider (1935), the presence of trade barriers still remains puzzling to both economists and political scientists. Protectionist measures and regulations provide benefits for the specific sectors of production but reduce the welfare of a society as a whole. Despite its well-known inefficiency, however, most trade and industrial policy tends to align against free trade and many countries use trade barriers as an important tool for income redistribution (Rodrik 1994; Dixit and Londregan 1996; Alt, Frieden, Gilligan, Rodrik, and Rogowski 1996; Acemoglu and Robinson 2001). While it is frequently pointed out that multilateral trade negotiations under the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO) have generated the global rush toward free trade, both advanced and less-developed countries still protect domestic industries through the use of

trade-remedy laws (e.g. anti-dumping, countervailing duty, and escape clause) and non-tariff barriers (e.g. import quotas, quantitative restrictions, price controls, and voluntary export restraints).

In this vein, both trade economists and political scientists have paid a great deal of attention to the domestic determinants of trade protection. Earlier economic studies attribute the presence of trade barriers to the fact that protectionist interest groups are better at articulating policy demands, due to their greater abilities to overcome collective action problems. Protectionist interest groups are more strongly motivated to influence policy-makers than a large group of consumers since the benefits of protection are concentrated on a small set of producers but the costs are dispersed to the entire population. As in the later literature on endogenous tariff formation, therefore, these studies attribute patterns in trade-policy to protectionist demands of industrial sectors and their relative abilities to engaging in lobbying and campaign contributions. On the other hand, the latest studies in political science concentrate more on clarifying institutional conditions under which policymakers are insulated from protectionist pressures and reduce trade barriers for the welfare for society as a whole. A common argument found in this approach is that the formal design and nature of domestic political institutions (e.g. regime types, constitutional framework, and electoral systems) generate cross-national variations in protection, shaping political incentives of representatives to provide public goods (here, free trade) for diffused interests.

Previous research, however, generates numerous anomalies regarding variations in protection across democracies. First, despite their emphasis on the nature of free trade as a public good, considerable disagreement prevails among researchers over the forms of

democratic institutions that induce political representatives to target the broad, collective interest of constituencies in policy decisions. While some argue that larger electoral districts and strong party discipline in proportional representation systems tend to lower protection by moderating protectionist pressures (Rogowski 1987; Mansfield and Busch 1995; Grossman and Helpman 2005), others claim that electoral institutions per se are not systematically associated with levels of protection (McGillivray 2004; Mukherjee, Smith, and Li 2009). Moreover, contrary to many predictions in the literature, existing data also demonstrate considerable variance in levels of protection across democracies with similar electoral institutions as well as constitutional structures. Once we consider various indicators of protection other than tariff rates, the effect of specific features of electoral systems (e.g. electoral formula, party discipline, and constituency size) becomes even more ambiguous (McGillivray 2004; Karol 2007).

Second and more importantly, most of the literature on political institutions does not say much about which groups are more likely to become the recipients of protectionist measures and how policymakers determine which industries and sectors to protect. With a few exceptions, they restrict their focus to analyzing variations in the average level of protection across countries, with national-level political-institutional variables as right-hand-side regressors to explain that aggregate variation. Although trade economists have illuminated several factors that create inter-industry variations in protection, they usually regard trade-policy outcomes only as a function of lobbying and campaign contributions of import-competing sectors without considering electoral incentives of policymakers and policy preferences of voters. In addition, most empirical

works in the endogenous tariff literature have been narrowly developed within the context of interest group politics in the United States.

To fill this gap in the literature, my dissertation develops a theoretical framework explaining variation in the structure of trade protection within and across countries. Much of the literature on trade policy has exclusively focused on either the effects of industry group characteristics on sectoral protection or the influence of domestic political institutions on trade openness at the national level. Unlike previous research, my dissertation aims to explain the ways in which the partisan and electoral incentives of representative policymakers affect the allocation of distributive benefits generated from trade policies across domestic constituencies. Because of the income effects of international trade, domestic groups shape different policy preferences over trade openness according to types of industrial sectors in which they are employed or types of factors of production they own (i.e. capital or labor). Trade policy preferences of domestic groups, however, are not directly translated into policy outcomes because protectionist measures generate particular benefits for a small sector of population but spread out the costs across the entire population. Thus, representative policymakers have substantial political incentives to target protectionist rents toward their partisan constituents rather than opposition groups, or to pivotal groups and swing voters as opposed to committed supporters or opponents.

Following these propositions, my dissertation argues that the ways in which governments distribute trade policy benefits across domestic constituencies depend on the strategic context shaped by two factors: first, the societal and geographic structure of domestic interests which delineates the scope and characteristics of political cleavages

over trade policy; second, electoral institutions and conditions which define the political importance of partisan and geographical constituencies to representative policymakers. First, the structure of domestic interests refers to the ways in which domestic constituencies shape collective policy demands over the issues of international trade. The extent to which domestic groups pressures representative policymakers for protectionist relief is mainly explained by their economic characters in the market, such as types of industrial sectors (i.e. import-competing and exporting sectors) and types of factors of production (i.e. capital and labor). Nevertheless, the structure of trade policy preferences of domestic constituencies is not directly translated into trade policy outcomes. Distributive benefits generated from trade barriers induce elected officials to target protection to particular groups of domestic constituencies to optimize their electoral prospects. Therefore, secondly, electoral institutions and conditions exert significant influence on the ways in which policy preferences of domestic groups over trade openness are mapped into trade policy outcomes. The degree to which protectionist interests receive favorable levels of protection is significantly affected by electoral institutions and conditions, which define types of domestic constituencies from which representative policymakers garner electoral support.

To test the validity of my arguments, my dissertation relies on a variety of methods and data. Four chapters of my dissertation contain a set of empirical tests regarding the political and economic determinants of the structure of trade protection in democracies. In these empirical chapters, the aforementioned two key concepts are operationalized differently according to whether I examine patterns of trade protection within and across countries. The first three empirical chapters of my dissertation analyze

within-country variation in levels of protection across electoral constituencies and industrial sectors in the United States from 1989 through 2004. Using sectoral data on tariff and nontariff protection, district-level election outcomes, and geographical information about the distribution of industrial employment on the electoral map, I investigate the extent to which voter demand for protectionist measures and their political attributes affect the allocation of protectionist rents across the electorate. The fourth empirical chapter of my dissertation focuses on explaining variations in the structure of trade protection across countries. In this chapter, I analyze the economic and political conditions under which representative policymakers target protection toward skill-intensive industries rather than unskilled-intensive industries. Relying on the median-voter theory of trade policy in Mayer (1984) and its extensions (Dutt and Mitra 2002; Kono 2008) as well as the personal-vote literature (Carey and Shugart 1995), I maintain that variation in the skill-bias of tariff protection across countries is explained by the interaction between a country's factor endowments and political particularism in electoral systems.

The remainder of this dissertation is organized as follows. Chapter 2 reviews the existing literature on the political economy of international trade. In order to motivate the theory, this chapter compares two schools of thought regarding trade-policy decisions: first, the literature on endogenous tariff formation which emphasizes particular characteristics of industries associated with their group ability to overcome collective action problems and coordinate lobbying for group interests; and second, institutional explanations clarifying structural conditions under which policymakers are insulated from protectionist pressures and pursue trade liberalization for diffused interests of

society as a whole. This chapter further points out that several empirical anomalies remain to be explained, since these two lines of research focus almost exclusively on either the demand or the supply of trade policies. Most institutional studies on trade policies mainly concentrate on variation in the aggregate-level of trade protection across countries, and hence are not able to explain why and how governments target rents from protectionist policies toward particular constituencies. While the endogenous protection literature proposes a general theoretical framework to explain the patterns of protection, their interest-group model does not explain why governments offer protectionist benefits to declining industries which do not have incentives and abilities to coordinate group lobbying efforts. Based on existing data on variation in the structure of protection within and across countries, this chapter closes by suggesting that democratic governments have partisan and electoral incentives regarding the levels of trade barriers and the distribution of trade policy benefits across the electorate.

Chapter 3 analyzes the effects of geographical location of industries on the electoral map on the inter-industry structure of trade protection in the United States from 1989 through 1998. Using data on the geographic distribution of industrial employment across electoral constituencies and district-level election outcomes from presidential, gubernatorial, and general elections from 1988 through 1997, I generate a set of indicators measuring the degree of the spatial concentration of industries in electorally competitive constituencies. Then I examine the extent to which this electoral distribution characteristic of industries explains variation in the level of tariff and nontariff protection across industries, as well as the marginal effects of industry comparative disadvantage on policy outcomes. The results of my analyses strongly suggest that industries located in

electorally competitive constituencies are more likely to receive higher levels of tariff protection than those located in safe constituencies and that the extent to which sectoral demands for protection increases tariff and nontariff protection at the industry level itself increases as industries contain more marginal voters. These findings do not confirm the previous literature on U.S. trade policy arguing that the spatial distribution of industrial employment determines the degree of political clout of industrial sectors (Busch and Reinhardt 1999; Rogowski, Kayser, and Kotin 1999) and that industries located in marginal districts are least likely to secure protection because of weak party discipline of congressional parties (McGillivray 1997, 2004). Rather, this chapter suggests that redistribution occurred through protectionist policies cannot be explained without considering the electoral competitiveness of domestic constituencies.

Chapter 4 examines within-country variation in levels of trade protection across electoral constituencies in the U.S. from 1989 through 2004. In this chapter, I argue that constituency marginality influences not only the allocation of protectionist rents across the electorate but also government responsiveness to domestic pressures for protection. I first match industry-level data on trade volumes and protectionist measures with geographical data on the distribution of industrial employment on the electoral map. In doing so, I build a set of indicators of voter demands for trade protection and the amount of protectionist rents aggregated at the level of congressional districts. Then I investigate the extent to which the political characteristics of electoral constituencies (i.e. marginality and the relative safeness) affect the district-level concentration of trade protection as well as the marginal effect of protectionist demands on trade policy outcomes. First, the estimates of my models demonstrate that district competitiveness increases the extent to

which sectoral tariff protection is targeted toward industries in each district. All other things being equal, the district-level of tariff protection is greater in districts having two equally sized groups of partisans rather than in districts showing stable, strong support for either the Republican or the Democratic Party. Second, I find that the political characteristics of electoral constituencies affect the marginal effects of protectionist pressures on trade policy outcomes. The extent to which constituent demands for protection actually raise the amount of protectionist rents is much higher in electorally competitive constituencies rather than in safe constituencies. These findings imply that even when domestic political institutions promote trade liberalization at the national level, elected representatives still have strong incentives to target protectionist rents to particular constituencies to optimize their electoral prospects.

Using the same dataset presented in Chapter 4, Chapter 5 evaluates the validity of the core voter model developed by Cox and McCubbins (1986) in the context of U.S. trade policy. This chapter begins with the assumption that the concentration of protectionist measures on marginal constituencies does not necessarily disconfirm the validity of the core-voter model, because marginal constituencies could contain two equally sized groups of partisan voters. As Cox (2010) points out, governing parties might target trade protection toward marginal constituencies to reward their core-partisan supporters. In this vein, I examine the extent to which the strength of voter partisanship for the incumbent president and the majority party in Congress affects the allocation of protectionist rents across districts and across states, respectively. The results of my analysis demonstrate that there is a curvilinear relationship between the strength of voter partisanship and the amount of protection aggregated at the level of congressional

districts. The quadratic model shows that the district-level of protection tends to be maximized when the share of a district's presidential vote normalized around the national mean is close to zero, and when the average of the two-party vote share for the incumbent president and the majority party in a district reaches 0.52 and 0.45, respectively. I also find that constituency competitiveness increases the marginal effect of voter demand for protection on policy outcomes both at the district-level and at the state-level.

Chapter 6 explains the political and economic determinants of the skill bias of tariff structure. Specifically, it focuses on explaining cross-national variation in the extent to which tariff protection is biased toward skill-intensive industries. The literature on endogenous protection commonly argues that the skill-bias of trade policy has features of public goods, because it tends to enhance output growth in a long-term perspective, regardless of the average level of protection (Grossman and Helpman 1990). Nevertheless, much previous research does not explain why some countries are better able to target protectionist measures toward skill-intensive industries rather than others. While some argue that the skill-bias of protection is promoted by good institutions, the existing literature does not clearly explain the conditions under which politicians have stronger incentives to favor skill-intensive industries over unskilled-intensive ones (Nuun and Trefler 2006). In this chapter, I maintain that variation in the skill-bias of tariff protection across countries depends on two factors: first, a country's factor endowments that determine the median voter's sector-specific trade policy preferences, and second, the degree of political particularism that affects the responsiveness of representative policymakers to rent-seeking behaviors of special interest groups. Using time-series cross sectional data on 29 industries in 52 democracies from 1989 through 2004, this chapter

produces two key findings: first, the skill-bias of tariff structure is higher in electoral systems which effectively mute the incentives of policymakers to build personal support bases; second, the extent to which political particularism in electoral systems reduces the skill-bias of tariff protection declines, as the capital-labor ratio at the national level increases. Tariff protection biased more toward skill-intensive industries is more likely to generate positive externalities and promote long-term growth than tariff protection biased toward unskilled-intensive industries. Hence the skill-bias of tariff protection is likely to increase when representative policymakers effectively control rent-seeking behavior of special interest groups for the collective interests of broad, national constituencies. These results suggest that the structure of trade protection is determined not only by the economic characteristics of domestic constituencies that shape their trade policy preferences, but also by institutional arrangements of domestic political systems that affect the incentives of representative policymakers in trade policy decisions.

Chapter 2

The Political Economy of International Trade

This chapter reviews existing research on trade politics. The existing literature on the political economy of trade policy is dominated by two-well known approaches. The first is an interest group approach that centers on the influence of domestic pressure groups on trade policy outcomes. The second approach, usually known as "institutional explanations of trade policy," postulates that institutional arrangements of domestic political systems affect trade policy. In this chapter, I point out that while each line of approach has received robust empirical support, the existing literature does not clearly explain the ways in which representative policymakers choose the recipients of trade protection across domestic constituencies. I maintain that in order to explain varying patterns of trade barriers within and across countries, we need to consider the interaction of two factors: first, the economic structure of domestic interests which delineates the scope and characteristics of political cleavages over trade policy; second, electoral institutions and conditions which define the political importance of partisan and geographical constituencies to elected officials.

2.1. Interest Group Approach

The interest group approach emphasizes the impact of domestic pressure groups on trade policy outcomes. The level and structure of trade protection are mainly explained by the economic and organizational characteristics of domestic interests which have heterogeneous preferences over trade openness. An important assumption of the interest group approach is that some domestic groups are relatively better than others in articulating their policy demands over trade issues. Almost eighty years ago, Pareto (1927) already suggested that distributive benefits generated from trade barriers allow protectionist groups to organize for their collective interests more effectively than a large group of consumers.

> In order to understand how those who champion protection make themselves heard so easily, it is necessary to add the consideration which applies to social movements generally…A protectionist measure provides large benefits to a small number of people and causes a very great number of consumers a slight loss. This circumstance makes it easier to put a protectionist measures into practice (Pareto 1927, p.379).

The relative efficiency of protectionist groups in articulating their policy demands is more fully conceptualized in Olson's model of interest group politics (1965). When an interest group needs to organize political activities to maximize their common interests, each member of the group is strongly motivated to free ride on others' efforts, since he can enjoy the collective benefits of group activities, regardless of his own contribution.

Self-interested behaviors of actors consequently yield the sub-optimal provision of collective activities on the part of a group as a whole. Here, Olson emphasizes that the degree to which groups are able to overcome the problems of collective action depends on two factors: first, the size of a group; and second, the probability that group members change the status quo. All other things being equal, interest groups can more effectively exercise control over free-riding behavior of group members when the benefits of collective actions are concentrated, and when the probability that members affect policy outcomes is relatively higher. These propositions explain why protectionist interests are more likely to further their collective benefits as organized groups, whereas ordinary consumers usually remain scattered and unorganized. If transaction costs per person are fixed, protectionist interest groups tend to incur smaller costs involved in coordinating collective political action than a large number of consumers. More importantly, each member of a protectionist group has a stronger incentive to take costly political actions for the issues at stakes since the probability that they affect policy outcomes is relatively higher. Consequently, Olson's interest group model suggests that the issues of collective action problems are key factors explaining variation in the ability of domestic interest groups to influence trade policy outcomes. A small, powerful set of domestic protectionist interests are relatively better than a large group of consumers, and among domestic producers, small, highly concentrated industrial sectors are much more efficient in achieving policy demands than large, dispersed ones.

In this vein, the interest-group models focuses on clarifying the demand-side factors of trade policy outcomes, such as policy preferences of domestic actors over trade issues and their organizational influences on policymakers. The first line of research

infers aggregate domestic demand for trade protection from macroeconomic proxies, such as economic downturns (Magee 1980; Shapiro and Page 1994), unemployment rates (Nowzad 1978; Hughes and Waelbroeck 1981; Bergsten and Cline 1983; Wallerstein 1987), and exchange rate changes (Bergsten and Williamson 1983). The second line concentrates more on specifying the impact of policy preferences of domestic interests on the various dimensions of trade policy outcomes, including lobbying activities of sectoral interests (Magee 1980; Gilligan 1997), congressional voting patterns on trade bills (Irwin Kroszner 1999; Bailey and Brady 1998; Bailey 2001; Hiscox 2001, 2002; Beaulieu 2002; Ladewig 2005, 2006), and sectoral-levels of trade protection (Trefler 1993; Grossman and Helpman 1994).

Specifically, the literature on endogenous protection provides a comprehensive framework explaining the inter-industry structure of trade protection. Endogenous protection theory argues that whether or not industrial sectors receive relief from international competition is contingent upon their incentives and abilities to pressure policymakers as organized groups. Cross-sectoral variation in trade barriers are, therefore, attributed to a set of industry characteristics which determine sector efficiency in organizing collective political actions: trading position of industries (Magee 1980), wages and employment (Olson 1983; Baldwin 1985), sector size (Anderson and Baldwin 1981), import penetration and export dependence (Trefler 1993; Lee and Swagel 1997), geographical concentration (Pincus 1975; Caves 1976, Lavergne 1983; Busch and Reinhardt 1999), and the amount of lobbying and campaign contributions (Magee, Brock and Young 1989; Grossman and Helpman 1994; Baldwin and Magee 2000; Gawande and Bandyopadhyay 2002).

The micro-foundation of endogenous protection theory has been more theoretically elaborated by the interest group model of Grossman and Helpman (1994, 1995) which proposes that the levels of trade protection should be higher in industrial sectors that contribute money to the government through organized lobbies. In "Protection for Sale", Grossman and Helpman (1994) regard trade policy decisions as a menu auction, where tariff rates are determined by interactions between industrial sectors and politicians. While industrial sectors attempt to influence politicians through organized lobbying, politicians maximize their utilities considering campaign resources and aggregate social welfare. When industrial sectors represented by organized lobbies show their promised contributions schedules, politicians, in turn, determine tariff rates through optimization process. Grossman and Helpman show that in equilibrium, re-election minded politicians sell tariff and quotas to protectionist groups to the highest bidders, that is, sectors actively involved in interest group lobbying.[1]

The interest group model systematically addresses the impact of domestic interests groups on trade policy outcomes. Numerous studies offer convincing evidence that varying patterns of trade policy outcomes not only reflect the structure of trade policy preferences of domestic constituencies but also indicate policy equilibria between self-interested policymakers and the organized demands of protectionist pressure groups. Cross-national research demonstrates that macroeconomic indicators effectively capture the effect of aggregate protectionist demands on the average level of trade openness at the

[1] The Grossman-Helpman model also suggests that the cross-sectoral structure of protection is also explained by two other economic factors: import elasticity and import penetration. The model predicts that import elasticity is negatively associated with the levels of trade protection, but the influence of import penetration depends on whether industries are organized or not. Import penetration lowers the levels of trade protection in industrial sectors with organized lobbies, but increase protection in the absence of lobbies. For different specifications of the Grossman-Helpman model, see Goldberg and Maggi (1997), Gawande and Bandyopadhyay (2002), and Eicher and Osang (2002).

national level (Busch and Mansfield 1995; Henisz and Mansfield 2006). [2] The literature on endogenous protection also demonstrates that the economic and organizational characteristics of industrial sectors are significantly associated with their lobbying activities, as well as with the levels of protection that they obtain from governments. Specifically, the Grossman-Helpman model has received substantial empirical support in subsequent studies which focus on the cross-sectoral patterns of U.S. trade barriers. Goldberg and Maggi (1997) and Gawande and Bandyopadhyay (2002) commonly find that industrial sectors represented by organized lobbies are more likely to receive higher levels of NTBs than unorganized sectors. Eicher and Osang (2002) show that protection is greater in industrial sectors represented by organized lobbies and that the size of lobbying expenditures from Political Action Committees (PACs) exerts significant influence on sectoral-levels of tariff rates.

However, the micro-foundational explanations of the interest-group model raise theoretical and empirical questions, due to their emphasis on interest group influence. First, the idea that interest groups buy policies with money has been challenged by several studies. Goodhart (2008) points out that the Grossman-Helpman model and its extensions do not clearly explain why politicians offer particularistic benefits toward declining industries which do not have enough resources to devote to lobbying. Ansolabehere, Figueiredo, and Snyder (2008) argue that organized interests give money to politicians as a form of "political participation and consumption" rather than a form of "policy-buying." They point out that despite the presumed importance of lobbying and

[2] The latest large-n studies provide some evidence that macroeconomic factors matter for cross-national variation in trade barriers, even after controlling differences in political systems. High levels of unemployment, for instance, are regarded as one important source of protectionist demands since the rise of imports not only makes it difficult for workers to find alternative jobs but also reduces their wages. Exchange rate changes also generate calls for protection by affecting the competitiveness of exporting and import-competing sectors in domestic industries.

political contributions suggested in the literature, the relative proportions of campaign money over total federal government spending and GDP in the United States remain consistently small for about the last 100 years. Ansolabehere et al. also raise a question about the effectiveness of campaign contributions as political investment. In their review of a series of studies on roll-call voting, they show that contrary to the predictions of the interest group model, previous studies do not offer clear and consistent evidence on the influence of PAC contributions on legislative voting behaviors.

Secondly, the interest group model takes a "black-box" approach to the institutional context of trade politics which affect the interactions between representative policymakers and domestic constituencies. Trade policy decisions in democracies involve political parties and individual legislators, which represent a different set of domestic constituencies. However, most existing studies of endogenous protection rest on a highly simplified assumption that only two groups of actors are influential in setting trade barriers: domestic industrial sectors and a government. Once industrial sectors bid for protectionist measures in the form of campaign contributions, the government increases the levels of trade barriers until the deadweight loss caused by protection threatens their chance of retaining power. Such a framework often regards the government as a unitary actor which automatically responds to the demands of import-competing sectors, especially those represented by organized interests. In doing so, the interest group model implies that the aggregate preference of import-competing sectors is translated into the equilibrium policy outcome over trade issues.

Thirdly, for these reasons, the explanatory power of the interest group approach relatively declines for cases in which interest groups do not have substantial access to the

policy-making process. The ways in which governments respond to protectionist pressures from domestic interest groups should vary across countries and over time. This is because the institutional context might affect not only the political representation of domestic constituencies in policy decisions, but also the political incentives of representative policymakers in selecting the recipients of trade protection. By ignoring these factors, the interest group model does not offer explicit answers to questions, such as why some declining industries often enjoy more protectionist rents, even without significantly engaging in lobbying activities, and why there are varying patterns of trade barriers across countries. With a few exceptions (Lee and Swagel 1997; Dutt and Mitra 2002, 2005), therefore, most empirical research focuses on explaining the inter-industry structure of protection within country, especially within the United States.

2.2. Institutional Approach

The institutional model of trade pays more attention to the supply-side variables in trade policy, considering the links between domestic political institutions and the average levels of trade openness. While focusing on different layers of domestic political systems, institutional explanations of trade policy usually begin with the premise that trade protection is a private good for specific interest groups, whereas free trade is a public good for the interests of a broad national constituency. The levels of trade protection are supposed to be lower in systems where politicians have a strong incentive to provide a public good at the national level and maintain policy autonomy from protectionist interests. Most of these studies provide a common framework that cross-national variations in trade protection are attributed to the formal design and nature of political

institutions, including types of political regimes (Mansfield, Milner, and Rosendorff 2000, 2002; McGillivray and Smith 2004; Milner and Kubota 2005), the structure of executive-legislative relations (Lohmann and O'Halloran 1994), electoral institutions (Rogowski 1987; Mansfield and Busch 1995; Grossman and Helpman 2005; McGillivray 1997, 2004; Kono 2006), the strength of political parties (Hankla 2006), and the number of institutional access points in political systems (Ehrlich 2007).

One important implication of these studies is that political-institutional arrangements define the ways in which representatives maximize their chances of retaining power in trade policy decisions. The formal designs and features of political institutions exert influence on the average levels of protection by delineating the size and characteristics of the constituency which representatives are motivated to serve. For instance, as opposed to narrowness, representatives serving broad constituencies are argued to maintain relative autonomy from protectionist interest groups and thus concentrate on the provision of public goods for diffused interests of society as a whole (here, free trade).

In this vein, some of the latest research on the influence of regime types draws on the selectorate theory which proposes that the provision of a public good is positively associated with the size of the winning coalition, that is, the minimal set of people whose support representatives should maintain to stay in office. [3] As the size of the winning

[3] In their theory of the selectorate and winning coalition, Bueno de Mesquita et al. (2003) rest on the assumption that an incumbent leader maximizes his chances of retaining power by rewarding the winning coalition – the minimal set of people whose support he should maintain to stay in office. When the size of the winning coalition is small, the incumbent leader retains power by providing private goods that enrich only members in his coalition. As the size of a coalition increases, however, it becomes more cost-effective for a leader to reward his supporters by providing public goods that benefit all members of society as a whole. Given that support from the winning coalition determines the political survival of incumbents, the selectorate theory proposes that a large winning coalition enhances political incentives for leaders to provide public goods.

coalition increases, it becomes more cost-effective for leaders to provide public goods for broad constituencies rather than private goods for a small sector of population. Thus systems with a large winning coalition, such as democracies, are more likely to have stable trade flows (McGillivray and Smith 2004) or lower levels of trade protection (Milner and Kubota 2005).[4]

The literature on the effect of executive strength on trade policymaking similarly rests on the contention that constituency size is inversely related to incentives to pursue protectionism. Executives have a strong motivation and capability to adopt lower levels of protection for general welfare at the national level since their chances of retaining office are rarely affected by specific interest groups. By contrast, rank-and-file legislators who serve narrow geographical constituencies are strongly motivated to build their own support groups by satisfying particular demands of localized groups. In the legislation of trade bills, therefore, particularistic incentives of legislators frequently generate protectionist logrolling as equilibrium where each legislator proposing protectionist policy also supports similar proposals from other legislators. In this vein, Lohmann and O'Halloran (1994) maintain that the Reciprocal Trade Agreement Act (RTAA) of 1934 resulted in a significant reduction of tariff rates in the United States by changing the nature of the trade policymaking process. They point out that collective action problems among individual legislators were resolved by the RTAA which delegates authority to the president, "[who] would implement measures to trade off the marginal benefits from protectionist industries in one district against the marginal costs imposed on all other

[4] Another line of research sees trade liberalization in terms of international cooperation. The presence of competitive elections in democracies lead political leaders to cooperate more on commercial issues because the electoral control of voters over the executive increases the amount of gains that leaders obtain from trade agreements (Mansfield, Milner, and Rosendorff 2002).

districts"(Lohmann and O'Halloran 1994, p.599). Likewise, Nielson (2003) argues that presidents who have strong legislative power are more likely to reduce protectionism since the executives, by serving a single national constituency, are strongly motivated to pursue policies targeting broad interests.

In fact, the idea that representatives serving a larger constituency are more likely to liberalize trade can be traced back to Rogowski's insightful work (1987) on the link between political institutions in democracies and trade. He argues that, for trade dependent countries, the optimal form of democratic institutions is a closed-list proportional representation (PR) system which is characterized by a few larger electoral constituencies and political parties with strong discipline. Specifically, Rogowski emphasizes the importance of constituency size on policy autonomy of elected officials from localized interests as follows.

> Insulation from regional and sectoral pressure in a democracy, I claim, is most easily achieved with large electoral district…..When automakers or dairy farmers entirely dominate twenty small constituencies and are a powerful minority in fifty more, their voice will certainly be heard in the nation's councils. Where they constitute but one or two percent of an enormous district's electorate, representatives may defy them more freely (Rogowski 1987, p. 208).

While Rogowski primarily focuses on the institutional choice of European countries that heavily rely on international trade, researchers explain the affinity between PR systems

and trade openness the other way around. Mansfield and Busch (1995) maintain that PR systems tend to have lower levels of protectionism because the diversity of trade policy preferences in large districts moderates protectionist pressures, and prevent logrolling among legislators in the legislation of protectionist bills. Relying on Rogowski's work, they provide evidence that developed democracies with more parliamentary constituencies (hence smaller electoral districts) tend to have higher levels of non-tariff barriers. In a related vein, Grossman and Helpman (2005) claim that systems with strong party discipline make PR systems more amenable to liberal trade policy. Their formal model rests on the assumption that political parties are more likely to maximize chances of winning the majority of seats in the legislature by serving heterogeneous constituencies. In systems with low party discipline, such as majoritarian systems, parties do not effectively prevent individual legislators from deviating from pre-announced policy platforms and pursuing protectionist policy for the interests of their own constituencies.[5]

Institutional research on trade protection provides a comprehensive theoretical framework for understanding the political incentives of representative policymakers in

[5] The logic of Rogowski's argument is quite consistent with the literature on the relationship between electoral institutions and public policy outcomes. For instance, electoral institutions exert significant influence on the size and scope of public spending, because they affect types of domestic constituencies to which reelection-minded politicians target to maximize their chances of winning office. Legislators in single-member district (SMD) systems are likely to spend more on geographically-targeted projects rather than on universal public goods (Persson and Tabellini 1999; Chang 2008; Rickard 2009). There are several factors that explain SMD legislators' inclination toward geographically-targeted allocation of resources. Compared to their PR counterparts, SMD legislators are more responsive to particular demands of their own geographical constituencies, since they are directly elected by voters rather than appointed by party leaders. Due to many small electoral districts and weak party discipline, SMD legislators are more likely to be influenced by localized distributive pressures (Milesi-Ferretti, Perotti, and Rostagno 2002; Grossman and Helpman 2005), and hence to increase the size of distributive programs through universal logrolling (Weingast, Shepsle and Johnson 1981). Moreover, political parties in SMD systems also have strong incentives to concentrate targetable resources in specific regions. To fulfill the requirement of a majority winner, parties should receive 50% plus one vote in 50% plus 1 district. Therefore, distributive benefits are more likely to be concentrated on some key marginal districts containing political moderates and swing voters which could be easily swayed by distributive benefits (Persson and Tabellini 1999).

setting trade policies. The implications of institutional explanations of trade policy raise the following issues: first, mixed findings about the relationship between electoral institutions and trade openness; second, the lack of explanations about varying patterns of trade barriers across countries.

First, there is still considerable disagreement about the forms of electoral systems that induce political representatives to choose liberal trade policy for the broad, collective interest of constituencies. While some argue that larger electoral districts and strong party discipline in proportional representation systems increase trade openness by moderating protectionist pressures (Rogowski 1987; Mansfield and Busch 1995; Grossman and Helpman 2005; Saksena and Anderson 2008; Evans 2009), others suggest that majoritarian systems are more likely to have lower trade barriers (Hatfield and Hauk 2003; Rosendorff and Doces 2007; Chang, Kayser, and Rogowski 2008). On the other hand, another group of research claims that electoral institutions per se are not systematically associated with the level of protection (McGillivray 2004; Kono 2007; Ehrlich 2007; Mukherjee, Smith and Li 2009).

In his earlier work (1987), for instance, Rogowski addresses that there is a positive correlation between trade dependency, proportional representation, and party centralization in Western European countries. While relying on Rogowski's proposition, Mansfield and Busch (1995) find that proportional representation itself tends to raise the levels of non-tariff barriers (NTBs), once the number of electoral constituencies is controlled. Relying on Grossman-Helpman (2005), Evans (2009) maintains that majoritarian electoral systems tend to have higher average tariffs than countries with proportional systems because PR legislatures take into account the interests of the nation

as a whole. Saksena and Anderson (2008) demonstrate that single-member district plurality (SMDP) systems are more prone to higher levels of NTBs rather than PR systems.

In contrast, Rosendorff and Doces (2007) propose that majoritarian dyads tend to have larger volumes of bilateral trade than proportional dyads. Kono (2007) demonstrates that the liberalizing effect of constituency size is greater in majoritarian systems than proportional representation. Interestingly, the recent research of Rogowski and his collaborators (Rogowski and Kayser 2002; Chang, Kayser, and Rogowski 2008) advances an argument that PR systems tend to yield higher consumer prices which reflect policy decisions targeting particular interests of domestic producers. Greater seat-vote proportionality in proportional systems induces politicians to favor those who provide money (producers) over those who provide votes (consumers). In contrast, SMDP systems are more likely to produce pro-consumer policies because SMDP systems increase the marginal impact of a vote change on the distribution of seats in the legislature.

Mixed findings about the impact of electoral institutions on trade policy outcomes result from two factors. First, some institutional research on protection has paid insufficient attention to the countervailing effects of electoral systems on policy decisions. Several studies point out that proportional systems have factors that yield inefficiency and particularism in government policy decisions. Both Cox (1990) and Myerson (1993) maintain that PR systems, by having large district magnitude, increase the number of competitors in electoral contests and promote their centrifugal incentives on a unidimensional policy space. As district magnitude gets larger, parties (and individual

candidates) are more likely to optimize their electoral prospects by taking a non-centrist position for a small sector of population rather than by converging toward the median voter's preference. Moreover, fragmented electoral accountability in proportional representation is often pointed out as a reason for inefficient consequences in policy decisions. While a single-party government in SMDPs holds responsibility for the collective interest of broad constituencies, parties participating in coalition governments in PRs each represent only a small set of population. Thus PR systems, especially those that have more parties, are more likely to generate multi-party logrolling in policy decisions with less efficient outcomes (Scartascini and Crain 2002; Bawn and Rosenbluth 2006; Mukherjee 2003).

Hence, instead of using a majoritarian-proportional dichotomy, another line of research attempts to directly measure particularistic incentives of elected officials in policy decisions from specific components of electoral institutions. Nielson (2003) and Hankla (2006) maintain that levels of protection tend to be lower in party-centered systems where party leaders control ballot structures and thus legislators do not have incentives to cultivate personal votes by protecting their own constituencies. In explaining variations in agricultural subsidies across OECD countries, Park and Jensen (2007) calculate the Cox thresholds which measure the likelihood that electoral systems induce legislators to target narrow geographical constituencies in policy decisions.[6]

[6] Park and Jensen (2007) point out that a majoritarian-proportional representation dichotomy does not account for a cross-national variation in agricultural subsidies in OECD countries. For instance, their data show that several closed-list PR systems, such as Switzerland, Iceland, and Norway persistently maintain high levels of subsidies from 1986-2000, whereas some majoritarian systems including the United States and Canada have relatively lower levels of agricultural protection. To explain this variation, they calculate the Cox-thresholds which conceptualize the degree to which electoral systems induce legislators to protect the benefits of specific interest groups, using the number of noncumulative votes, the number of competitors, and voting rules. For more explanations about Cox thresholds, see Park and Jensen (2007, p.317).

Ehrlich (2007) maintains that levels of protection are a function of the number of access points in domestic political systems since an increase in access points reduces lobbying costs that protectionist groups should pay to reflect their interest in trade policy decisions. On the other hand, Goodhart (2008) also offers a formal explanation for countervailing effects of electoral formulas on the levels of protection. She argues that SMDP legislators are strongly motivated to pursue protectionist policy at the local level since in small electoral districts of majoritarian systems benefits from protection often exceed costs imposed on consumers. At the national level, however, the protectionist bias in majoritarian systems is moderated by vote-maximization strategies of parties which are motivated to target distributive benefits only on some key marginal districts.

Another factor that yields mixed findings is the institutional literature's assumption on the relationship between electoral institutions, the provision of public goods, and the level of trade barriers. The current literature on the influence of electoral systems rests on the following common premises: first, free trade is a public good that benefits the interest of broad national constituency whereas protectionist policy is a private good for a small sector of population; and hence second, certain features of electoral institutions determine the incentive for elected officials to provide public goods and hence adopt lower, more efficient levels of protection.

While it seems reasonable to think that free trade increases the welfare of a society as a whole, it is not clear whether the average level of trade protection is necessarily lower in institutions which promote the provision of public goods. First, if we consider public goods in terms of non-excludability, there are cases in which protectionist policies hold the characteristics of public goods for diffused interests. According to

Mayer (1984) and Dutt and Mitra (2002, 2005), the median voter's preference over trade openness is significantly affected by relative factor endowments in a given country as well as equity in the distribution of factor ownership. For instance, if capital is concentrated in a few hands in a capital abundant country, a majority voting is more likely to generate protectionist trade policy in this country since trade openness negatively affects a large proportion of the population which owns labor.[7]

Kono (2007) similarly exemplifies the situation where a majority of voters prefers higher protection by saying that "the reduction of protection on goods which are consumed by the half of the population is the same as the increase in protection for sectors that employ half of the population in terms of the size of beneficiaries." Thus he argues that particularistic incentives in electoral systems are associated with the ways in which governments distribute protectionist measures across industrial sectors rather than the degree to which they impose protectionist measures for the interests of domestic producers. In a related vein, Hatfield and Hauk (2003) suggest that trade protection takes characteristics of a public transfer under certain circumstances. In advanced industrial counties, high tariffs might be regarded as a type of public good which redistribute wealth from owners of relatively abundant factors to owners of relatively scarce factors (i.e. labor). If this is true, PR legislators targeting the collective interests of broad, national constituencies might have a stronger incentive to increase trade barriers than majoritarian legislators.[8]

[7] See Mayer (1984), Alt and Gilligan (1994), and Dutt and Mitra (2002 and 2005) for more explanations of the relationship between equality, factor endowments, and levels of protection.
[8] Since the distribution of income is right-skewed in most countries, the median voter of a society is capital-poor and labor-rich compared to the national mean in both developed and developing countries (Kono 2008).

A final critique of broad-brushed institutional research on trade protection is that it does not tell us much about varying patterns of trade barriers within and across countries. This is mainly because most empirical works restrict their focus to analyzing the average level of protection across countries and also because they do not pay enough attention to structures of trade policy preferences of voters. While deriving trade policy preferences of representatives from the features of electoral systems at the level of districts, most institutional research infers aggregate preferences of constituencies at the national level, only from macroeconomic indicators (e.g. unemployment rate, exchange rates, economic growth, and the degree of import penetration, etc). Nevertheless, macroeconomic indicators alone do not clearly capture the ways in which domestic groups holding different policy preferences align themselves with parties and politicians to maximize their political-economic interests in trade policy decisions. Consequently, by concentrating only on cross-national variations in the forms of democratic systems, most of the literature on political institutions does not say much about which groups are more likely to become the recipients of protectionist measures and how policymakers determine which industries and sectors to protect. With a few exceptions, they restrict their focus to analyzing variations in the average level of protection across countries, with national-level political-institutional variables as right-hand-side regressors to explain that aggregate variation.

2.3. Theoretical Statements

To fill this gap in the literature, my dissertation develops a theoretical framework explaining varying patterns of trade barriers within and across countries. The interest-

group model in the literature on endogenous protection focuses on examining the influence of lobbying and campaign contribution on sectoral levels of trade barriers. Institutional explanations for trade policy concentrate on specifying the effects of domestic political systems on the average level of trade openness of countries. Unlike these studies, my dissertation pays much more attention to the ways in which reelection-minded parties and legislators allocate distributive rents generated from trade restrictions to particular groups of voters and industrial sectors. Since international trade exerts significant influence on the distribution of income within a country, domestic interest groups shape collective policy demands over the level of trade openness according to their different economic characteristics in the market. However, the ways in which different policy preferences of domestic groups are mapped into policy outcomes are significantly influenced by the incentives of representative policymakers associated with electoral targeting. Since protectionist measures and regulations concentrate targetable benefits on a small sector of population, representative policymakers have substantial political incentives to offer protectionist rents to particular groups of domestic constituencies that will optimize their electoral prospects.

In this vein, my dissertation argues that the ways in which governments distribute trade policy benefits across domestic constituencies depend on the strategic context shaped by two factors: first, the societal and geographic structure of domestic interests which delineates the scope and characteristics of political cleavages over trade policy; second, electoral institutions and conditions which define the political importance of partisan and geographical constituencies to representative policymakers. First, the structure of domestic interests is related to the ways in which domestic constituencies

shape collective policy demands over the issues of international trade. As will be explained in greater detail, the extent to which domestic groups exert protectionist pressures can be explained according to types of industrial sectors in which they are employed (i.e. import-competing and exporting sectors) or types of factors of production they own (i.e. capital or labor). The structure of trade policy preferences of domestic constituencies, however, does not directly determine variation in the allocation of protectionist rents across the electorate. Because of distributive rents yielded by protectionist measures, elected officials shape substantial incentives to target protection to particular groups of electoral constituencies to maximize their chances of retaining power. Therefore, secondly, the ways in which trade policy preferences of domestic groups are mapped into policy outcomes are significantly influenced by electoral institutions and conditions. All other things being equal, the degree to which protectionist interest groups receive favorable levels of protection is explained by electoral institutions and conditions that define types of electoral constituencies from which representative policymakers garner electoral support.

In the following four chapters of my dissertation, these two key concepts are operationalized differently according to whether I examine patterns of trade protection within and across countries. The first three empirical chapters of my dissertation explain within-country variations in levels of trade protection across electoral constituencies and across industrial sectors in the United States from 1989 through 2004. Using sectoral data on tariff and nontariff protection, district-level election outcomes, and geographical information about the distribution of industrial employment on the electoral map, I investigate the extent to which voter demands for protection and their political

characteristics presented in electoral competition affect the allocation of protectionist rents across the electorate. Specifically, these chapters evaluate the relative merits of extant models of distributive politics (i.e. swing voter and core voter models) in a context of U.S. trade policy, by examining the effects of constituency marginality and voter partisanship on the structure of protection at various levels. My findings demonstrate that electoral competitiveness increases the amount of tariff protection aggregated at the level of congressional districts, and that industries geographically located in electorally marginal constituencies are more likely to receive higher levels of tariff protection than those in safe constituencies. My results also show that the political characteristics of constituencies modify the relationship between domestic pressures for protectionist relief and trade policy outcomes. I find strong and consistent evidence that politically competitive constituencies magnify the effects of protectionist demands on the amount of tariff and nontariff protection both at the district-level and at the industry-level.

The fourth empirical chapter of my dissertation focuses on explaining variations in the structure of trade protection across countries. In this chapter, I analyze the economic and political conditions under which representative policymakers target protection toward skill-intensive industries rather than unskilled-intensive industries. Under the assumption that higher levels of protection for skill-intensive industries generate positive externalities for long-term economic growth, I argue that a country's factor endowments and the level of political particularism in electoral institutions explain variation in the skill-bias of tariff protection across democracies. A country's factor endowments capture the sector-specific trade policy preferences of the median voter. The level of political particularism in electoral institutions affects the incentives for

politicians to offer favorable levels of protection for skill-intensive industries rather than unskilled-intensive industries. The results of my empirical analysis demonstrates that the skill-bias of tariff protection tends to be lower in candidate-centered electoral systems in which party leaders do not mute the incentives for individual legislators to cultivate personal support base. An increase in the relative abundance of capital compared to labor of the median voter, however, reduces the effects of particularism on the skill-bias of tariff protection.

Chapter 3

Industrial Location and the Structure of U.S. Trade Barriers

1. Introduction

Why are some declining industries more successful in receiving higher levels of trade protection than others, even without actively engaging in lobbying? How does the political representation of industrial sectors influence the cross-industry structure of trade protection? Most previous studies of trade policies begin with the premise that interest groups need to resolve their collective action problems in order to maximize their common interests (Olson 1965). Like all other public goods, collective activities to achieve policy goals are undersupplied to the group as a whole, since non-excludable benefits generated from group efforts induce individual members to free-ride on others' contributions.

In this vein, the literature on endogenous protection maintains that the cross-industry structure of protection is explained by industry characteristics, which affect their incentives and abilities to coordinate lobbying efforts for sectoral interests. Industries organize costly political actions more effectively, when transaction costs involved in monitoring and bargaining are relatively low and when there is a substantial probability that group members can actually affect policy outcomes (Alt and Gilligan 1994).

Whether industries receive favorable levels of protection, therefore, depends on the organizational and economic features of industries, such as import penetration and export dependence (Magee 1980; Lee and Swagel 1997; Gilligan 1997), industry size (Anderson and Baldwin 1981; Milner 1988; Busch and Reinhardt 1999), firm heterogeneity (Milner 1988), firm concentration (Trefler 1993; Gawande and Bandyopadhyay 2000), and geographic concentration (Pincus 1975; Caves 1976, Lavergne 1983; Hansen 1990; Milner 1997; Busch and Reinhardt 1999). The micro-foundation of endogenous protection theory has been more formally elaborated in the interest-group model by Grossman and Helpman (1994) in which the presence of political contributions and organized lobbying efforts determine the sectoral-level of protection.

What is left unexplained by the endogenous protection literature, however, is that politicians often give privileged access in the form of protectionist tariffs to declining industries (e.g. textiles, footwear, apparel, etc.) which do not have enough monetary resources devoted to lobbying activities (Marvel and Ray 1983; Dixit and Londregan 1995; Goodhart 2008). Moreover, it is somewhat difficult to discern the effects of lobbying and campaign contributions on policy outcomes in terms of both magnitude and direction because money provided from organized pressure groups only constitutes a small part of overall campaign finance (Ansolabehere, Figueiredo, and Snyder 2003).

To fill this gap, this paper pays attention to another important aspect of political calculations that reelection-minded politicians make in setting trade policies: votes. It analyzes the relationship between the geographical location of industries on the electoral map and the inter-industry structure of trade protection in the United States from 1989 through 1998. In doing so, I examine the extent to which the electoral characteristics of

industrial sectors affect cross-industry variation in the level of tariff and nontariff protection, respectively. My study builds upon previous research on the political geography of U.S. trade barriers (Busch and Reinhardt 1999; Rogowski, Kayser, and Kotin 1999; McGillivray 1997, 2004; Muûls and Petropolou 2008). Despite the insights offered by each, these studies show considerable disagreement about how industrial location influences the political representation of sectoral interests and trade policy outcomes. Moreover, their findings also raise the issue of generalizability, because most of them infer the political clout of industries from the geographical location of industries on the electoral map during a particular year.

It is not a simple task to empirically clarify the political characteristics of industrial sectors and their effects on the structure of trade protection. This is mainly because data on trade barriers are generated at the level of industrial sectors, whereas election results are measured at the level of geographic units. I resolve these issues as follows. Based on data on the geographic distribution of industrial employment across electoral constituencies and district-level election outcomes, I first generate a set of indicators measuring the degree of the spatial concentration of industries in electorally competitive constituencies. Then I examine the extent to which the electoral characteristics of industries explain variation in the level of tariff and nontariff protection across industries, as well as the marginal effects of industry comparative disadvantage on policy outcomes.

The present study attempts to contribute to the literature on the political economy of U.S. trade policy as follows. First, some previous work suggests that the political representation of industrial sectors is mainly determined by the number of legislators

representing industries as their own geographic constituencies (Pincus 1975; Busch and Reinhardt 1999; Rogowski, Kayser, and Kotin 1999). However, this paper maintains that the political clout of industries should be considered not only in terms of the spatial distribution of industrial employment across districts, but also from the ideological characteristics of regions in which industries are located. Since protectionist measures concentrate distributive rents on a small set of domestic producers, policymakers have substantial incentives to target protection toward particular industries, which will enhance their chances of winning election.

Second, contrary to much previous research that relies on cross-sectional observations for a single year, I analyze the effects of industrial location on the cross-industry structure of trade protection over time. My analysis relies on multiple data sources: data on tariffs from 1989 through 1998 and nontariff barriers (NTBs) for 1993, 1994, and 1996 generated at the four-digit Standard Industrial Classification (SIC) codes, district-level data on presidential, gubernatorial, and congressional elections that occurred from 1984 through 1997, and geographic information about industrial employment in sub-national economies from 1988 through 1997. In doing so, I examine the political determinants of the structure of U.S. trade policy during the administrations of George H.W. Bush (1989-1992) and Bill Clinton (1993-1998).

Third, the present study provides new evidence about the political geography of U.S. trade barriers. As will be discussed in more detail below, previous research offers competing explanations about the relationship between industrial location on the electoral map and the cross-industry structure of protection. Busch and Reinhart (1999) maintain that in single-member district systems, like the United States, industries which are

geographically concentrated but politically dispersed across congressional districts are more likely to have favorable levels of trade protection. Although using an almost identical indicator of industrial location for the same time period, Rogowski, Kayser, and Kotin (1999) contend that the likelihood that an industry receives protection is maximized at a moderate level of dispersion of industrial employment. On the other hand, McGillivray (1997, 2004) argues that because of weak party discipline, trade protection in the U.S. tends to be directed toward industries located in safe districts, which are represented by senior, powerful members.

The results of my analysis do not support these claims. Rather my findings suggest that the level of dispersion of industrial employment across electoral districts alone does not accurately capture the extent to which sectoral demands for protectionist measures are reflected in trade policy outcomes. Two results deserve emphasis. First, all other things being equal, industries located in politically competitive constituencies are likely to secure higher levels of tariff protection compared to those in safe constituencies. Second, constituency marginality amplifies the effects of protectionist demands of industrial sectors on the level of trade protection. The extent to which industry comparative disadvantage raises the level of tariff and nontariff protection is much greater for industries concentrated in marginal constituencies rather than for those in safe ones.

This chapter proceeds in four sections. Section 2 reviews previous research on the impact of industry geography on the inter-industry structure of protection. Section 3 provides a description of the required data and empirical approach. The main empirical findings are presented in Section4, and Section 5 concludes.

2. Existing Explanations

The idea that industry geography exerts a significant influence on the cross-industry variation in trade protection is neither new nor surprising. Researchers, however, consider the effects of industrial location in different ways. One line of research mainly focuses on the relationship between the geographic concentration of industries and the ability of industries to organize and lobby for group benefits. These studies maintain that geographically concentrated industries are more likely to secure favorable levels of protectionist measures than others (Pincus 1975; Caves 1976; Lavergne 1983; Nelson 1988; Hansen 1990; Busch and Reinhardt 1999). Due to the spatial proximity of firms and workers, geographically concentrated industries tend to enjoy lower transaction costs involved in mobilizing, monitoring, and coordinating individual firms' efforts for industry-wide lobbying (Schonhardt-Bailey 1991). Several studies show that the spatial concentration of employment also allows industrial workers to be more politically active. Workers in geographically concentrated industries tend to articulate their collective interests through voting and campaign contributions more effectively, unlike those in dispersed industries (Grier, Munger, and Roberts 1994; Busch and Reinhardt 2000). The effects of geographic concentration on trade policies and political mobilization in industries are regarded as almost invariant under different electoral systems, since they are mainly related to the formation of protectionist interests (Rogowski, Kayser, and Kotin 1999; Busch and Reinhardt 2005).

The second line of research posits that industrial location affects not only the lobbying efforts of interested industries but also their political representation in the

legislature. While the first line of research defines industrial location in terms of the physical proximity of industries in space, these studies are more concerned with the "political concentration" of industries, that is, the spatial concentration of industrial employment across electoral districts. One of the most common arguments is that in single-member district (SMD) electoral systems, the levels of protection are likely to be higher for industries widely dispersed across electoral districts rather than those concentrated in one or few districts. Since politically dispersed industries on the electoral map have a large group of voters in many districts, elected officials have strong incentives to build a legislative majority for specific interests of these industries (Schattschneider 1935; Pincus 1975; Caves 1976; Busch and Reinhardt 1999).

In particular, Busch and Reinhardt (1999) argue that the effects of geographic and political concentration of industries on protection should be distinguished conceptually and empirically. While the physical closeness increases the efficiency of industries in articulating their protectionist demands, industries in SMD systems still need to be widely dispersed across as many electoral districts as possible, in order to ensure the political representation of their group interests. By using a new measure of geographic concentration of industries, their findings show that U.S. NTBs are likely to apply to industries which are geographically concentrated but politically dispersed across congressional districts. Along similar lines, Rogowski, Kayser, and Kotin (1999) examine the relationship between the political concentration of industries and sectoral distortion of prices between the U.S. and world markets. However, they argue that an industry's political leverage is maximized at a moderate level of political concentration because in

SMD systems, like the U.S. and the U.K, industries with high and low levels of political concentration are likely to waste their votes in the legislature.

The third line of research formulates more elaborate explanations about how the regional concentration of industries on the electoral map affects the incentives for political representatives to concentrate protection to particular industries. For instance, McGillivray (1997, 2004) examines the joint effects of industry geography, electoral rules, and the strength of political parties on the structure of tariff protection in Canada and the United States. She argues that single-party governments in SMD systems have a strong incentive to protect industries in marginal districts to obtain a legislative majority. The ability of governing parties to do so, however, depends on the degree of party discipline which determines the relationship between party leaders and rank-and-file legislators. In strong majoritarian systems, like Canada, government parties tend to concentrate protection on marginal, party-competitive districts at the expense of their core areas of electoral support and opposition strongholds, because party leaders exercise tight control over candidate nominations as well as legislative agendas. For weak majoritarian systems, like the United States, McGillivray predicts that industries located in electorally safe districts are likely to receive favorable levels of protection because senior, powerful legislators representing safe districts form a majority coalition for the interests of their geographic constituencies. On the other hand, Muûls and Petropolou (2008) build a political agency model in which the incumbent politicians improve their reelection prospects by attracting swing voters in a continuum of electoral constituencies. Their empirical tests show that U.S. industries located in swing and decisive states in presidential elections are more likely to receive higher levels of protection than others.

Nevertheless, previous research on the political geography of U.S. trade policy warrants further discussion. First, there is considerable disagreement about how industrial location is related to the cross-industry level of trade protection. By employing an almost identical measure of political concentration, Busch and Reinhardt (1999) maintain that politically dispersed industries are most likely to maximize their group benefits, whereas Rogowski, Kayser, and Kotin (1999) contend that highly dispersed industries are least likely to enjoy political clout on setting trade policies. McGillivray (2004) again shows that once we consider the electoral marginality of districts, the spread of industries across congressional districts rather reduces the levels of protection. These mixed findings stem in part from the fact that researchers infer the political clout of industries from different dimensions of electoral systems, such as the number of individual legislators having industrial workers as geographical constituencies or the electoral incentives of parties in the allocation of distributive benefits. Moreover, the larger question of generalizability still remains because these studies examine the effect of industrial location on the structure of protection, relying on the distribution of industrial employment across electoral constituencies for a particular election year.[9]

Second, and perhaps more importantly, many underlying assumptions in these studies need to be reconsidered theoretically and empirically. For instance, McGillivray's argument that U.S. legislators favor industries in safe districts rather than those in marginal districts relies on two assumptions: first, party discipline in the United States is quite low; second, in weak majoritarian systems, safe districts are more likely to be

[9] Busch and Reinhardt (1999) and Rogowski, Kayser, and Kotin (1999) examine the effects of the political concentration of industries across districts for the 102nd Congress. McGillivray regresses sectoral tariff rates of 1970 in Canada and 1979 in the United States on the 1968 Canadian Parliamentary election and the 1976 U.S. House election, respectively. On the other hand, Muûls and Petropolou (2007) link U.S. NTB barriers for 1983 to the state-level industrial location in the 1984 presidential election.

represented by senior, powerful legislators rather than by junior members, because of lower chances of reelection in marginal districts. However, it should be noted that the traditional view on "weak parties" in the U.S. Congress has been strongly challenged. A number of studies show that partisan organizations exert significant influences on the content of legislation, roll-call voting, and the allocation of distributive benefits (Cox and McCubbins 1993; Aldrich and Rohde 2000; Ansolabehere, Snyder, and Stewart 2001). Unlike McGillivray, these studies regard the concentration of targetable resources on partisan strongholds as a proxy for partisan bias in distributive politics rather than as the consequence of weak party discipline (Levitt and Snyder 1995; Ansolabehere and Snyder 2006; Chen 2012). By assuming that party discipline is exogenously given and constant over time, McGillivray does not directly test the influence of party discipline on the allocation of protection in majoritarian democracies. Thus we do not yet know whether her findings about the structure of protection in U.S. industries are generated by either weak party discipline or the political incentives for parties to favor their core partisan supporters in the allocation of protectionist benefits.

The existing literature provides competing explanations for the ways in which industrial location on the electoral map affects industries' chances of obtaining protectionist relief. This chapter aims to fill this gap by reexamining the effects of political representation on the cross-industry structure of U.S. trade protection. Relying on the literature of distributive politics, I maintain that the extent to which elected officials respond to the policy demands of industrial sectors depends on the political attributes of industrial sectors revealed in electoral competition. Because of income effects of international trade, industrial sectors articulate different policy preferences for

protectionist measures according to their net trade positions. However, the redistribution of protectionist rents across industrial sectors does not necessarily coincide with the strength of protectionist pressures from industrial sectors. Tariffs and NTBs concentrate distributive rents on small groups of domestic sectors but spread the costs of protection across the entire population. Hence representative policymakers have substantial incentives to target protectionist rents to particular constituencies that will promote their chances for reelection.

Extant models of distributive politics offer contrasting predictions about the political characteristics of industries that increase their chance of receiving favorable levels of protection. The swing voter model suggests that politicians target protectionist rents to marginal constituencies rather than to core partisan supporters, since the former are more willing to cast their votes for parties that promise more distributive rewards (Lindbeck and Weibull 1987; Dixit and Londregan 1995). In contrast, the core voter model maintains that it is more cost-efficient for parties to concentrate protectionist rents on their loyal supporters when swing voters might renege on their promises about electoral support (Cox and McCubbins 1986), or when parties often differ in their abilities to deliver distributive benefits to particular groups of voters (Dixit and Londregan 1996).

In this vein, we could formulate a set of testable hypotheses regarding the political and economic determinants of the inter-industry structure of protection, as detailed below. Here I use the swing voter model as a baseline to specify the relationship between protectionist demands, industrial location, and the inter-industry structure of protection.

H_1: Industries which are adversely affected by import competition are more likely to receive higher levels of trade protection.

H_2: Industries which are geographically located in marginal or competitive constituencies are more likely to receive higher levels of trade protection than those located in safe constituencies.

H_3: The geographic concentration of industries in electorally competitive constituencies increases the extent to which industry comparative disadvantage raises levels of protection.

Hypothesis 1 predicts that the strength of protectionist demands of industrial sectors explain variation in the levels of tariff and nontariff protection across industries. In hypotheses 2 and 3, I assume that the political characteristics of industries also matter for the inter-industry structure of trade protection because of the incentives of representative policymakers to optimize their electoral prospects. Hypothesis 2 maintains that the political attributes of industries exert an independent effect on the allocation of protection, and hypothesis 3 suggests that reelection-minded representatives respond to protectionist demands of industries differently according to their political characteristics.

3. Empirical Research Design

To test the aforementioned hypotheses, this section describes a model explaining the cross-industry structure of trade protection. The industry-level model evaluates the extent to which the economic and political attributes of industries independently and interactively affect the distribution of tariff and nontariff protection across industries.

Specifically, it clarifies the political attributes of industrial workers as electoral constituencies, based on the distribution of industrial employment across electoral districts and district-level outcomes from different types of elections.

3.1. Dependent Variable

The dependent variable in the industry-level analysis relies on two different data sources. First, I consider ad valorem tariffs for about 394 manufacturing industries at the four-digit SIC codes from 1989 to 1998. Following previous research, I define industry-level tariff protection as collected duties as a percentage of the value of total imports and as a percentage of the value of dutiable imports (Irwin 1994; O'Halloran 1994; Epstein and O'Halloran 1996). While the gap between these values is not constant over time, the latter is always larger than the former. Sectoral data on duties and imports are obtained from international trade data by Peter K. Schott (2008).[10]

Second, I separately consider NTB protection for 356 industries at the four-digit SIC codes in 1993, 1994, and 1996, as a coverage ratio and as a frequency ratio, respectively. The NTB coverage ratio represents the relative share of import values subject to nontariff measures within a corresponding four-digit SIC industry. In a similar vein, the NTB frequency ratio denotes the proportion of tariff lines affected by nontariff measures within the four-digit SIC industry. Sectoral data on U.S. NTBs are collected from Kono (2006), which are originally based on the United Nations Commission on Trade and Development (UNCTAD)'s Trade Analysis and Information System

[10] For more details, see Schott's International Economics Resource Page: http://faculty.som.yale.edu/peterschott/sub_international.htm

(TRAINS).[11] Kono's data show whether a given commodity *h* at the six-digit Harmonized System (HS) level is subjected to non-tariff measures, such as price, quantity, quality, threat, and advance payment.

To calculate the NTB coverage ratio for industry *k*, I first tabulated Kono's NTB data at the four-digit SIC codes, using concordance of each 10-digit HS code to a single four-digit SIC industry from Pierce and Schott (2009). Then I created a dummy variable indicating if a six-digit HS commodity *h* is subjected to any types of NTBs mentioned above, and weighted them by the share of import values of *h* over the total value of imports for the four-digit SIC industry *k* to which *h* belongs. Finally, by adding up these values across six-digit HS codes but within the four-digit SIC industry *k*, I generate the NTB coverage ratio for about 356 industries at the four-digit SIC codes for 1992, 1993, and 1996. As in Trefler (1993), the numerical computation of industry *k*'s NTB coverage ratio is summarized in equation (2) in which m_h denotes a dummy variable for NTB for the six-digit HS industry *h*, and $v_{h,k}/v_k$ is the relative value of imports of *h* within the corresponding four-digit SIC industry. For the NTB frequency ratio, I calculate the ratio of the number of HS codes influenced by NTB measures over the total number of HS codes within the four-digit SIC industry.

$$\textit{NTB coverage ratios } t_k = \sum_{h=1}^{n} m_h \times (v_{h,k}/v_k) \qquad (2)$$

[11] Kono uses Jon Haveman's extracts from TRAINS versions 2-8.

3.2. Independent Variables

Our independent variables are divided into three categories: first, industry-level demands for protectionist measures; second, industrial location on the electoral map which represents the political attributes of industrial sectors as electoral constituencies; and third, organizational characteristics of industries that influence sector efficiency in coordinating lobbying and campaign contributions.

First, I generate the variable *Industry Comparative Disadvantage* which represents the strength of sectoral demands for protectionist measures. It measures the extent to which each industry develops protectionist demands, based on its relative position in international and domestic markets. Following Busch and Reinhardt (1999), I measure *Industry Comparative Disadvantage* as the difference between import penetration and export dependence for four-digit SIC industries. Import penetration is defined as the ratio of the value of imports over the total value of imports and domestic shipments, and similarly, export dependence is measured as the value of exports over the total value of exports and domestic shipments. Import penetration indicates the extent to which industries are threatened by sectoral import flows, whereas export dependence indicates industry's demands for access to international markets. Thus large positive values of *Industry Comparative Disadvantage* indicate that international competition more adversely affects the economic fortunes of industries. Data on imports, exports, and domestic shipments for four-digit SIC industries were again collected from Schott's international trade data mentioned above.

Second, and more importantly, I construct a set of indicators representing the geographical location of industries on the electoral map, using district-level results for

presidential elections from 1984 through 1996 and data on industrial employment in sub-national economies from 1988 through 1997. The spatial distribution of industrial employment across congressional districts allows us to infer their political characteristics in electoral competition. Using district presidential vote measures and industrial composition of districts, I construct a variable *Partisan Dominance of Industry* indicating the extent to which a given industry is geographically located in electorally marginal or safe constituencies. *Partisan Dominance of Industry* is conceptually similar to the political concentration of industry, which is measured as the Herfindahl-Hirschman (HH) index of the district share of industrial employment in the literature (Busch and Reinhart 1999; Rogowski, Kayser, and Kotin 1999; McGillivray 1997).[12] However, while the political concentration of industry only measures the spatial proximity of industrial employment on the electoral map, the *Partisan Dominance of Industry* variable takes into account different electoral characteristics of districts in which a given industry is located. Assuming that industry *k* is dispersed across *n* congressional districts, *Partisan Dominance of Industry* is calculated from equation (3) below.

$$\textit{Partisan Dominance of Industry}_k = \sum_{i=1}^{n}((E_{k,i}/\sum_i E_{k,i})^2 \times \textit{Partisan Dominance}_i \quad (3)$$

[12] The political concentration of industry is computed as the sum of the square of each district's share of industry *k*'s total employment at the national level. Thus, the political concentration has zero value for industries which are widely dispersed across 435 congressional districts, but takes a value of 1 for a small industry concentrated in a single electoral district.

Equation (3) shows that *Partisan Dominance of Industry* is computed as the weighted sum of the squared proportion of district *i*'s employment for industry *k*, with the weight given by the value of *Partisan Dominance* for district *i*. Here $E_{k,i}$ presents the number of industry *k*'s employees in district *i*, and $\sum_i E_{k,i}$ denotes total employees for industry *k* at the national level. On the other hand, *Partisan Dominance* indicates the strength of district *i*'s partisan support for either Republican or Democratic candidates. I measure *Partisan Dominance* as the absolute value of district presidential vote share normalized around its national mean in the most recent presidential election, as the literature on congressional representation commonly sees presidential electoral returns as the most reliable indicator of district competitiveness or partisanship (Ansolabehere, Snyder, and Stewart 2001; Canes-Wrone, Brady, and Cogan 2002; Abramowitz, Alexander, and Gunning. 2006; Griffin 2006). More specifically, *Partisan Dominance* indicates the absolute deviation of the proportion of the two-party vote in district *i* from the average share of the two-party vote in the entire nation. If districts show stronger electoral support for one party than the national average, *Partisan Dominance* takes large positive values. For districts having two equally sized groups of partisans as the national average, *Partisan Dominance* is coded as zero, meaning the highest level of district competitiveness. In this vein, *Partisan Dominance of Industry* captures the political attributes of industrial sectors revealed in electoral competition. It will take a value closer to zero for industries heavily located in competitive districts, but have large positive values for industries located in electorally safe constituencies.

Geographical information about industrial employment was collected from the U.S. Census Bureau's County Business Patterns (CBP) data which offer annual

information about industrial employment and payrolls for four-digit SIC industries from 1988 through 1997 at various levels of geographic units (i.e. county, state, and nation).[13] I convert the CBP's county-level data on industrial employment to district-level outcomes by using the Missouri Census Data Center's Mable/Geocorr2k geographic correspondence engine, which provides detailed information about the geographical relationship between county and congressional districts from the 101st to the 105th Congresses.[14] For most congressional districts consisting of multiple counties, we can easily figure out the industrial composition of employment at the district level, by adding the size of employment for each industry across counties but within a corresponding district. If a county is divided into two or more congressional districts, I disaggregate county-level data on industrial employment into district-level outcomes, based on county's share of population for each congressional district in Mable/Geocorr2k files. As supplementary sources, I also use the U.S. Census Bureau's Congressional District Geographic Relationship Tables and Congressional District Atlas to consider redistricting and corresponding changes in the subdivision of congressional districts.

My model contains other substantial variables which may exert significant effects on the cross-industry patterns of trade protection. As reviewed above, it is frequently argued that geographically concentrated industries are more likely to act upon their common interests, because regionally clustered industries tend to have lower transaction costs involved in communication, transportation, and mobilization (Trefler 1993; Busch

[13] For some industries, the CBP data uses abbreviations that indicate employment-size classes at the county level to protect the confidentially rights of employees. In these cases, I narrow down the range of employment-size classes as much as possible, using establishment group categories and the hierarchical structure of geographic units and the SIC codes. Then following McGillivray (1997, 2004), I take the mid-point of employment-size classes as the number of employees for each industry. See Isserman and Westervelt (2006) for more details on the structure of the CBP data.

[14] Mable/Geocorr2k geographic correspondence can be found at: http://mcdc.missouri.edu/websas/geocorr90.shtml

and Reinhart 1999). To control for the effect of geographic concentration of industrial employment, I construct the Ellison-Glaeser Index at the four-digit SIC codes from 1988 to 1997. The *Ellison-Glaeser Index* measures the physical closeness of industrial employment in space, using the distribution of industrial employment across plants. Drawing on Ellison and Glaeser (1993) and Holmes and Stevens (2004), I compute the Ellison-Glaser index, by using equation (4) below.

Ellison-Glaeser Index $_k$

$$\gamma = \frac{G - (1 - \sum_{i=1}^{M} x_i^2) \times H}{(1 - \sum_{i=1}^{M} x_i^2)(1 - H)}$$

Where

$$G = \sum_{i=1}^{M} (s_i - x_i)^2 \text{ and } H = \sum_{j=1}^{N} z_j^2$$

(4)

Here *G* indicates the degree of natural or raw geographic concentration of industry. Under the assumption that industry *k* has spread across *M* states, s_i represents state *i*'s share of industry *k*'s total employment, and x_i denotes state *i*'s share of total national employment. *H* is the Herfindahl-Hirschman Index of industry plant size distribution, in which z_j denotes the share of employment of plant *j* of industry *k.*

To construct the *Ellison-Glaeser Index* for all manufacturing industries in my dataset, I again use the CBP data on industrial employment at the state level as well as at the national level, respectively, during the period from 1988 through 1997. Following Holmes and Stevens (2004), I also employ the CBP data on the distribution of

employment across establishment categories to calculate the Herfindahl-Hirschman Index of industry concentration (=H) in equation (4), since industrial employment data are not available at the plant level for the period of my investigation. Large positive values of the *Ellison-Glaeser index* indicate high degrees of the spatial proximity of industrial employment. Thus, if geographically clustered industries more effectively reduce transaction costs in coordinating lobbying activities for protectionist measures, the coefficient for the *Ellison-Glaeser Index* should be positive and significant.

Relying on the literature on endogenous tariff protection, I consider a set of industry characteristics which might affect their group efficiency in organizing collective political activities for their sectoral interests. Following previous work (Trefler 1993; Busch and Reinhart 1999), I control for the effects of *Firm Concentration Ratio*, representing the extent to which an industry's market share is dominated by a small number of large firms. Since it is measured as the Herfindahl-Hirschman index of the dollar value of the domestic shipments made by the industry's fifty largest firms, high values of *Firm Concentration Ratio* indicate that a very few large firms exert greater influence on industry. It is frequently argued that industries dominated by a small number of firms have strong incentives to organize and lobby for protection, because they would enjoy most of the distributive rents yielded from protectionist measures (Hansen 1990; Trefler 1993). If this argument holds true, we might expect that the coefficient for *Firm Concentration Ratio* would be positive and significant.

I also include an industry's national employment in my model to control for the effect of industry size.[15] Previous research on endogenous protection commonly

[15] For the purpose of presentation, the *Size* variable is measured as the total number of employees for each industry in millions.

maintains that the size of an industry is an important factor explaining the cross-industry structure of protection. The size of industrial employment might have two conflicting effects. On the one hand, it could increase the political importance of the industry, because large industries might mobilize more votes from their employees to pressure representative policymakers (Trefler 1993; Lee and Swagel 1997). On the other hand, industry size might reduce the political clout of industries since greater employment might generate more collective action problems in coordinating lobbying efforts for protection.

Last, I add the lagged ad valorem tariff rates at the four-digit SIC codes. Previous studies suggest that pre-existing tariff levels might influence both constituent demands for trade protection as well as the responsiveness of governments to protectionist demands. Specifically, if there is a substitutive relationship between tariffs and NTBs, prior tariff rates might moderate the strength of industries' demands for protection. Governments could also be more resistant to protectionist pressures from industries which are already the beneficiaries of tariff protection. If tariffs and NTBs are complementary to each other, however, higher levels of tariff rates might have a positive, significant association with sectoral NTBs (Mansfield and Busch 1995; Busch and Reinhardt 1999; Kono 2006).

Equation (5) summarizes the industry-level model in which the economic and political attributes of industries independently and interactively influence the cross-industry structure of protection. The industry-level model differentiates the political attributes of industries based upon the regional distribution of industrial employment across congressional districts and district-level election results. In equation (5), β_2

represent the effect of the geographical concentration of industry *k* in electorally safe districts. β_3 indicates the extent to which industrial concentration in safe districts modifies the relationship between industry comparative disadvantage and the dependent variable. The marginal effect of industry comparative disadvantage is, therefore, hypothesized to depend on the degree of industrial concentration in safe districts, as presented in equation (6). As explained in detail above, the industry-level model in equation (6) is estimated against ad valorem tariffs for about 394 manufacturing industries at the four-digit SIC from 1989 to 1998, and for NTB protection for 356 industries at the four-digit SIC codes for 1993, 1994, and 1996, respectively.

$$\begin{aligned} &\textit{Industry-level Protection}_{kt} \\ &= \beta_0 + \beta_1 \textit{Industry Comparative Disadvantage}_{kt-1} \\ &+ \beta_2 \textit{Partisan Dominance of Indsutry}_{kt-1} \\ &+ \beta_3 \textit{Industry comparative Disadvantage} \times \textit{Partisan Dominance of Industries}_{kt-1} \\ &+ \beta_4 \textit{Ellison-Glaeser Index}_{kt-1} + \beta_5 \textit{Firm Concentration Ratio}_{kt-1} \\ &+ \beta_6 \textit{Industry Size}_{kt-1} + \beta_7 \textit{Industry-Level Tariff}_{kt-1} + \varepsilon_i \end{aligned} \tag{5}$$

$$\begin{aligned} &\partial \textit{Industry-Level Protection} / \partial \textit{Industry Comparative Disadvantage} \\ &= \beta_1 + \beta_3 \textit{Partisan Dominance of Industry} \end{aligned} \tag{6}$$

4. Empirical Results

This section reports estimation results for the industry-level model presented in equation (5). Here, the industry-level protection is predicted from industry's trade positions, industrial location on the electoral map, and a set of control variables that might be associated with lobbying efforts of industrial sectors. In Tables 3.1 and 3.2, my model is tested against ad valorem tariffs for 394 industries at the four-digit SIC codes from 1989 through 1998, based on the value of total imports and the value of dutiable imports, respectively. Table 3.3 displays the estimated results for NTB coverage ratios and NTB frequency ratios of 356 four-digit SIC industries in the 1990s.

Let us briefly examine the effects of industry characteristics related to industrial efficiency in organizing lobbying efforts for protection. The results of my analysis demonstrate that the economic and organizational characteristics of industries matter for the structure of protection, as suggested in the literature on endogenous tariff protection. First and foremost, my findings clearly show that industry's net trade position is one of the most important factors explaining sectoral demands for compensation through protectionist measures. In Tables 3.1-3.3, the variable *Industry Comparative Disadvantage* mostly has a significant positive association with both tariff and nontariff protection. These findings suggest that levels of tariff and nontariff protection tend to be higher for industries which are more threatened by international competition but rely less on exports.

Previous research also emphasizes the importance of geographical concentration of industry as a substantial factor influencing the cross-industry structure of protection. My findings support earlier findings that there is a significant, positive relationship

between the geographic concentration of industries and the industry-level trade protection (Trefler 1993; Busch and Reinhardt 1999). In Table 3.1, the positive significant coefficients on geographic concentration suggest that regionally clustered industries are likely to have higher levels of tariff protection. Similarly, Table 3.3 demonstrates that the geographic concentration of industries also exerts a significant, positive effect on NTB coverage ratio as well as on NTB frequency ratios. These results strongly support the idea that geographically concentrated industries are likely to increase sectoral levels of trade protection, because the spatial closeness of firms and workers allows industries to have lower transaction costs involved in coordinating lobbying efforts for collective interests (Busch and Reinhardt 1999).

Nevertheless, my findings suggest that other organizational characteristics of industries might not have significant, consistent effects on the inter-industry structure of protection. The results in Tables 3.1-3.3 do not generate convincing evidence for the argument that industry size has a positive association with the level of protection, because large industries are likely to be considered politically more important than small ones (Lee and Swagel 1997). In most cases, the *Size* variable does not have a significant, positive coefficient. In column 5 of Table 3.1, the size of industrial employment is inversely related to the level of protection, suggesting that large industries might be less efficient in organizing and lobbying for protection for their sectoral interests. Nevertheless, Table 3.3 again shows that industry size does not exert significant influence on either the NTB coverage ratio or the NTB frequency ratio.

Table 3.1 also demonstrates that the estimated coefficients for *Firm Concentration Ratio* are negatively signed and mostly significant. This finding implies

that the level of tariff protection tends to be rather lower for industries dominated by a small number of large, significant firms. In Table 3.3, however, *Firm Concentration Ratio* does not exert any significant effect on the cross-industry structure of NTBs. Overall, these findings do not confirm the argument that firm concentration increases sectoral levels of trade protection, since it lowers transaction costs involved in coordinating collective lobbying but raises the amount of protectionist rents for individual firms (Trefler 1993; Busch and Reinhardt 1999; Grier, Munger, and Roberts 1994). Given that previous research has also generated mixed findings about the effects of the size and firm concentration of industries, it is not surprising that my findings present weak and insignificant effects of these variables.

[Insert Tables 3.1 and 3.2 here]

Let us now turn to the relationship between industrial location on the electoral map and the industry-level of trade protection. Here we focus on examining the degree to which the political characteristics of industrial workers revealed in electoral competition influence the levels of tariff and nontariff protection, on the one hand, and the marginal effect of industry comparative disadvantage on trade policy outcomes, on the other hand.

The overall results in Tables 3.1 and 3.2 demonstrate that the *Partisan Dominance of Industry* variable is negatively related to the industry-level of tariff protection. As large positive values of *Partisan Dominance of Industry* imply that industries are mainly located in electorally safe constituencies, its significant and negative coefficients suggest that the levels of tariff protection are likely to be higher for industries located in

politically competitive constituencies rather than for industries in safe constituencies. In Table 3.1, *Partisan Dominance of Industry* exerts a significant, negative effect on ad valorem tariffs based on the total value of imports, only with the inclusion of industry-fixed effects.[16] On the other hand, findings in Table 3.2 indicate that the coefficients for *Partisan Dominance of Industry* are consistently negatively signed and significant, if we consider ad valorem tariffs generated from the value of dutiable imports. These findings suggest that the geographical concentration of industrial employment in electorally safe constituencies reduces the chance of industry receiving favorable levels of tariff protection.

In Tables 3.1 and 3.2, I also include the multiplicative interaction term between *Partisan Dominance of Industry* and *Industry Comparative Disadvantage*. In doing so, we can evaluate the extent to which the political characteristics of industries affect the relationship between protectionist pressures from industries and actual policy outcomes. The findings in Tables 3.1 and 3.2 offer strong evidence that industrial concentration in electorally safe constituencies reduces the marginal effects of protectionist demands of industries on the level of tariff protection. The coefficients for the *Partisan Dominance of Industry* × *Industry Comparative Disadvantage* are consistently negative and significant across different specifications of the model. For instance, column 5 of Table 3.1 shows that the estimated coefficients for *Industry Comparative Disadvantage* and its interaction term with *Partisan Dominance of Industry* are 0.037 and -0.116, respectively. This finding suggests that the influence of protectionist interests on tariff protection will drop

[16] As my data fail to meet the asymptotic assumptions of the Hausman Test, we cannot reject the null hypothesis that differences in coefficients between random and fixed models are not systematic. Using generalized least squares (GLS) does not significantly change my results presented in Tables 1 and 2.

from 0.037 to -0.058, as the value of *Partisan Dominance of Industry* moves from its minimum (= 0.003) to maximum (= 0.819) in my dataset.

[Insert Table 3.3 about here]

The results of my analysis also demonstrate that similar patterns hold for sectoral NTBs. On the one hand, Table 3.3 demonstrates that the marginal voter status of industrial employment does not exert a direct and independent influence on the cross-industry structure of NTB protection. The coefficients for *Partisan Dominance of Industry* are all positively signed and insignificant. These findings do not support my initial hypothesis that industries located in electorally competitive regions are more likely to receive higher levels of nontariff protection. On the other hand, however, the results presented in Table 3.3 provide convincing evidence that the marginal effects of *Industry Comparative Disadvantage* on the NTB coverage ratio and the NTB frequency ratios will be maximized, when industrial employment is concentrated in electorally competitive constituencies. As shown in Table 3.3, the coefficients for the multiplicative interaction term of *Partisan Dominance of Industry* × *Industry Comparative Disadvantage* range from -4.685 to -3.43, and all of them are statistically significant. More specifically, columns 2 and 3 demonstrate that all other things being equal, the marginal effect of *Industry Comparative Disadvantage* on the NTB coverage ratio will be reduced from 0.254 to -1.5 and from 0.284 to -1.736 respectively, as *Partisan Dominance of Industry* changes from 0.003 to 0.434 in my dataset. In columns 5 and 6, the same change in *Partisan Dominance of Industry* induces the marginal effect of *Industry Comparative*

Disadvantage on the NTB frequency ratio to drop from 0.174 to -1.305 and from 0.193 to -1.457, respectively.

It should also be noted that the coefficients for *Partisan Dominance of Industry* and its interaction term with *Industry Comparative Disadvantage* rarely change in terms of direction and significance, even if we control for the effect of the political concentration of industry suggested in previous studies. In Tables 3.1-3.3, the *Political Concentration* variable indicates the degree of the spatial concentration of industrial employment across congressional districts. If industries which are widely dispersed as many congressional districts as possible have better representation in political institutions and hence receive more favorable levels of protection, the coefficients for *Political Concentration* should be negative and significant (Busch and Reinhardt 1999). My results in Tables 3.1-3.3, however, show that the *Political Concentration* variable does not have a significant influence on the industry-level tariff and nontariff protection. The only exceptions are presented in columns 2 and 5 of Table 3.2, in which I consider ad valorem tariffs on the value of dutiable imports as the dependent variable. Nevertheless, these findings still suggest that industries dispersed across congressional districts are less likely to receive tariff protection, as shown in McGillivray's work (2004).

Robustness Tests

As a robustness check, I re-examine the effects of the political characteristics of industries on the inter-industry structure of trade protection, considering other types of elections with different time frames. Specifically, I construct three different indicators of industrial location representing the concentration of industrial employment in electorally

competitive (or safe) constituencies: *Presidential Closeness of Industry*, *Closeness to 50-50 of Industry,* and *House Marginality of Industry*. These measures are again generated from equation (3), in which I replace *Partisan Dominance* with alternative indicators of electoral competitiveness, such as *Presidential Closeness*, *Closeness to 50-50,* and *House Marginality*.

While *Partisan Dominance* is only concerned with district presidential vote shares in the most recent presidential election, *Presidential Closeness* is the average of district presidential vote measures in the two most recent presidential elections, with each of them normalized around its national mean. Following Ansolabehere and Snyder (2006), *Closeness to 50-50* denotes the absolute difference between the two-party vote share that Democratic Candidates won in presidential, Senate, gubernatorial elections over the past four years and 50%. In doing so, I assume that the industry-level of tariff protection in1992 is influenced by the political attributes of industrial sectors observed from 1988 through 1990. As in McGillivray (1997), I also consider *House Marginality* which represents the absolute difference between the two-party vote share for Democratic candidates and 50% in the most recent House election.[17] Like *Partisan Dominance,* the values of *Presidential Closeness*, *Closeness to 50-50,* and *House Marginality* all increase from zero to positive values, as a district's two-party vote share deviates from a 50-50 split in each combination of election outcomes. Consequently, all three measures of industrial location also take large positive values, as industrial employment is more concentrated in constituencies showing strong partisanship for one party over the other. In contrast, the value of these three measures become closer to zero, as industrial

[17] The absolute value of *House Marginality* is equivalent to one-half of the absolute difference in the Democratic and Republican share of the two-party vote in the most recent House election.

employment is mostly located in constituencies having two equally sized groups of partisans.

[Insert Tables 3.4 and 3.5 about here]

Table 3.4 and 3.5 report the estimation results for the industry-level model, with alternative indicators of industrial location. Here I consider four different dependent variables: tariff rates on the value of total imports, tariff rates on the value of dutiable imports, NTB coverage ratios, and NTB frequency ratios. My findings in these tables still strongly support my argument that the geographical concentration of industries in electorally competitive constituencies significantly increases the marginal effect of protectionist demands on the levels of both tariff and nontariff protection. Columns 1-3 of Table 3.4 demonstrate that the multiplicative interactions between *Industry Comparative Disadvantage* and each indicator of industrial location exert a consistently negative and significant effect on the level of tariff rates based on the value of total imports. These findings suggest that the extent to which *Industry Comparative Disadvantage* actually increases the level of tariff protection is inversely related to the geographic concentration of industries in electorally safe constituencies. In a related vein, the findings in Table 3.5 also clearly show that the coefficient estimates for interaction terms between *Industry Comparative Disadvantage* and indicators of industrial location are all negatively signed and significant. These results provide confirming evidence that the extent to which protectionist pressures from industrial sectors would actually increase sectoral NTBs in

terms of coverage and frequency is significantly higher for industries located in politically competitive constituencies rather than for industries located in safe ones.

Based on these results, Figure 3.1 graphically presents the marginal effect of industry comparative disadvantage on various types of protectionist measures. The solid lines in each graph shows the degree to which industry comparative disadvantage increases the levels of protection, whereas dashed lines represent 95% confidence intervals of the marginal effects. Specifically, the first row of graphs indicates the effects of the political attributes of industry on the relationship between industry comparative disadvantage and sectoral tariff rates on the value of total imports. Similarly, the second and third rows of graphs present the marginal effect of industry comparative disadvantage on NTB coverage ratios and NTB frequency ratios, respectively.

[Insert Figure 3.1 about here]

The graphs in Figure 3.1 strongly suggest that the degree to which industry comparative disadvantage increases the level of tariff and nontariff protection significantly varies according to the political characteristics of industries presented in electoral competition. In Figure 3.1, all nine graphs present a negative slope for the marginal effect line of industry comparative disadvantage on the industry-level protection. This finding implies that all other things being equal, the extent to which industry comparative disadvantage raises sectoral levels of tariff and nontariff protection is maximized, if the values of three indicators of location are all zero, that is, if industries have more electorally competitive constituencies. Nevertheless, if industries are more

geographically located in safe constituencies and thus take large positive values for indicators of industrial location, the extent to which industry comparative disadvantage raises the levels of tariff and nontariff protection significantly drops. Figure 3.1 also shows that protectionist pressures from industrial sectors would not raise the level of trade protection anymore, once the values of industrial location exceed a certain threshold. For instance, the center graph in the second row demonstrates that the effects *Industry Comparative Disadvantage* on NTB coverage ratios become zero, once the value of *Closeness to 50-50 of Industry* is greater than 0.055.

5. Conclusion

This chapter analyzes the inter-industry structure of U.S. trade protection from 1989 through 1999. Relying on the literature on the political geography of U.S. trade policy and extant models of distributive politics, the present study finds that the inter-industry structure of tariff and nontariff protection is influenced not only by sectoral demands for protection, but also by the political characteristics of industries as electoral constituencies. My findings consistently demonstrate that industries located in electorally competitive constituencies are more likely to receive higher levels of tariff protection and that the marginal effect of industry comparative disadvantage increases as industries are more geographically located in politically competitive constituencies.

Several studies have already emphasized the importance of the political geography of U.S. trade protection. The findings of this study do not confirm previous findings that the spatial distribution of industrial employment determines the degree of political clout of industrial sectors (Busch and Reinhardt 1999; Rogowski, Kayser, and

Kotin 1999) and that because of the weakness of congressional parties, U.S. industries located in marginal districts are least likely to receive favorable levels of protection (McGillivray 1997, 2004). Rather, the present study suggests that redistribution achieved through protectionist policies cannot be explained without considering the political characteristics of domestic constituencies that change over time. Constituency competitiveness influences not only the distribution of protectionist rents across industrial sectors but also the marginal effect of protectionist pressures on policy outcomes.

These findings imply that trade policy preferences of industrial sectors and their organizational characteristics affecting collective lobbying do not fully explain the inter-industry structure of trade protection. Due to distributive rents yielded by trade barriers, representative policymakers strategically direct protectionist measures toward particular industrial sectors that will enhance their chances of winning power as politically pivotal constituencies.

TABLE 3.1 Partisan Dominance of Industry and Industry-Level Tariffs on Total Imports, 1989-1998

	Dep. Variable = Tariff on the Value of Total Imports at the four-digit SIC					
	(RE)	(RE)	(FE)	(RE)	(RE)	(FE)
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
Industry Comparative Disadvantage	0.031***	0.031***	-0.028***	0.036***	0.037***	-0.032***
	(0.003)	(0.003)	(0.007)	(0.004)	(0.004)	(0.008)
Partisan Dominance of Industry	-0.004	-0.005	-0.023**	-0.003	0.002	-0.023**
	(0.009)	(0.014)	(0.012)	(0.009)	(0.014)	(0.012)
Partisan Dominance of Industry × ICD				-0.111**	-0.116**	0.071
				(0.044)	(0.045)	(0.060)
Geographic Concentration	0.019***	0.019***	0.001	0.020***	0.021***	0.001
	(0.005)	(0.005)	(0.007)	(0.005)	(0.005)	(0.007)
Firm Concentration	-0.013**	-0.013**	-0.005	-0.013**	-0.012*	-0.005
	(0.006)	(0.006)	(0.010)	(0.006)	(0.006)	(0.010)
Size	-0.012	-0.012	0.04	-0.012	-0.012*	0.04
	(0.007)	(0.007)	(0.035)	(0.007)	(0.007)	(0.035)
Lagged Value of Tariff	0.695***	0.695***	0.306***	0.693***	0.693***	0.306***
	(0.009)	(0.009)	(0.012)	(0.009)	(0.009)	(0.012)
Political Concentration		0.002			-0.007	
		(0.015)			(0.015)	
Constant	0.009***	0.009***	0.025***	0.008***	0.008***	0.025***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
R-squared	0.792	0.792	0.623	0.793	0.793	0.62
Number of observations	3482	3482	3482	3482	3482	3482

* p<0.10, ** p<0.05, *** p<0.01; Standard errors in parentheses.

TABLE 3.2 Partisan Dominance of Industry and Industry-Level Tariffs on Dutiable Imports, 1989-1998

	Dep. Variable = Tariff on the Value of Dutiable Imports at the four-digit SIC					
	(RE)	(RE)	(FE)	(RE)	(RE)	(FE)
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
Industry Comparative Disadvantage	0.028***	0.028***	-0.077***	0.040***	0.039***	-0.071***
	(0.009)	(0.009)	(0.013)	(0.010)	(0.010)	(0.014)
Partisan Dominance of Industry	-0.036*	-0.086***	-0.057***	-0.035*	-0.079***	-0.056***
	(0.019)	(0.029)	(0.020)	(0.019)	(0.030)	(0.020)
Partisan Dominance of Industry × ICD				-0.220**	-0.193*	-0.137
				(0.102)	(0.103)	(0.107)
Geographic Concentration	0.007	0.008	-0.014	0.008	0.009	-0.014
	(0.011)	(0.011)	(0.012)	(0.011)	(0.011)	(0.012)
Firm Concentration	-0.019	-0.021	-0.017	-0.018	-0.02	-0.017
	(0.016)	(0.016)	(0.018)	(0.016)	(0.016)	(0.018)
Size	-0.045	-0.04	0.106*	-0.046	-0.041	0.105*
	(0.029)	(0.030)	(0.060)	(0.029)	(0.029)	(0.060)
Lagged Value of Tariff	0.012***	0.012***	0.009***	0.012***	0.012***	0.009***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Political Concentration		0.076**			0.067*	
		(0.034)			(0.034)	
Constant	0.057***	0.055***	0.057***	0.056***	0.055***	0.057***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
R-squared	0.148	0.152	0.11	0.159	0.159	0.103
Number of observations	3379	3379	3379	3379	3379	3379

* p<0.10, ** p<0.05, *** p<0.01; Standard errors in parentheses.

TABLE 3.3 Partisan Dominance of Industry and Industry-Level Nontariff Barriers in the 1990s

	Dep. Variable = Nontariff Protection at the four-digit SIC codes					
	NTB Coverage Ratio			NTB Frequency Ratio		
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
Industry Comparative Disadvantage (ICD)	0.057	0.266**	0.298**	0.008	0.184*	0.204*
	(0.096)	(0.135)	(0.139)	(0.077)	(0.108)	(0.112)
Partisan Dominance of Industry	0.528	0.385	0.879	0.363	0.242	0.561
	(0.338)	(0.343)	(0.626)	(0.272)	(0.276)	(0.504)
Partisan Dominance of Industry × ICD		-4.069**	-4.685**		-3.430**	-3.828**
		(1.844)	(1.957)		(1.484)	(1.575)
Geographic Concentration	0.23	0.357*	0.403*	0.385**	0.493***	0.522***
	(0.208)	(0.214)	(0.220)	(0.167)	(0.172)	(0.177)
Firm Concentration	-0.149	-0.077	0.007	-0.111	-0.05	0.004
	(0.208)	(0.209)	(0.227)	(0.167)	(0.169)	(0.183)
Size	0.32	0.313	0.285	0.121	0.115	0.097
	(0.232)	(0.231)	(0.232)	(0.187)	(0.186)	(0.187)
Lagged Value of Tariff	3.281***	3.146***	3.093***	2.996***	2.882***	2.847***
	(0.386)	(0.388)	(0.392)	(0.310)	(0.312)	(0.316)
Political Concentration			-0.646			-0.417
			(0.685)			(0.551)
Constant	0.039	0.034	0.039	0.011	0.007	0.01
	(0.027)	(0.027)	(0.028)	(0.022)	(0.022)	(0.022)
R-squared	0.25	0.261	0.263	0.301	0.312	0.313
Number of observations	356	356	356	356	356	356

* p<0.10, ** p<0.05, *** p<0.01; Standard errors in parentheses.

TABLE 3.4 Industrial Location and the Marginal Effect of Industry Comparative Disadvantage on Tariff Protection

	Dep. Variable = Tariff Protection at the four-digit SIC codes					
	Tariff on the Value of Total Imports			Tariff on the Value of Dutiable Imports		
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
Industry Comparative Disadvantage (ICD)	0.034***	0.037***	0.036***	0.031***	0.034***	0.032***
	(0.003)	(0.003)	(0.004)	(0.009)	(0.010)	(0.010)
Presidential Closeness of Industry	-0.005			-0.009		
	(0.009)			(0.020)		
Presidential Closeness of Industry × ICD	-0.119**			-0.088		
	(0.048)			(0.108)		
Closeness to 50-50 of Industry		0.003			-0.02	
		(0.010)			(0.021)	
Closeness to 50-50 of Industry × ICD		-0.135***			-0.112	
		(0.047)			(0.101)	
House Marginality			0.004			-0.013
			(0.006)			(0.010)
House Marginality × ICD			-0.082***			-0.037
			(0.031)			(0.057)
Geographical Concentration	0.021***	0.020***	0.018***	0.006	0.006	0.004
	(0.005)	(0.005)	(0.005)	(0.011)	(0.011)	(0.011)
Firm Concentration	-0.013**	-0.014**	-0.013**	-0.022	-0.022	-0.02
	(0.006)	(0.006)	(0.006)	(0.016)	(0.016)	(0.016)
Size	-0.012	-0.011	-0.011	-0.042	-0.043	-0.043
	(0.007)	(0.007)	(0.007)	(0.029)	(0.029)	(0.029)
Lagged Industry-Level Tariff	0.694***	0.694***	0.693***	0.012***	0.012***	0.012***
	(0.009)	(0.009)	(0.009)	(0.002)	(0.002)	(0.002)
Constant	0.008***	0.008***	0.008***	0.056***	0.056***	0.056***
	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.003)
R-squared	0.793	0.793	0.793	0.172	0.168	0.161
Number of Observations	3482	3482	3483	3379	3379	3379

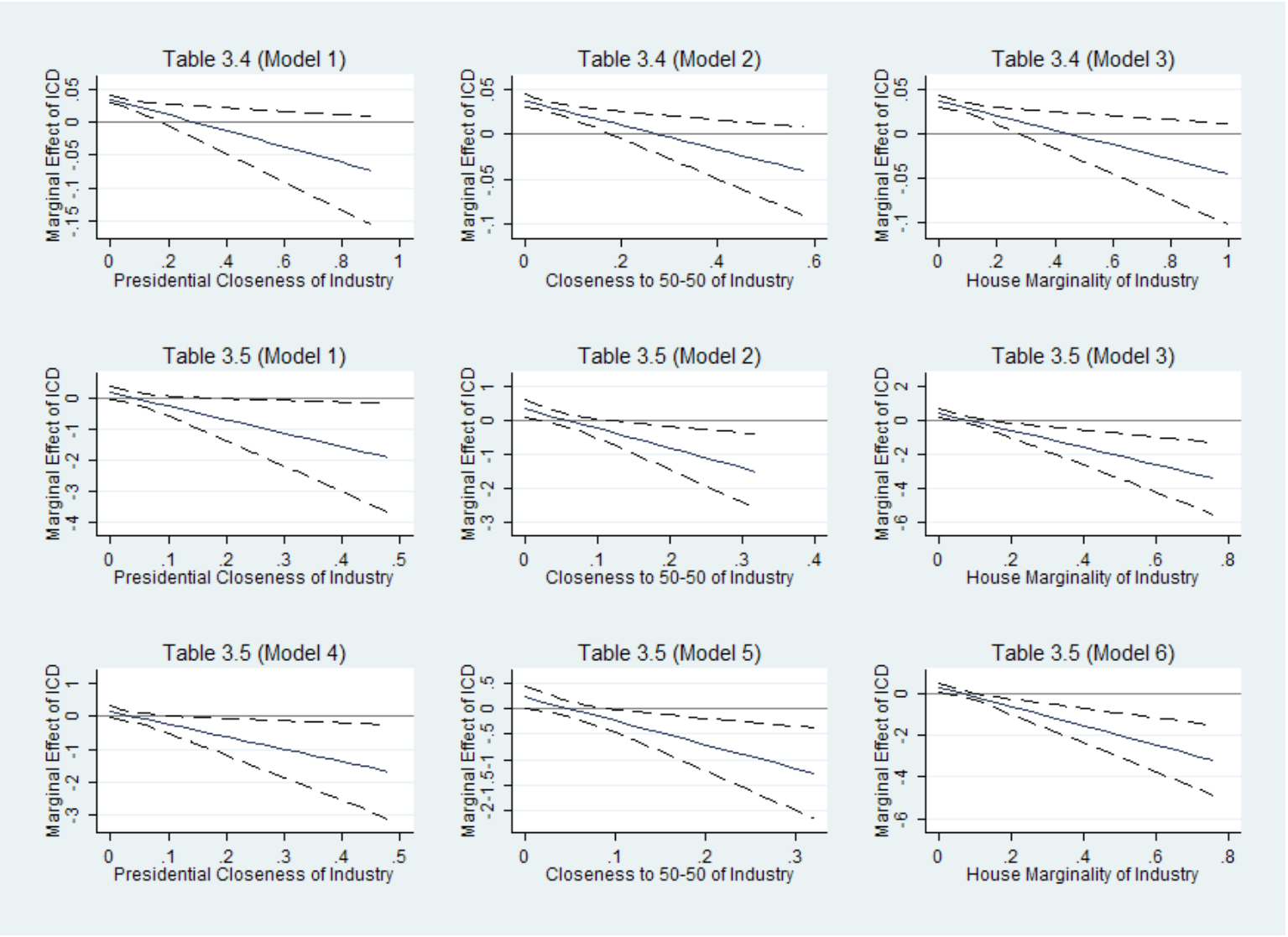
* p<0.10, ** p<0.05, *** p<0.01; Standard errors in parentheses.

TABLE 3.5 Industrial Location and the Marginal Effect of Industry Comparative Disadvantage on Nontariff Protection

	Dep. Variable = Nontariff Protection at the four-digit SIC codes					
	NTB Coverage Ratio			NTB Frequency Ratio		
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
Industry Comparative Disadvantage (ICD)	0.189*	0.318**	0.380***	0.121	0.219**	0.302***
	(0.114)	(0.135)	(0.138)	(0.092)	(0.109)	(0.110)
Presidential Closeness of Industry	0.379			0.295		
	(0.326)			(0.262)		
Presidential Closeness of Industry × ICD	-4.391**			-3.739**		
	(2.000)			(1.607)		
Closeness to 50-50 of Industry		0.317			0.071	
		(0.441)			(0.355)	
Closeness to 50-50 of Industry × ICD		-5.744***			-4.615***	
		(2.035)			(1.638)	
House Marginality of Industry			-0.128			-0.168
			(0.258)			(0.207)
House Marginality of Industry × ICD			-5.049***			-4.608***
			(1.549)			(1.241)
Firm Concentration	-0.081	-0.087	0.066	-0.063	-0.051	0.079
	(0.203)	(0.206)	(0.214)	(0.163)	(0.166)	(0.172)
Geographical Concentration	0.437**	0.465**	0.515***	0.543***	0.594***	0.623***
	(0.214)	(0.210)	(0.197)	(0.172)	(0.169)	(0.158)
Size	0.298	0.298	0.26	0.11	0.093	0.071
	(0.229)	(0.231)	(0.230)	(0.184)	(0.186)	(0.184)
Lagged Industry-Level Tariff	3.143***	3.129***	3.119***	2.874***	2.866***	2.846***
	(0.390)	(0.388)	(0.385)	(0.313)	(0.313)	(0.308)
Constant	0.039	0.036	0.038	0.009	0.01	0.01
	(0.027)	(0.028)	(0.027)	(0.022)	(0.022)	(0.022)
R-squared	0.26	0.263	0.269	0.313	0.313	0.326
Number of Observations	356	356	356	356	356	356

* p<0.10, ** p<0.05, *** p<0.01; Standard errors in parentheses.

FIGURE 3.1 THE Marginal Effects of Industry Comparative Disadvantage on Tariff and Nontariff Barriers



Chapter 4

Electoral Competition and the Allocation of Protectionist Rents: An Empirical Test of the Swing Voter Model

1. Introduction

How do elected representatives choose the recipients of trade protection among many domestic groups adversely affected by international competition? How do we explain the allocation of distributive rents generated from protectionist policies across the electorate?

The existing literature on international trade commonly argues that trade policy outcomes are significantly influenced by the institutional features of domestic political systems. These studies begin with the assumption that liberal trade policies yield benefits for broad, national constituencies, whereas protectionist policies concentrate particular benefits on a specific set of domestic constituencies. Thus, the extent to which representative policymakers offer trade liberalization as public goods for the welfare of society as a whole is greatly influenced by domestic political institutions, which determine types of constituencies that policymakers target to maximize their chance of winning power. In this vein, a vast literature has demonstrated both theoretically and empirically that the levels of trade protection are explained by various dimensions of domestic political systems, such as regime types (Mansfield, Milner, and Rosendorff 2002; McGillivray and Smith 2004; Milner and Kubota 2005), constitutional frameworks

(Lohmann and O'Halloran 1994; Nielson 2003), electoral institutions (Rogowski 1987; Mansfield and Bush 1995; Grossman and Helpman 2005; Goodhart 2008), party strength (Hankla 2006), and the number of institutional access points (Ehrlich 2007). With a few exceptions, however, institutional explanations of trade policy do not tell us much about the structure of trade protection, especially within-country variations in the amount of protectionist rents across the electorate. This is not only because existing studies restrict their attention to cross-national variations in the average level of protection (e.g. trade volumes, average tariff rates, import-duty coverage ratio, etc.), but also because they infer trade policy preferences of elected representatives from political institutions which are primarily defined at the national level. Some previous research systematically shows that the extent to which individual policymakers are protectionist is related to the size and policy preferences of their constituencies. Nevertheless, these studies focus their attention on congressional voting patterns on trade bills rather than trade policy outcomes (Bailey and Brady 1998; Hiscox 2002; Karol 2007; Ehrlich 2009).

To fill this gap, this chapter explores the determinants of the structure of U.S. trade protection from 1989 through 2004. Using sectoral data on tariffs and nontariff barriers (NTBs) and district-level election outcomes, I argue that the political characteristics of domestic constituencies explain not only the allocation of protectionist rents across constituencies but also government responsiveness to protectionist pressures from domestic groups. I first match industry-level data on trade volumes and protectionist measures with geographical data on the distribution of industrial employment on the electoral map. In doing so, I build a set of indicators of voter demands for trade protection and the amount of protectionist rents aggregated at the level of congressional

districts. Then I investigate the extent to which the political characteristics of electoral constituencies (i.e. marginality and the strength of voter partisanship) affect district-level concentration of trade protection as well as the marginal effect of protectionist demands on trade policy outcomes.

This chapter attempts to advance our understanding of the political economy of trade in three ways. First, it analyzes the effects of electoral competition on the structure of U.S. trade protection to clarify the causal mechanism by which representative policymakers choose particular constituencies to offer protectionist rents among different groups of voters. Previous research on endogenous protection commonly argues that within-country variation in the level of protection is mainly determined by interest group lobbying and campaign contributions. Although acknowledging the validity of their findings, this study pays attention to the fact that money does not fully explain the political incentives of elected officials in allocating distributive benefits across the electorate.

Second, this chapter develops empirical tests of extant models of distributive politics in a previously unexplored context – trade politics. While the existing literature universally assumes that tariffs, subsidies, and other protectionist measures are typical examples of "tactical redistribution" that concentrate benefits on particular groups of voters, only few studies address these issues systematically and empirically (McGillivray 1997, 2004).[18] The present study extends the literature by analyzing the patterns of electoral targeting in U.S. trade policy over the past fifteen years. Unlike previous research, this chapter relies on multiple data sources: sectoral data on tariffs from 1989

[18] Most empirical studies of distributive politics concentrate on analyzing the allocation of public expenditures and intergovernmental transfers. While McGillivray's work (1997, 2004) is one noteworthy exception, her empirical tests rely on cross-sectional observations in a single year.

through 2004 and NTBs from 1993, 1994, and 1996, and district-level outcomes for presidential, gubernatorial, and general elections from 1984 through 2002.

Third, this chapter addresses the ongoing debate about extant models distributive politics. As will be discussed in more detail below, the existing literature offers two competing predictions about the allocation of protectionist rents across the electorate: the swing voter model put forward by Dixit and Londregan (1995, 1996) and the core-voter model proposed by Cox and McCubbins (1986). A long line of research has also offered mixed findings whether parties target swing or core voters. This chapter seeks to narrow this gap in the literature, by focusing on examining the validity of the swing voter model in U.S. trade politics. Assessing the relative merits of the core-voter model should be treated as a separated project, because it requires us to consider more detailed data on the distribution of voter partisanship at constituency level or to specify the political characteristics of domestic groups outside the context of electoral districts.[19] Specifically, while the existing empirical research on distributive politics concentrates on clarifying the direct and independent effects of marginality and voter partisanship, I maintain that those political characteristics of voters also modify the relationship between constituent demands and policy outcomes. In doing so, I acknowledge the possibility that elected officials are more responsive to protectionist demands of constituencies which are more likely to increase their chances of winning office.

The results of my analysis reveal several interesting patterns. First, the estimates for my models demonstrate that district competitiveness increases the extent to which sectoral tariff protection is targeted toward industries in each district. My findings show

[19] For instance, Cox (2010) maintains that multi-districts models are not often suitable to assess the merits of the core-voter model because governing parties could target their core partisan supporters in marginal districts.

that all other things being equal, the district-level of tariff protection is greater in districts having two equally sized groups of partisans rather than in districts showing stable, strong support for either the Republican or the Democratic Party. Second, I find that the political characteristics of electoral constituencies affect the marginal effects of protectionist pressures on the allocation of protectionist rents across the electorate. My results indicate that the extent to which constituent demands for protection actually raise the amount of protectionist rents is much higher in electorally competitive constituencies rather than in safe constituencies. These findings imply that even when domestic political institutions promote trade liberalization at the national level, elected representatives still have strong incentives to target protectionist rents to particular constituencies to optimize their electoral prospects.

The remainder of this chapter is organized as follows. Section 2 develops theoretical statements about electoral targeting in trade policies. Relying on the literature on standard trade models and distributive politics, this section generates a set of testable hypotheses explaining within-country variation in the allocation of protectionist rents. Section 3 provides a description of the required data and empirical approach. The main empirical findings and robustness tests are presented in Section 4. Section 5 concludes with a discussion of my findings.

2. Theory

This section elaborates on the relationship between the political geography of industries and within-country variation in trade protection. I argue that the structure of trade protection is explained by two factors. First, the economic characteristics of electoral

constituencies explain their collective demands for trade protection, because trade liberalization has unequal distributive effects on domestic groups. Second, however, domestic protectionist pressures are not automatically translated into policy outcomes. Elected officials have strong incentives to target protectionist rents to specific constituencies that will enhance their chances for reelection. The political attributes of domestic constituencies presented in electoral competition, therefore, influence not only the allocation of protectionist rents across the electorate but also the effects of protectionist interests on trade policy outcomes.

2.1. Constituent Demands for Trade Protection

The literature on the political economy of trade proposes that domestic groups develop heterogeneous preferences over trade openness, according to their economic characteristics in the market (Alt and Gilligan 1994; Hiscox 2002). The expansion of international trade generates both winners and losers, because it affects the relative income of domestic groups within a country. Standard trade models suggest that two main variables determine trade policy preferences of domestic groups: factors of production (e.g. capital and labor) and the net trade positions of industries.

First, the Stolper-Samuelson theorem maintains that when factors of production are completely mobile across industrial sectors, international trade increases returns to owners of relatively abundant factors of production, but decreases returns to owners of relatively scarce factors within an economy. Their prediction is based on the Heckscher-Ohlin model which suggests that a country tends to export goods which intensively use its relatively abundant factors, and import goods which employ its relatively scarce

factors. As the expansion of international trade lowers the price of the imported goods but raises the price of exporting goods, owners of relatively scarce factors strongly support protectionist measures, whereas owners of relatively abundant factors prefer trade liberalization. Hence, the Stolper-Samuelson theorem implies that trade policy preferences of domestic interests are mainly shaped by types of factors of production that domestic groups own and a country's factor endowment relative to other countries. For instance, labor in capital abundant countries is likely to oppose lowering existing trade barriers, whereas labor in labor abundant countries is more likely to support freer trade to have better access to international markets. In a similar vein, capital owners in capital abundant countries is expected to pursue trade liberalization, but those in labor abundant countries tend to demand more protectionist measures.

In contrast, the Ricardo-Viner model starts with the assumption that at least one or more factors of production are not completely mobile across industrial sectors. When factors are specific to particular industries, they do not have good alternative uses in other types of production. Specifically, it is quite difficult to reallocate factors heavily used in import-competing sectors to export sectors because of declines in their asset values (Alt and Gilligan 1994). Based on a different assumption on the mobility of factors of production, the Ricardo-Viner model shows that trade policy preferences of domestic groups are explained by trade positions of industries rather than by factor types or relative factor endowments. Returns to specific factors depend on the economic prospects of industrial sectors in which they are employed. Thus, unlike the Stolper-Samuelson theorem, the Ricardo-Viner model predicts that capital and labor specific to import-competing industries both shape strong collective demands for protectionist measures,

whereas capital and labor in exporting sectors strongly prefer trade liberalization. In particular, factors intensively used in declining industries are more likely to be protectionist than other groups, as their productivity is likely to fall continuously over time (Alt, Frieden, Gilligan, Rodrik, and Rogowski 1996).

Theories of international trade offer demand-side explanations of within-country variation in the level of trade protection across domestic groups. The economic characteristics of domestic groups explain the ways in which protectionist interests exert political pressures on representative policymakers to secure more compensation through protectionist policies. Depending on the mobility of factors of production, the structure of domestic political cleavage on trade issues is formed along the line of broad, factor-based classes or around narrow particular interests of industrial sectors (Hiscox 2002). In the case of the United States, therefore, we can expect that collective demands for protection are politically organized by import-competing sectors rather than by export sectors, and by owners of relatively scarce factors (i.e. labor) rather than by owners of relatively abundant factors (i.e. capital), respectively, although their relative effects might vary over time.

2.2. Electoral Targeting in Trade Policy

The structure of domestic demands for protection, however, does not solely account for the allocation of protectionist rents across different groups of voters. Trade protection is a typical example of tactical redistribution by which politicians target distributive benefits to specific constituencies. Tariffs, subsidies, and other measures of protection for particular firms and industries are likely to concentrate distributive benefits on particular

sectors but spread out the costs of protection across the entire population.[20] Hence, protectionist demands of domestic groups are not automatically translated into actual policy outcomes because some electoral constituencies are more politically pivotal than others. When representative policymakers choose the recipients for protectionist measures, they have substantial incentives to consider the political attributes of domestic constituencies because the redistribution of wealth caused by trade policies exerts significant influence on their chance of winning office.

The literature on distributive politics and congressional representation allows us to understand the political process under which parties and legislators target distributive rents generated from protection to particular constituencies as an attempt to optimize their electoral prospects. Extant models of distributive politics mainly focus on the effects of the electoral incentives for political parties on the allocation of targetable benefits. These models commonly envision two parties which compete against each other in elections within a single district, promising transfers to different groups of voters. The allocation of benefits is contingent upon election outcomes because it is realized only when the relevant party wins the election. The swing voter model presented by Lindbeck and Weibull (1987) and Dixit and Londregan (1995) maintains that parties concentrate distributive benefits on marginal or swing voters since they are more willing to change their ideological preferences in response to the promise of distributive benefits. In a similar vein, Dixit and Londregan (1995) also argue that targetable resources tend to be directed to poor constituencies, which have higher marginal utility of economic benefits and thus more easily sell their votes to parties promising larger rewards.

[20] For more explanations of a typology of distributive politics, see Lowi (1979), Dixit and Londregan (1995), Cox (2010), and Stokes (2009).

In contrast, the core-voter model proposed by Cox and McCubbins (1986) emphasizes the advantage of core partisan constituencies in receiving distributive transfers. The core-voter model pays attention to the risk-averse nature of parties in allocating targetable resources. Parties are reluctant to concentrate distributive benefits on marginal or swing voters, since they are more likely to renege on their commitment to vote, once they receive the promised rewards from parties. Thus, it is more cost-efficient for parties to invest more in their loyal supporters rather than in marginal voters or opposition supporters, especially if one party is better than the other in delivering targetable resources to specific constituencies (Dixit and Londregan 1996) or if parties are more interested in mobilizing the political participation of their core partisan supporters rather than in changing political preferences of marginal voters (Cox 2010).

While similar to extant models of distributive politics, the literature on congressional representation pays more attention to the relative effects of political parties and individual legislators on electoral targeting in the context of multi-districts models. Partisan models suggest that congressional parties, as strategic units, target distributive benefits to politically pivotal regions in order to win a majority party's status in the legislature (Kiewiet and McCubbins 1991; Cox and McCubbins 1993) or reward core supporters in their partisan strongholds (Levitt and Snyder 1995; Chen 2012). In contrast, non-partisan models maintain that the allocation of targetable resources is better explained by the incentives of legislators to maximize their chances for reelection. Unlike parties, individual legislators tend to be more responsive to narrow, particular demands from their geographic constituencies than those from broad, partisan constituencies. When congressional parties are not strong enough to control these personal vote-seeking

activities, the allocation of distributive benefits is more influenced by individual characteristics of representatives, such as congressional committee memberships and seniority. In many cases, however, it is difficult to identify the independent effect of legislator characteristics because most of them are also endogenous to the characteristics of geographic constituencies (Levitt and Poterba 1999).

To integrate these different dimensions of distributive politics, Franzese and Nooruddin (2004) build the effective constituency model in which the representation of geographic and partisan constituencies is formulated as a continuum. The extent to which policymakers concentrate distributive benefits on partisan constituencies over geographic ones is determined by several dimensions of political institutions, such as party unity, ideological polarization, and electoral competitiveness.

In a similar vein, McGillivray (1997, 2004) analyzes the interactive effects of electoral formula and party strength on the structure of trade protection. She maintains that in strong majoritarian systems, like Canada, a single party government protects industries in marginal districts to increase the chance of obtaining a legislative majority. In weak majoritarian systems, like the U.S., marginal districts are least likely to receive protectionist rents because senior, powerful legislators representing safe constituencies tend to form policy coalitions to protect industries in their own constituencies. McGillivray's work, however, still raises the issue of generalizability. She does not directly clarify the effects of party strength, although emphasizing its modifying effects on the structure of trade protection. Rather her analysis focuses more on comparing the relationship between district marginality and the district-level concentration of protection

for a particular year in two countries, which she assumes are contrasting in terms of party strength.

2.3. Testable Hypotheses

The existing literature allows us to clarify demand-side and supply-side factors explaining the allocation of protectionist rents across different groups of voters. The economic attributes of domestic interests shape sectoral demands for protectionist measures. However, the structure of protectionist interests only partially explains redistribution achieved through trade policies. Representative policymakers have strong incentives to concentrate protectionist rents on particular constituencies that are critical to their electoral prospects. The geographical distribution of industrial employment across congressional districts informs politicians of the political characteristics of domestic constituencies on which they intend to concentrate protectionist rents. Based on our discussion so far, I formulate a set of testable hypotheses concerning the possible determinants of the structure of trade protection. As shown below, these hypotheses explain within-country variation in the amount of protectionist rents across congressional districts.

H_1: Protectionist rents are more likely to be targeted to districts in which the ratio of import-competing sectors over exporting sectors is relatively higher than others.

H_2: Protectionist rents are more likely to be concentrated on districts which have a relatively higher proportion of labor than others.

H_3: The amount of protectionist rents is likely to be higher in competitive, marginal districts rather than in safe districts.

H_4: District competitiveness increases the marginal effect of protectionist demands on the amount of protectionist rents aggregated at the level of congressional districts.

These hypotheses focus on evaluating the extent to which the economic and political characteristics of domestic constituencies independently and interactively influence the structure of protection within a country. Hypotheses 1 and 2 only consider the effect of protectionist demands from domestic constituencies on the allocation of protectionist rents across the electorate. As reviewed earlier, I assume that domestic protectionist pressures in the U.S. mainly come from import-competing sectors and owners of relatively scarce factors (i.e. labor). Hypotheses 3 and 4 are concerned with the effects of the political characteristics of domestic constituencies. I use the swing voter model as a baseline model in order to specify the political mechanism under which governing parties target compensation from protectionist measures to particular groups of voters. Hypothesis 3 maintains that constituency marginality exerts an independent influence on within-country variation in protection across electoral constituencies. Specifically, hypothesis 4 suggests that district competitiveness increases the extent to which domestic protectionist pressures actually raise the amount of protectionist rents. In doing so, I maintain that the electoral characteristics of domestic constituencies exert significant influence on the responsiveness of representative policymakers to protectionist interests.

3. Data and Variables

This section describes the required data and models that explain the distribution of protectionist rents across the electorate. My empirical analysis relies on three data sources. The first is sectoral data on U.S. trade protection, including tariff rates for 407 U.S. manufacturing industries at the four-digit Standard Industrial Classification (SIC) codes from 1989 to1997 and 385 industries at the six-digit North American Industry Classification System (NAICS) codes from 1998 to 2004. I also consider NTBs for 356 industries at the four-digit SIC codes for 1993, 1994, and 1996, because sectoral data on NTBs are only available for these years. The second set of data consists of district-level results for presidential, gubernatorial, and general elections held from 1984 to 2002. As explained in greater detail below, I generate various indicators of electoral competition to capture changes in the political characteristics of electoral constituencies.

Third, to integrate industry-level data with district-level election results, I use the U.S. Census Bureau's County Business Patterns (CBP) which provides information about industrial employment and establishment size at various levels of geographic units (e.g. country, state, nation, etc.). The CBP data allows us to convert industry-level data on trade volumes and protectionist measures into district-level indicators, since it reveals the relative share of industrial employment in sub-national economies. As the geographic unit of analysis in my models is a congressional district, I transform the CBP's county-level data on the composition of industrial employment to district-level outcomes, using the Missouri Census Data Center's MABLE/Geocorr 2k geographic correspondence

engine, the U.S. Census Bureau's Congressional District Geographic Relationship Tables, and Congressional District Atlas.

3.1. Dependent Variable

The dependent variable in my model is the average level of trade protection in a given congressional district *i* in year *t*. As the present study aims to examine whether the incumbent government targets distributive rents generated from trade protection to electorally safe or marginal constituencies, we need to construct a comparable measure of trade protection across congressional districts. As in Conybeare (1984) and McGillivray (1997, 2004), I define the district-level of protection as the degree to which industries in district *i* are protected through tariff or nontariff measures, respectively, or more generally, the extent to which protectionist rents are concentrated at the level of congressional districts. As presented in equation (1) below, I generate the district-level of protection, considering sectoral data on trade barriers, and the composition of industrial employment in each congressional district.

$$\textit{District-level Protection}_{it} = \sum_{k=1}^{n} t_k \times (E_{k,i}/E_i) \tag{1}$$

Here, t_k denotes tariff or nontariff protection for industry *k* located in district *i*. Under the assumption that there are *n* industries in district *i*, $E_{k,i}$ and E_i each represents the number of employees for industry *k* in district *i* and the total number of employees in district *i*, respectively. Hence equation (1) calculates the district-level of protection as the

weighted sum of protection for *n* industries located in district *i*, with the weight given by the relative importance of industry *k* to district *i*'s employment.

For t_k, I consider an ad valorem tariff rate and an NTB coverage ratio for industry *k*, respectively. First, I calculate the ad valorem tariff t_k by dividing the value of collected duties by the custom value of total imports for industry *k*. Existing studies measure ad valorem tariffs as collected duties either as a percentage of the value of total imports or as a percentage of the value of dutiable imports, respectively (Irwin 1994; O'Halloran 1994; Hiscox 1999). The value of the former is always smaller than the latter's value, since total imports are always larger than dutiable imports. While the gap between these two measures is not constant over time, I mainly focus on ad valorem tariffs on total imports. Tariffs based on the value of dutiable imports tend to overestimate the level of protection, especially when there are more commodities receiving duty-free treatment.

Sectoral tariff rates are generated from the SIC87- and NAICS-level U.S. import and export data by Peter K. Schott (2008). Based on the Foreign Trade data by the U.S. Census Bureau, Schott offers collected duties and the total amount of imports of all manufacturing industries both at the four-digit SIC and at the six-digit NAICS codes for the entire period of investigation.[21] To generate the district-level tariff protection, I calculate ad valorem tariffs ($=t_k$) for 407 industries at the four-digit SIC codes from 1989 to1997, and for 385 industries at the six-digit NAICS codes from 1998 to 2004, following coding schemes in the CBP data on the geographical distribution of industrial employment. [22]

[21] The data are downloadable from Schott's International Economics Resource Page: Trade Data and Concordances at http://faculty.som.yale.edu/peterschott/sub_international.htm

[22] In 1997, U.S. Federal Statistical Agencies replaced the SIC codes with the NAICS in most industry-level data, as the North American Free Trade Agreement (NAFTA) went into effect. Converting the CBP data on

I also separately consider industry *k*'s NTB coverage ratio, as the literature suggests that legislators exercise more discretion over the creation of nontariff protection (Gawande and Bandyopadhyay 2000; Hauk 2011). Due to data limitation, I measure NTB coverage ratios in 1993, 1994, and 1996 at the level of four-digit SIC codes. Sectoral data on NTBs are obtained from Kono (2006), which are originally collected from the Trade Analysis and Information System (TRAINS) by the United Nations Commission on Trade and Development (UNCTAD).[23] Kono's data present the existence of NTBs (i.e. price, quantity, quality, threat, and advance payment) as a dummy variable for industries at the six-digit Harmonized Systems (HS). Using Pierce and Schott's (2009) concordance between HS and SIC codes, I measure the extent to which the amount of imports of four-digit SIC industries are subjected to nontariff measures mentioned above. As suggested in Trefler (1993), equation (2) below shows that industry *k*'s NTB coverage ratio is equivalent to the weighted sum of a binary indicator of NTB protection for a six-digit HS sector *h* (= m_h) within a four-digit SIC industry *k*, with a weight given by sector *h*'s relative share of imports within industry *k*.

$$NTB\ coverage\ ratios\ t_k = \sum_{h=1}^{n} m_h \times w_h \qquad (2)$$

To measure the extent to which sectoral tariff and nontariff protection are directed toward industries in a given district, we need to consider the relative importance of

industrial employment from SIC to NAICS codes will generate a significant bias in the estimates of the district-level of protection since the relationship between SIC and NAICS industries are not one-to-one for all manufacturing industries.

[23] Kono uses Jon Haveman's extracts from TRAINS versions 2-8.

industry k ($=E_{k,i}/E_i$) in each district's economy. Geographical information about the distribution of industrial employment is collected from the CBP which provides sub-national data on employment and payrolls by SIC industries from 1989 to1997 and by NAICs industries from 1998 to 2004.[24] It should be noted that there are some issues in the use of the CBP data. For some industries, the CBP's county-level data do not offer the exact number of employees but abbreviations representing the intervals of employment size, due to the confidentiality rights of employees. In these cases, I continually narrow down the size of employment intervals as much as possible, using establishment group categories and the hierarchical structure of geographic units and industrial classification codes in the CBP data.[25] Then, as in McGillivray (1997, 2004), I replaced the missing values in employment with the mid-points of intervals that I refined.

Another issue arises from the fact that the basic geographical unit in the CBP is a county, not a congressional district. To convert the CBP data on industrial employment from county-level to district-level outcomes, I employ the Missouri Census Data Center's Mable/Geocorr2k geographic correspondence engine which offers historical information about the geographical relationship between county and congressional districts from the 101st to the 108th Congresses.[26] As supplementary sources, I also use the U.S. Census Bureau's Congressional District Geographic Relationship Tables and Congressional District Atlas to reflect redistricting and corresponding changes in the subdivision of congressional districts. Since each congressional district usually consists of multiple counties in most cases, we can easily generate the industrial composition of employment

[24] Minor differences in the SIC codes between the CBP data and Schott's trade data were adjusted.
[25] See Isserman and Westervelt (2006) for geographical-level hierarchies and industry-level hierarchies in the County Business Patterns.
[26] Mable/Geocorr2k geographic correspondence can be found at: http://mcdc.missouri.edu/websas/geocorr90.shtml

at the district level by adding the size of employment for each industry across counties but within a corresponding district. If a county is divided into more than two congressional districts, however, I disaggregate county-level data on industrial employment into district-level outcomes, based on the relative share of county's population in each congressional district available in Mable/Geocorr2k files.

3.2. Independent Variables

To test the aforementioned hypotheses, I generate a set of independent variables that would explain within-country variation in the amount of protection across electoral districts. My independent variables include constituent demands for protection, the political characteristics of constituencies, and interactive terms between them.

First, my model includes a series of economic variables that explain collective demands for compensation through protectionist policies at the district level. These variables indicate the strength of protectionist pressures from various sources. First, I generate a variable *District Comparative Disadvantage* to consider constituent demands for protection generated by industrial sectors. *District Comparative Disadvantage* represents the extent to which voters in district *i* rely on import-competing industries rather than on exporting industries. More specifically, it denotes the difference between import-penetration and export dependence at the level of congressional districts. Following Busch and Reinhardt (2000), I first measure industry-level comparative disadvantage by subtracting import penetration from export dependence for each industry. Import penetration, as the ratio of imports to the sum of imports and domestic shipments, indicates the extent to which industries are threatened by the flow of imports. Similarly,

export dependence is measured as the ratio of exports over the sum of exports and domestic shipments, presenting industry's policy demands for access to international markets. *District Comparative Disadvantage* is then measured as the total sum of industry-level comparative disadvantage for *n* industries located in district *i*, with each of them weighted by its share of employment within district, as equation (3) shows below.

District Comparative Disadvantage

$$= \sum_{k=1}^{n} (\text{import penetration} - \text{export dependence})_k \times (E_{k,i}/E_i) \quad (3)$$

Trade liberalization significantly reduces relative returns to employees in import-competing sectors, by lowering the price of import-competing goods but raising the price of exported goods in the domestic market. Thus we can expect that *District Comparative Disadvantage* would have a positive and significant association with the amount of protectionist rents aggregated at the district-level. The greater the relative number of workers employed in import-competing sectors, the stronger the constituent demands for protectionist measures and regulations, and the higher the district-level of protectionist rents yielded from tariffs and NTBs.

As discussed earlier, constituent demands for trade protection could be generated not only from import-competing industries but also from owners of relatively scarce factors of production (Mayer 1984; Alt and Gilligan 1994; Hiscox 2002). In the case of the U.S., this means that low-skilled labor strongly prefers higher levels of protection, whereas capital owners are more supportive of freer trade. To control for the effect of

factors of production, I include *Labor* and *No High School Degree* to my model. As in Hiscox (2002), *Labor* indicates the relative proportion of manufacturing workers over total employees in district *i*. Similarly, *No High School Degree* represents the relative share of population over 25 years old without a high school degree over district *i*'s total employment. If low-skilled workers have more protectionist demands than other domestic interests, and if elected representatives are more responsive to protectionist pressures from these groups, both *Labor* and *No High School Degree* should also be positively associated with district-level trade protection.

I also consider *District-Level Unemployment* to control for protectionist pressures yielded by macroeconomic fluctuations. It is frequently argued that unemployment is one of the most important sources of domestic demands for trade protection. High levels of unemployment increase protectionist pressures from domestic constituencies because increasing import flows make it difficult for dislocated workers to find alternative jobs and reduce their relative wages (Mansfield and Busch 1995). Moreover, elected representatives could be more responsive to protectionist demands during economic downturns, during which the tendency of voters to cast their votes on the basis of personal economic circumstances is more prevalent than ever (Abramowitz, Lanoue and Ramesh 1988). All these economic variables reveal the strength of protectionist demands at the district level. If elected representatives are responsive to constituent demands for protection, therefore, their coefficients should be all positively signed and significant.[27]

Second and more importantly, I consider the political characteristics of electoral constituencies that would affect the electoral incentives of representative policymakers in

[27]District-level data on unemployment rates and education are constructed from county-level data from the Bureau of Labor Statistics (http://www.bls.gov/lau/) and the Annual Educational Attainment Estimates for U.S. Counties 1990-2005 from Bode (2010), respectively.

allocating targetable resources. As an indicator of constituency marginality or district competitiveness, I create a variable *Partisan Dominance* representing the strength of voter's ideological commitment to either the Republican or the Democratic Party at the district level. Relying on the literature on congressional representation, I generate *Partisan Dominance* by measuring the deviation of the proportion of the two-party vote in the district from the average share of the two-party vote in the entire nation in the most recent presidential election. The greater the difference in the presidential vote shares between the district-level and the national-level, the stronger the partisan bias of districts, and the lower the degree of political competition. Previous research commonly argues that presidential electoral returns are one of the most reliable and valid proxies for voters' partisan preferences (Ansolabehere, Snyder, and Stewart 2001; Canes-Wrone, Brady and Cogan 2002; Abramowitz et al. 2006; Griffin 2006). District-level presidential vote shares not only reflect constituent behavior in electoral competition, but also are highly correlated with congressional election outcomes over time (Levendusky, Pope, and Jackman 2008). Elected officials also pay significant attention to voting patterns in presidential elections, in order to gauge the ideological disposition of voters and the degree of electoral competitiveness in their geographic constituencies (Griffin 2006).

Following previous studies, I calculate *Partisan Dominance* as the absolute value of a district's proportion of the two-party vote normalized around its national mean.[28] For instance, think about districts A, B, and C in which the share of two-party vote for Bill Clinton were 0.53, 0.73, and 0.33 in the 1992 presidential election, respectively. Since the national mean of the two-party vote share for Bill Clinton and George W. Bush were 0.53

[28] Data on presidential electoral returns are collected from the Almanac of American Politics from 1984 through 2002 which offers district-level presidential vote shares adjusted to congressional redistricting cycles.

and 0.47, respectively, district liberalism (conservatism) for A, B, and C would be 0, +0.2(-0.2), and -0.2(+0.2) in my coding scheme. This implies that district B is more Democratic or liberal than the national average by 20 percentage points, and similarly, district C is also more Republican or conservative than the entire nation by 20 percentage points. The value of *Partisan Dominance* is therefore coded as 0 for A and +0.2 for both B and C, such that the degree of voter partisanship for the latter is equally higher than the former.

Additionally, my model includes a set of political variables that might influence the political representation of protectionist demands in setting trade policies. As mentioned above, non-partisan models of distributive politics suggest that individual legislators have electoral incentives to accrue more targetable resources to their own geographical constituencies to increase their chances of reelection. If party leaders do not control those incentives, legislator characteristics would exert significant influence on the amount of rents that districts receive from protectionist measures, especially NTBs. I consider two factors which might be associated with the allocation of protectionist rents across electoral constituencies: seniority rank and congressional committee memberships.

Senior representatives might be able to concentrate more protectionist rents on industries in their own geographical constituencies, because they are in a better position to form a majority coalition for protectionist bills than junior representatives (McGillivray 1997). Similarly, members of congressional committees that exercise more discretion over trade issues might be more likely to target protection to their geographical constituencies than other representatives (Levitt and Poterba 1999). Following previous studies, I define *Seniority* as the natural log of the number of years served since the

legislator was first elected. *Ways and Means Committee* and *Committee on Foreign Affairs* are dummy variables which take a value of 1, if a legislator in district *i* is appointed to these committees. Data on seniority and congressional committee assignments were collected from Stewart and Woon (2005).[29] The *Number of Districts per State* variable is also included to control for the effect of legislative malapportionment in the U.S. Senate on trade policies. Every state has two senators regardless of its population size. Thus import-competing industries located in less populated states could have a better chance of receiving protection, because their demands for protectionist measures are more likely to be over-represented in the legislature than those located in populated states (Baldwin 1985; McGillivray 1997; Hauk 2011).

Last, I also include the dependent variables lagged five years and dummy variables for presidential and general elections in some specifications of the model explaining the district-level of tariff protection. While using shorter lags does not significantly affect my findings, it overwhelms the effects of the main independent variables without having a true causal effect (Achen 2001). For the district-level of nontariff protection, however, I include the one year-lagged value of tariff protection. Tariffs might increase or lower the level of NTBs because their relationship could be either substitute or complementary (Kono 2006).

The district-level model in equation (4) below presents the political and economic determinants of the allocation of protectionist rents across electoral constituencies. Here the amount of trade protection targeted to industries in district *i* is presented as a function

[29] For more details, see Charles Stewart's Congressional Data page at: http://web.mit.edu/17.251/www/data_page.html

of constituent demands for protectionist measures and their political characteristics revealed in electoral competition.

$$\begin{aligned} &\textit{District-Level Protection}_{it} \\ &= \beta_0 + \beta_1 \textit{ District Comparative Disadvantage}_{it-1} + \beta_2 \textit{ Partisan Dominance}_{it-1} \\ &+ \beta_3 \textit{ District Comparative Disadvantage}_{it-1} \times \textit{ Partisan Dominance}_{it-1} \\ &+ \beta_4 \textit{ Seniority}_{it-1} + \beta_5 \textit{ Ways and Means Committee}_{it-1} \\ &+ \beta_6 \textit{ Committee on Foreign Affairs}_{it-1} + \beta_7 \textit{ Labor }_{it-1} \\ &+ \beta_8 \textit{ No High School Degree }_{it-1} + \beta_9 \textit{ District Unemployment}_{it-1} \\ &+ \beta_{10} \textit{ Number of Districts per State}_{it-1} + \varepsilon_i \end{aligned} \tag{4}$$

$$\begin{aligned} &\partial\textit{District-Level Protection } / \partial\textit{District Comparative Disadvantage} \\ &= \beta_1 + \beta_3 \textit{ Partisan Dominance} \end{aligned} \tag{5}$$

Like McGillivray's work (1997, 2004), my model attempts to clarify the political determinants of the allocation of protectionist rents across 435 congressional districts. Unlike McGillivray, however, my model focuses more on examining the extent to which protectionist demands and the marginality of electoral constituencies independently and interactively influence the district-level of tariff or nontariff protection. Specifically, a multiplicative interaction term in equation (4) allows us to estimate the extent to which the political attributes of districts modify the relationship between constituent demands

for protection and the amount of protectionist rents aggregated at the district level. By taking the derivative of equation (4) with respect to *District Comparative Disadvantage*, we obtain equation (5) in which the marginal effect of *District Comparative Disadvantage* depends on the degree of *Partisan Dominance* in district *i*. If district competitiveness amplifies the effects of *District Comparative Disadvantage* on the dependent variable, the coefficient on Partisan Dominance (= β_3) should be negatively signed and significant.

4. Empirical Results

Tables 4.1-4.3 report the results of equation (4) which predicts the district-level protection from a set of lagged political and economic characteristics of congressional districts. The regression results in Table 4.1 display the extent to which district marginality and protectionist demands exert independent influences on the district-level tariff protection from 1989 to 2004. Using the same dataset, Table 4.2 examines the degree to which electoral competitiveness affects the relationship between protectionist demands and the district level of tariff protection. Similarly, Table 4.3 presents the interactive effects of constituent demands for protection and district marginality on the district-level protection generated from NTBs in the 1990s.

Before discussing the effects of marginality on the allocation of protectionist rents across the electorate, let us first consider the relationship between trade policy preferences of voters and the district-level of tariff protection. The results presented in Tables 1-3 commonly demonstrate that constituent demands for trade protection are important factors explaining within-country variation in the level of protection across

electoral constituencies. Most economic variables capturing the strength of protectionist pressures from various sources have positive and statistically significant relationships with the district-level of trade protection.

In Tables 4.1-4.3, the estimated coefficients for *District Comparative Disadvantage* are consistently positive and significant across different specifications of the model. Since it is measured as the weighted sum of the difference between import penetration and export dependence of industries located in a given district, high positive values of *District Comparative Disadvantage* indicate that district economy relies more on import-competing sectors rather than exporting industries. The positive significant coefficients for *District Comparative Disadvantage*, therefore, demonstrate the higher the relative importance of import-competing sectors over exporting sectors in district economy, the stronger voters' demands for protectionist measures and the greater the district-level of tariff and NTB protection. This finding supports the implication of the Ricardo-Viner model that domestic groups form different preferences over trade openness along the line of industrial sectors, especially when their income is closely tied to the fortunes of industries in which they are employed (Hiscox 2002).

My findings also demonstrate that types of factors of production explain the strength of constituent demands for protection as well as their influence on policy outcomes. Since the U.S. is relatively poorly endowed with labor compared to its trading partners, we can expect that both manufacturing workers and low-skilled labor generate collective demands for protectionist measures. The results in Tables 4.1-4.3 offer strong evidence that owners of relatively scarce factors in the U.S. tend to support protection, whereas owners of relatively abundant factors more favor free trade (Rogowski 1989;

Hiscox 2002). The *Labor* variable has a positive and significant association with the district level of tariff and nontariff protection, and its effects remain robust across different specifications. This finding implies that all other things being equal, the higher the relative proportion of manufacturing employment in districts, the greater the amount of protectionist rents that districts receive from tariffs and NTBs, respectively.

In a related vein, Tables 4.1-4.2 show that levels of education exert significant influence on the allocation of protectionist rents across districts. The positive and significant coefficients for *No High School Degree* indicate that an increase in the ratio of low-skilled labor is likely to raise the district-level of tariff protection. The impact of educational attainment is not, however, as consistent as the effects of protectionist demands from import-competing sectors or labor. The positive coefficient for *No High School Degree* loses its statistical significance, if we include the lagged district-level of tariff protection. Additionally, Tables 4.1 and 4.2 present the effects of the unemployment rate as another source of protectionist demands. The positive and significant coefficients for *District-Unemployment* support the earlier literature arguing that widespread unemployment tends to increase domestic pressures for protectionist policies (Bergsten and Cline 1983; Mansfield and Busch 1995).

Let us now examine the relationship between the political characteristics of districts and the allocation of protectionist rents across districts presented in each table. Here we focus on the extent to which electoral competitiveness influences the allocation of protectionist rents across districts and the degree to which competitiveness modifies the relationship between constituent demands for protection and the district-level of protection, respectively.

First and foremost, the results in Table 4.1 provide convincing evidence that tariff protection is more likely to be directed toward politically competitive districts containing more political moderates and independents rather than safe districts. Columns 1-3 demonstrate that *Partisan Dominance* consistently has a significant negative association with the district-level of tariff protection. As explained earlier, large positive values of *Partisan Dominance* represent strong partisan support for either the Republican or the Democratic Party at the district-level. If the value of *Partisan Dominance* becomes zero, it indicates the highest level of electoral competitiveness because the district has two equally sized groups of partisans. The negative and significant coefficient for *Partisan Dominance*, therefore, suggests that all other things being equal, protectionist rents generated from tariff barriers are more likely to be concentrated on electorally competitive districts rather than on safe ones. In column 3, for instance, the coefficient estimate for *Partisan Dominance* (= -0.318) shows that a one standard deviation increase in *Partisan Dominance* reduces the district-level of tariff protection by about 0.026 percentage points. It also implies that if the value of *Partisan Dominance* changes from zero to 0.492, that is, if we move from the most competitive district to the district showing the strongest partisan support for either of two parties in my dataset, the district-level tariff protection declines by 0.156 percentage points.[30]

[Insert Table 4.1 here]

[30] These districts voted about 0.492 percentage points more Republican or more Democratic than the national average in the most recent presidential election for the period of investigation.

Table 4.1 also considers a set of variables that might affect the political representation of constituent demands for trade protection. In columns 2 and 3, I examine the effect of seniority rank and congressional committee membership, respectively, assuming that each variable might exert an independent influence on the district-level of protection. Senior members might be able to accrue more rents to their constituencies without being appointed to influential committees. Similarly, junior members serving as committee members might concentrate more distributive benefits on their own constituencies (Levitt and Poterba 1999). Columns 2 and 3 each show that the coefficients for *Seniority* and *Ways and Means Committee* are positive and statistically significant. These finding suggest that trade protection tends to be directed toward districts represented by senior legislators or by members of the Ways and Means Committee. If we include the lagged dependent variable into our model, however, the effects of seniority and committee membership do not remain robust. In columns 4 and 5, the relationship between *Seniority* and the district-level of tariff protection turns negative and statistically significant, whereas the positive coefficient for *Ways and Means Committee* does not retain its statistical significance.

On the other hand, Table 4.1 demonstrates that the estimated coefficients for *Number of Districts in State* remain consistently negative and significant. The negative relationship between the number of congressional districts in state and the district-level of protection supports the argument that legislative malapportionment in the U.S. Senate tends to favor industries located in smaller constituencies. Constituent demands for protection are more likely to be politically represented when they come from less-populated states than populated ones (Baldwin 1985; Hauk 2011).

The results of district-level analysis have so far shown that the political and economic attributes of electoral constituencies both exert a significant and independent influence on the distribution of tariff protection across congressional districts. In Table 4.2, I include a multiplicative interaction term between *Partisan Dominance* and *District Comparative Disadvantage* to examine government responsiveness to domestic protectionist interests. In doing so, I assume that the extent to which constituent demands for protection actually increase the district-level of tariff protection is conditioned by the degree of *Partisan Dominance* in each district.

[Insert Table 4.2 here]

Unlike Table 4.1, Table 4.2 shows that *Partisan Dominance* does not maintain a negative, significant relationship with the district-level of tariff protection, as we include an interaction term *Partisan Dominance* × *District Comparative Disadvantage* as a regressor. The first two columns indicate that the *Partisan Dominance* variable does not exert significant influence on the district-level of tariff protection, whereas columns 3-5 rather suggest that there exists a positive and significant relationship between them.

More importantly, however, the results in Table 4.2 clearly demonstrate that *Partisan Dominance* weakens the relationship between protectionist demands and the district level of tariff protection. In all columns of Table 4.2, the effect of *District Comparative Disadvantage* is consistently positive and significant, and the coefficients for the interaction term *Partisan Dominance* × *District Comparative Disadvantage* remain consistently negative and significant across different specifications. In my dataset,

Partisan Dominance takes large positive values, as the level of district competitiveness decreases and as district partisanship for one party over the other increases. Thus these findings strongly suggest that the extent to which *District Comparative Disadvantage* increases the district level of tariff protection is maximized when *Partisan Dominance* takes a zero value, that is, when the district shows the highest level of electoral competitiveness. In column 1, for instance, the coefficients on *District Comparative Disadvantage* and its interaction term with *Partisan Dominance are* 0.185 and -0.668, respectively. These results indicate that if the value of *Partisan Dominance* in a given district increases from zero to its maximum (= 0.492), the marginal effect of *District Comparative Disadvantage* on the dependent variable declines from 0.185 to -0.09. The remaining columns of Table 4.2 similarly provide clear and consistent evidence that *Partisan Dominance* decreases the marginal effect of protectionist demands from import competing sectors on the district-level of tariff protection. The negative coefficients for the interaction term *Partisan Dominance* × *District Comparative Disadvantage* remain constantly significant, regardless of the ways in which I control for the effects of other political variables and the lagged dependent variables.

Table 4.2 also provides some evidence that *Partisan Dominance* constrains the effects of protectionist demands from manufacturing workers. As discussed above, my findings show that constituent demands for protection are generated not only from import-competing sectors but also from owners of relatively scarce factors (i.e. labor). In this vein, I also estimate the extent to which *Partisan Dominance* modifies the relationship between *Labor* and the district level of tariff protection. Column 3 of Table 4.2 shows that the coefficient for a multiplicative interaction term *Partisan Dominance* ×

Labor is -0.034 and statistically significant. This result suggests that the marginal effect of *Labor* on the district level of tariff protection declines from 0.036 to 0.019, as the value of *Partisan Dominance* changes from 0 to 0.492.

Table 4.3 reports estimation results for the district-level of nontariff protection. Here, the dependent variable is the extent to which sectoral NTBs are directed toward the 4-digit SIC industries located at the level of congressional districts in the 1990s. While data on NTBs are only available for 1993, 1994, and 1996, the value of *Partisan Dominance* does not vary significantly, because it is generated from the two-party vote share in the 1992 presidential election.[31] To estimate the effects of district competitiveness and protectionist demands on the distribution of nontariff protection across the electorate, I generate purely cross-sectional data by taking the average of each variable presented in equation (4) for corresponding years. However, my analysis in Table 4.3 does not include congressional committee memberships and election years, as they are previously defined as dummy variables.

[Insert Table 4.3 here]

The results in Table 4.3 indicate that the coefficients for *District Comparative Disadvantage* and *Labor* are all positive and significant. This finding implies that protectionist demands from import-competing sectors and low-skilled workers are important factors explaining the allocation of nontariff protection across electoral

[31] District vote shares for the 1992 presidential election are not completely identical across all three years. Although the reapportionment and delineation of congressional districts for the 103rd Congress (1993-1994) were supposed to remain in effect until the 108th Congress, there were several cases of state-initiative and court-ordered redistricting for the 104th, 105th, and 106th Congresses, respectively. For the 104th Congress (1995-1996), redistricting occurred in Georgia, Louisiana, Maine, Minnesota, South Carolina, and Virginia.

constituencies. Nevertheless, contrary to my expectations, the relationship between unemployment rate and the district level of tariff protection again turns negative and significant.

Although not as consistent as the main findings in previous tables, Table 4.3 offers some evidence that marginality voter status exerts significant influence on the relationship between constituent demands for protection and the district-level of nontariff protection. In columns 3 and 4, the coefficients for the interaction term between *Partisan Dominance* and *District Comparative Disadvantage* are negatively signed but insignificant. The findings in columns 5 and 6, however, show that the multiplicative interaction term *Partisan Dominance* × *District Comparative Disadvantage* has a significant negative coefficient, if the interaction term between *Partisan Dominance* and *Labor* is included in my model. These results demonstrate that the marginal effect of protectionist demands from import-competing sectors on the district-level NTB protection is greater for electorally marginal constituencies rather than for safe constituencies.

In column 5, for instance, the coefficient on the interaction term *Partisan Dominance* × *District Comparative Disadvantage* (= -2.018) indicates that the marginal effect of *District Comparative Disadvantage* on the district-level nontariff protection drops from 0.677 to -0.054 points, as the value of *Partisan Dominance* moves from its minimum (= 0.0002) to maximum (= 0.362) for the period of investigation. Similarly, column 6 shows that the same change in *Partisan Dominance* reduces the marginal effect of *District Comparative Disadvantage* from 0.677 to -0.053 points. These findings strongly suggest that protectionist pressures from domestic constituencies do not generate

an increase in NTB protection, if their electoral safeness exceeds a certain threshold. In columns 5 and 6, the sign of the marginal effect of *District Comparative Disadvantage* turns negative, once the value of *Partisan Dominance* hits 0.335 and 0.336, respectively.

Robustness Tests

To further test the robustness of my findings, I re-estimate equation (4), using different measures of political competitiveness. Although reflecting the effects of complete or partial redistricting that occurred for the period of investigation, the *Partisan Dominance* variable is based on district-level presidential electoral returns measured every four years. For robustness tests, therefore, I generate alternative indicators of district competitiveness by considering other types of elections in different time frames. I measure the average proportion of the two-party vote that Democratic candidates received in presidential, Senate, and gubernatorial elections held over the past four years. Then I calculate the difference between the average Democratic share of the vote and 50% and call it *Closeness to 50-50*, as suggested by Ansolabehere and Snyder (2006). For instance, the district-level tariff protection in 1990 in my dataset is matched with *Closeness to 50-50*, which is generated from the average of the two-party vote share that Democratic candidates received in races from 1986 through 1988.

Following McGillivray (1997), I also consider *House Marginality* which is the absolute difference between the two-party vote share for Democratic candidates and 50% in the most recent House election.[32] Like *Partisan Dominance*, both *Closeness to 50-50* and *House Marginality* are coded such that large positive values indicate strong partisan

[32] The absolute value of *House Marginality* is equivalent to one-half of the absolute difference in the Democratic and Republican share of the two-party vote.

support for Republican or Democrat. If the values of *Closeness to 50-50* and *House Marginality* are closer to zero, it means that voter partisanship is almost evenly divided between the Democratic and the Republican parties and that district might contain more swing and independent voters who are less ideologically attached to parties**.**

Tables 4.4 and 4.5 present the effects of alternative indicators of electoral marginality on the district-level of tariff and nontariff protection, respectively. My findings in these tables demonstrate that politically competitive districts are more likely to receive higher levels of tariff protection than safe districts and that district competitiveness tends to amplify the marginal effect of protectionist rents on the actual amount of tariff and nontariff protection aggregated to the district-level.

In Table 4.4, the negative and significant coefficients for *Closeness to 50-50* and *House Marginality* indicate that the amount of tariff protection would be higher in districts in which there are two equally sized groups of partisans than in districts showing strong support for one party over the other. In column 1 of Table 4.4, for instance, the effect of *Closeness to 50-50* is negative and significant, while it does not retain its statistical significance across different specifications. Since the value of *Closeness to 50-50* ranges from 0 to 0.345 in my data, the estimated coefficient for *Closeness to 50-50* (= -0.222) indicates that the amount of tariff protection targeted to the most competitive districts is greater than the amount of tariff protection concentrated on the safest districts by about 0.077 percentage points. Columns 4 and 5 also show that the coefficient estimates for *House Marginality* are -0.145 and -0.082, respectively. This finding suggests that a one standard deviation increase in *House Marginality* (= 0.092) decreases the district-level of tariff protection by about 0.013 and 0.007 percentage points,

respectively. Similarly, moving the value of *House Marginality* from zero to its maximum (= 0.471) in these columns again reduces the district-level tariff protection by 0.068 and 0.039 percentage points, respectively. These findings run contrary to McGillivray's earlier finding that marginal House districts in the U.S. are least likely to receive favorable levels of protection, because of weak party discipline.

[Insert Table 4.4 here]

Table 4.4 also provides clear evidence that governing parties are more responsive to protectionist demands from politically competitive districts rather than those from safe districts. In columns 2 and 3, the coefficients for *Closeness to 50-50* × *District Comparative Disadvantage* are -0.395 and -0.192, respectively. Since high positive values in *Closeness to 50-50* represent that districts are more electorally safe or partisan than other districts, the significant negative coefficients for these multiplicative interaction terms imply that district competitiveness increases the extent to which protectionist pressures from import-competing sectors raise the district level of tariff protection. For instance, column 2 shows that as the value of *Closeness to 50-50* changes from 0 to 0.345, the marginal effect of *District Comparative Disadvantage* on the district-level of tariff protection drops from 0.165 0.029. Column 3 similarly demonstrates that the same change in *Closeness to 50-50* reduces the marginal effect of *District Comparative Disadvantage* and *Labor* on the dependent variable from 0.033 to -0.033 and from 0.009 to 0.005, respectively. The results in Table 4.4 also suggest that *House Marginality* modifies the relationship between constituent demands for protection

and the district-level of tariff protection. In column 6, the coefficients for multiplicative interaction terms imply that the marginal effect of *District Comparative Disadvantage* and *Labor* decreases from 0.04 to -0.021 and from 0.01 to 0.005, respectively, as *House Marginality* increases from 0 to 0.471.

Table 4.5 investigates the extent to which district competitiveness modifies the relationship between protectionist demands and the district level of nontariff protection. Unlike Table 4.4, Table 4.5 reveals that there is almost no significant association between political competitiveness and the dependent variable. The estimated coefficients for *Closeness 50-50* and *House Marginality* are mostly positive and insignificant. Nevertheless, Table 4.5 provides strong confirmation for my hypothesis that district competitiveness magnifies the effect of protectionist demands from import-competing sectors on the district-level nontariff protection. In Table 4.5, the coefficients for the multiplicative interaction terms of *District Comparative Disadvantage* with *Closeness to 50-50* and with *House Marginality* are all consistently negative and significant. An increase in the values of *Closeness to 50-50* and *House Marginality* both denotes a decline in district competitiveness. Hence the findings in Table 4.5 suggest that the marginal effect of protectionist demands on NTBs will be maximized when the values *of Closeness to 50-50* and *House Marginality* takes a zero value, that is, when districts show the highest level of electoral competitiveness.

[Insert Table 4.5 here]

In column 2, the coefficient for the multiplicative interaction term between *Closeness to 50-50* × *District Comparative Disadvantage* (= -3.547) implies that if the value of *Closeness to 50-50* increases from its minimum (= 0.001) to maximum (= 0.329), the marginal effect of *District Comparative Disadvantage* declines from 0.775 to -0.388. The coefficient for *House Marginality* × *District Comparative Disadvantage* in column 5 similarly demonstrate that the marginal effect of *District Comparative Disadvantage* is 0.719 in the most competitive district but drops to -0.005 in the most safe district, as *House Marginality* ranges from 0.005 to 0.414.

Relying on Brambor, Clark, and Golder (2006), I graphically represent the marginal effect of two sources of protectionist interests on the amount of protection aggregated at the district-level. Figures 1 and 2 indicate the extent to which *District Comparative Disadvantage* and *Labor* influence the district-level of trade protection, respectively, according to changes in the levels of district competitiveness. The solid line in each graph represents the marginal effect of protectionist demands on the district-level protection, and the dashed line illustrates 95% confidence intervals around the marginal effect line. In each figure, the top row of graphs is based on results in Tables 2 and 4, in which I only examine the district-level of tariff protection from 1989 through 2004. Graphs in the second row are drawn from results in Tables 3 and 5, which focus on the mean value of the district-level of nontariff protection in the 1990s. As emphasized above, the zero values on *Partisan Dominance*, *Closeness to 50-50* and *House Marginality* all denote an equal division of district's electoral support between Republican and Democratic candidates, whereas high positive values of these indicators represent district's strong partisan attachment to either of the two parties.

[Insert Figure 4.1 here]

In Figure 4.1, the negative slope of the marginal effect line indicates that as the division of the two-party vote share in electoral competition increases, the degree to which *District Comparative Disadvantage* raises the district-level protection significantly decreases. In the top left graph, the marginal effect of *District Comparative Disadvantage* declines from 0.043 to -0.099 as the degree of *Partisan Dominance* moves from 0 to 0.492. Specifically, the bottom row of graphs shows that the strength of district partisanship changes the direction of the effect of protectionist demands on the district-level nontariff protection. In the bottom-left graph of Figure 4.1, the line indicating the marginal effect of *District Comparative disadvantage* becomes zero, when *Partisan Dominance* reaches 0.335. It means that *District Comparative Disadvantage* increases the aggregated amount of NTB protection at the district-level only when the value of *Partisan Dominance* does not exceed 0.335.

The center and right graphs in the bottom row of Figure 4.1 similarly demonstrate that the positive relationship between protectionist demands from import-competing sectors and the district-level NTB protection would not be maintained if *Closeness to 50-50* and *House Marginality* are greater than 0.195 and 0.411, respectively. These findings support my argument that the allocation of protectionist rents across the electorate is determined not only by the strength of protectionist interests but also by their political characteristics. All other things being equal, governing parties are more responsive to

protectionist interests in electorally competitive constituencies rather than those in electorally safe ones.

[Insert Figure 4.2 here]

On the other hand, Figure 4.2 offers some evidence that district competitiveness modifies the effect of *Labor* on the district-level protection, although it does not remain robust across different specifications of the model. In Figure 4.2, I display six graphs representing the marginal effect of the relative size of manufacturing workers on the district-level protection, considering changes in three indicators of marginality. The top row of graphs again shows that the extent to which *Labor* raises the district-level tariff protection will decline, as three indicators of electoral competitiveness increases. This finding implies that a district having more manufacturing employment is most likely to receive higher levels of tariff protection, if the district's vote is equally divided between the Republican and the Democratic parties. The remaining graphs, however, show no similar patterns. While the positive slope of the marginal effect lines indicate that strong district partisanship might increase the positive effect of labor on the district-level protection, none of them are statistically significant.

5. Conclusion

This chapter analyzes the political and economic determinants of within-country variation in the levels of trade protection across electoral constituencies. Building on the literature on international trade and distributive politics, I argue that the allocation of protectionist

rents is interactively determined by two factors: constituent demands for compensation through protectionist measures and the political attributes of domestic constituencies revealed in electoral competition.

My findings show that the economic characteristics of domestic constituencies explain the demand side of protectionist policies. The results from my analysis consistently demonstrate that domestic groups form heterogeneous demands over trade openness, according to the net trade positions of industries in which constituencies are employed as well as types of factors of production that constituencies own. All other things being equal, protectionist rents are likely to be concentrated on constituencies which are more adversely affected by the flow of imports and those in which the proportion of low-skilled labor is higher. However, the present study clearly demonstrates that the structure of domestic interests only partially explains the structure of trade protection within a country. The findings of this study provide consistent evidence that distributive rents generated from tariff protection are likely to be targeted toward electorally competitive constituencies rather than toward safe constituencies, and that marginal voter status significantly increases the chance of protectionist interests receiving favorable levels of tariff and nontariff protection. Specifically, the latter finding strongly implies that constituencies that make strong protectionist demands would not receive compensation through protectionist policies, if they are based on electorally safe constituencies.

One important implication of these findings is that redistribution achieved through trade protection does not necessarily coincide with the economic characteristics of domestic constituencies and their different preferences for trade openness. The political

characteristics of domestic constituencies shape the basis of representation of sectoral interests, because elected officials have substantial incentives to concentrate protectionist rents on particular constituencies that will enhance their chances for reelection.

TABLE 4.1 Partisan Dominance and the District-Level of Tariff Protection, 1989-2004

	Dep. Variable = District-Level of Tariff Protection				
Independent Variables	(1)	(2)	(3)	(4)	(5)
District Comparative Disadvantage (DCD)	0.133***	0.134***	0.133***	0.018***	0.018***
	(0.011)	(0.011)	(0.011)	(0.006)	(0.006)
Partisan Dominance	-0.315***	-0.308***	-0.318***	-0.041*	-0.041*
	(0.041)	(0.042)	(0.041)	(0.023)	(0.023)
Labor	0.033***	0.033***	0.033***	0.008***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
No High School Degree	0.027***	0.027***	0.027***	0.0003	0.0002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
District Unemployment	0.017***	0.017***	0.017***	0.025***	0.026***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
Number of Districts per State	-0.219***	-0.226***	-0.220***	-0.034**	-0.034**
	(0.033)	(0.033)	(0.033)	(0.014)	(0.014)
Seniority		0.009***		-0.004*	-0.004*
		(0.003)		(0.002)	(0.002)
Ways and Means Committee			0.029***	0.008	0.008
			(0.009)	(0.006)	(0.006)
Committee on Foreign Affairs			0.002	0.004	0.004
			(0.008)	(0.005)	(0.005)
Lagged District-Level of Tariff Protection				0.425***	0.426***
				(0.015)	(0.015)
Presidential Election					0.002
					(0.004)
General Election					0.001
					(0.003)
Constant	0.133***	0.134***	0.133***	0.018***	0.018***
	-0.011	(0.011)	(0.011)	(0.006)	(0.006)
R-squared	0.719	0.719	0.719	0.839	0.839
Number of Observations	6894	6794	6894	4578	4578

* p<0.10, ** p<0.05, *** p<0.01; standard errors in parentheses.

TABLE 4.2 Partisan Dominance and the Marginal Effects of Protectionist Interests on the District-Level of Tariff Protection, 1989-2004

	Dep. Variable = District-Level of Tariff Protection				
Independent Variables	(1)	(2)	(3)	(4)	(5)
District Comparative Disadvantage (DCD)	0.185***	0.186***	0.173***	0.043***	0.043***
	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)
Partisan Dominance	-0.017	-0.015	0.473***	0.169***	0.170***
	(0.050)	(0.051)	(0.086)	(0.056)	(0.056)
Partisan Dominance × DCD	-0.668***	-0.666***	-0.519***	-0.288***	-0.289***
	(0.069)	(0.070)	(0.073)	(0.056)	(0.056)
Partisan Dominance × Labor			-0.034***	-0.007*	-0.007*
			(0.005)	(0.004)	(0.004)
Labor	0.033***	0.033***	0.036***	0.009***	0.009***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
No High School Degree	0.027***	0.027***	0.027***	0.0004	0.0003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
District Unemployment	0.017***	0.017***	0.017***	0.026***	0.026***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
Number of Districts per State	-0.210***	-0.217***	-0.222***	-0.031*	-0.031*
	(0.039)	(0.040)	(0.040)	(0.017)	(0.017)
Seniority		0.007**	0.007**	-0.004**	-0.004**
		(0.003)	(0.003)	(0.002)	(0.002)
Ways and Means Committee		0.027***	0.027***	0.008	0.007
		(0.009)	(0.009)	(0.007)	(0.007)
Committee on Foreign Affairs		0.004	0.004	0.005	0.005
		(0.008)	(0.008)	(0.006)	(0.006)
Lagged District-Level of Tariff Protection				0.421***	0.422***
				(0.007)	(0.007)
Presidential Election					0.003
					(0.004)
General Election					0.0003
					(0.003)
Constant	-0.827***	-0.843***	-0.890***	-0.236***	-0.237***
	(0.015)	(0.016)	(0.017)	(0.011)	(0.011)
R-squared	0.72	0.72	0.719	0.838	0.838
Number of Observations	6894	6794	6794	4578	4578

* p<0.10, ** p<0.05, *** p<0.01; standard errors in parentheses.

TABLE 4.3 Partisan Dominance and the Marginal Effects of Protectionist Interests on the District-Level of Nontariff Protection in the 1990s

	Dep. Variable = District-Level of NTB Protection					
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
District Comparative Disadvantage	0.510***	0.510***	0.616***	0.616***	0.677***	0.677***
(DCD)	(0.113)	(0.114)	(0.138)	(0.138)	(0.143)	(0.144)
Partisan Dominance	0.553	0.554	1.084	1.082	-1.087	-1.086
	(0.575)	(0.576)	(0.696)	(0.697)	(1.565)	(1.568)
Partisan Dominance × DCD			-1.5	-1.495	-2.018*	-2.016*
			(1.111)	(1.113)	(1.158)	(1.162)
Partisan Dominance × Labor					0.137	0.137
					(0.088)	(0.088)
Labor	0.086***	0.086***	0.086***	0.086***	0.073***	0.073***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.013)	(0.013)
No High School Degree	0.017	0.017	0.017	0.017	0.017	0.017
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
District Unemployment	-0.069**	-0.068**	-0.064**	-0.064**	-0.062**	-0.062**
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
Number of Districts per State	-0.208	-0.209	-0.211	-0.212	-0.223	-0.223
	(0.342)	(0.342)	(0.341)	(0.342)	(0.341)	(0.341)
Seniority		0.008		0.005		0.002
		(0.053)		(0.053)		(0.053)
Lagged District-Level of Tariff Protection	3.038***	3.041***	3.057***	3.059***	3.056***	3.057***
	(0.275)	(0.277)	(0.275)	(0.277)	(0.275)	(0.276)
Constant	-0.292	-0.262	-0.35	-0.332	-0.15	-0.144
	(0.234)	(0.304)	(0.238)	(0.308)	(0.270)	(0.331)
R-squared	0.848	0.848	0.849	0.849	0.85	0.85
Number of Observations	431	431	431	431	431	431

* p<0.10, ** p<0.05, *** p<0.01; standard errors in parentheses.

TABLE 4.4 District Competitiveness and the Marginal Effects of Protectionist Interests on the District-Level of Tariff Protection, 1989-2004

	Dep. Variable = District-Level of Tariff Protection					
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
District Comparative Disadvantage	0.137***	0.165***	0.033***	0.111***	0.129***	0.040***
(DCD)	(0.011)	(0.016)	(0.009)	(0.011)	(0.018)	(0.010)
Closeness to 50-50	-0.222***	-0.02	0.157*			
	(0.047)	(0.060)	(0.080)			
Closeness to 50-50 × DCD		-0.395***	-0.192**			
		(0.138)	(0.082)			
Closeness to 50-50 × Labor			-0.011**			
			(0.006)			
House Marginality				-0.145***	-0.082**	0.192***
				(0.034)	(0.042)	(0.062)
House Marginality × DCD					-0.122***	-0.129**
					(0.096)	(0.052)
House Marginality × Labor						-0.011***
						(0.004)
Labor	0.033***	0.033***	0.009***	0.032***	0.032***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
No High School Degree	0.027***	0.027***	0.0001	0.027***	0.027***	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
District Unemployment	0.018***	0.018***	0.026***	0.016***	0.016***	0.026***
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
Number of Districts per State	-0.234***	-0.228***	-0.028*	-0.268***	-0.265***	-0.046***
	(0.033)	(0.033)	(0.014)	(0.034)	(0.034)	(0.017)
Seniority	0.007**	0.007**	-0.004	0.010***	0.010***	-0.003
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Ways and Means Committee	0.025***	0.024***	0.008	0.024***	0.024***	0.007
	(0.009)	(0.009)	(0.006)	(0.009)	(0.009)	(0.007)
Committee on Foreign Affairs	0.001	0.0004	0.005	0.006	0.006	0.010*
	(0.008)	(0.008)	(0.005)	(0.008)	(0.008)	(0.005)
Lagged District-Level of Tariff			0.420***			0.424***
			(0.015)			(0.016)
Presidential Election			0.002			0.003
			(0.004)			(0.004)
General Election			0.001			0.001
			(0.003)			(0.003)
Constant	-0.829***	-0.848***	-0.231***	-0.782***	-0.791***	-0.261***
	(0.017)	(0.017)	(0.013)	(0.017)	(0.018)	(0.016)
R-squared	0.720	0.720	0.840	0.710	0.710	0.841
Number of Observations	6800	6800	6800	6800	6800	6800

* p<0.10, ** p<0.05, *** p<0.01; standard errors in parentheses.

TABLE 4.5 District Competitiveness and the Marginal Effects of Protectionist Interests on the District-Level of Nontariff Protection in the 1990s

	Dep. Variable = District-Level of Nontariff Protection					
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
District Comparative Disadvantage	0.499***	0.779***	0.849***	0.518***	0.737***	0.728***
(DCD)	(0.114)	(0.178)	(0.184)	(0.116)	(0.164)	(0.167)
Closeness to 50-50	0.893	2.483**	0.099			
	(0.864)	(1.162)	(1.924)			
Closeness to 50-50 × DCD		-3.547**	-4.361**			
		(1.740)	(1.815)			
Closeness to 50-50 × Labor			0.181			
			(0.116)			
House Marginality				-0.045	0.676	1.043
				(0.557)	(0.674)	(1.474)
House Marginality × DCD					-1.858*	-1.771*
					(0.984)	(1.034)
House Marginality × Labor						-0.022
						(0.079)
Labor	0.086***	0.087***	0.072***	0.085***	0.086***	0.089***
	(0.010)	(0.010)	(0.014)	(0.010)	(0.010)	(0.015)
No High School Degree	0.017	0.016	0.015	0.018	0.018	0.018
	(0.012)	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)
District Unemployment	-0.072**	-0.069**	-0.067**	-0.072**	-0.066**	-0.066**
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
Number of Districts per State	-0.185	-0.16	-0.162	-0.132	-0.159	-0.157
	(0.340)	(0.339)	(0.338)	(0.345)	(0.344)	(0.345)
Seniority	0.004	-0.001	-0.006	0.007	0.006	0.007
	(0.054)	(0.053)	(0.053)	(0.056)	(0.056)	(0.056)
Lagged District-Level of	3.059***	2.995***	3.028***	3.044***	3.039***	3.035***
	(0.278)	(0.278)	(0.279)	(0.281)	(0.280)	(0.281)
Constant	-0.277	-0.405	-0.221	-0.199	-0.332	-0.377
	(0.306)	(0.311)	(0.333)	(0.322)	(0.329)	(0.366)
R-squared	0.848	0.85	0.851	0.848	0.849	0.849
Number of Observations	431	431	431	418	418	418

* p<0.10, ** p<0.05, *** p<0.01; standard errors in parentheses.

FIGURE 4.1 The Marginal Effects of District Comparative Disadvantage on the District-Level of Trade Protection (Using Sectoral Tariff Rates in the First Row and NTBs in the Second Row)

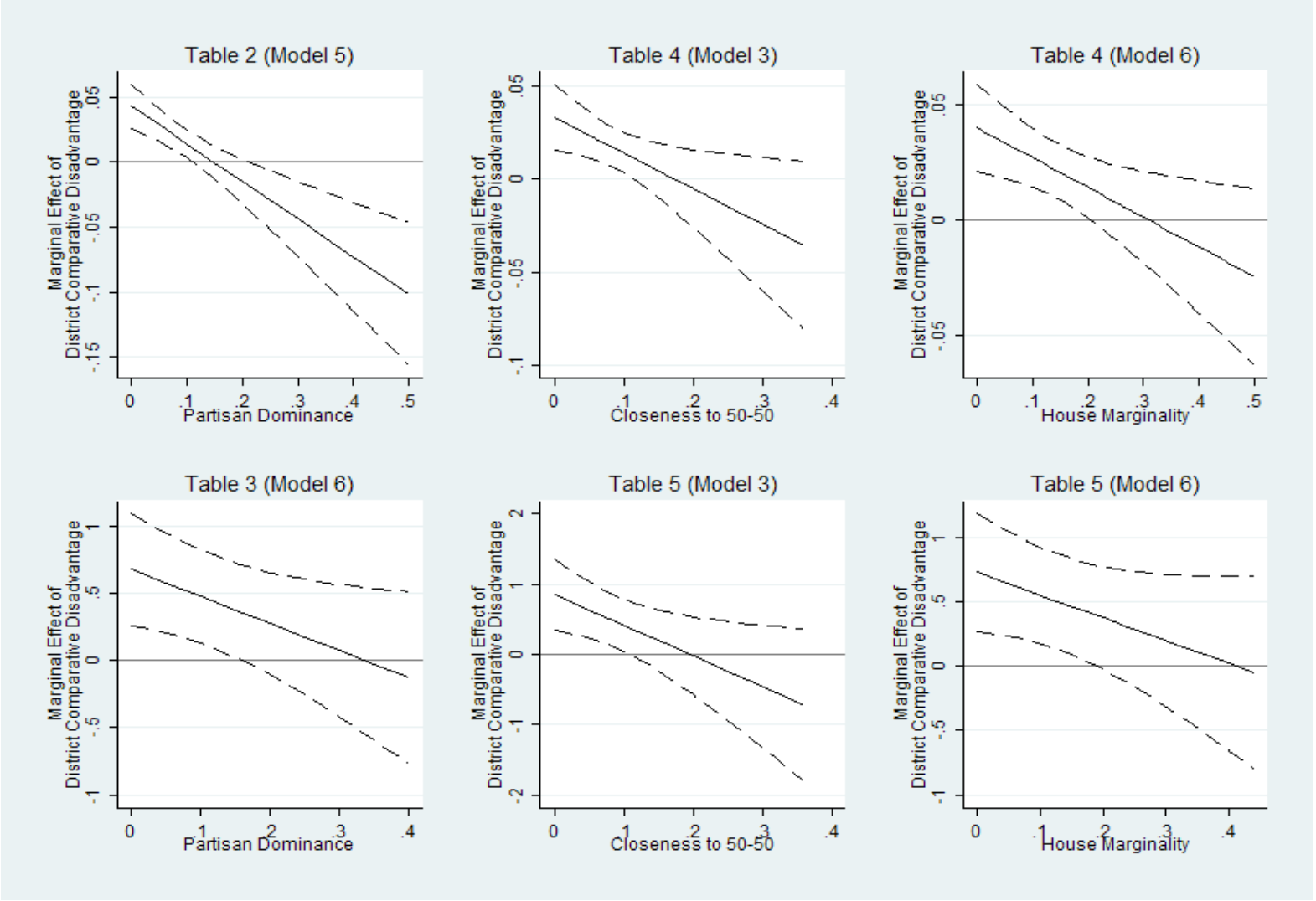
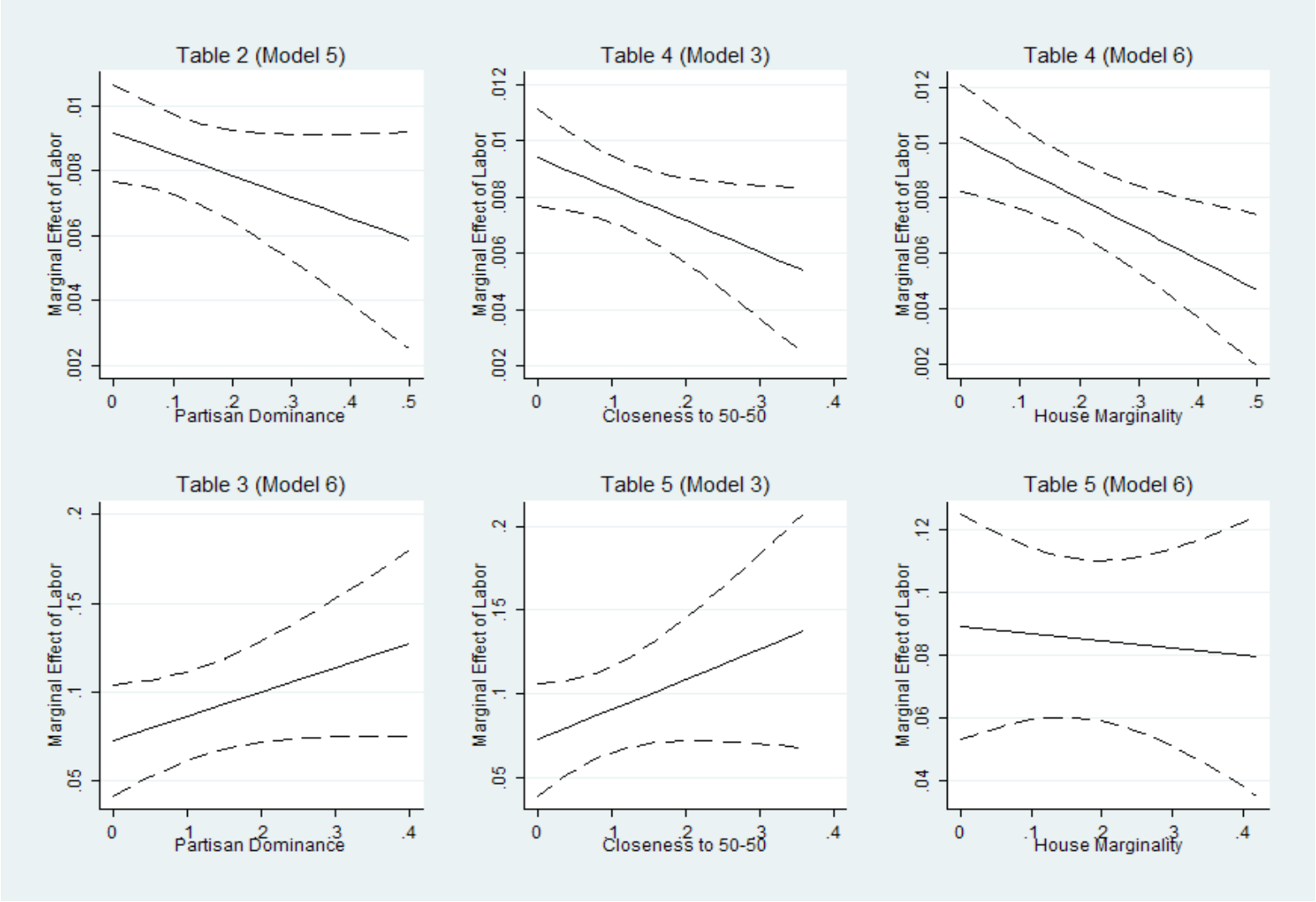


FIGURE 4.2 The Marginal Effects of Labor on the District-Level of Trade Protection (Using Sectoral Tariff Rates in the First Row and NTBs in the Second Row)



Chapter 5

Voter Partisanship and the Allocation of Protectionist Rents: An Empirical Test of the Core Voter Model

1. Introduction

In the previous two chapters, I examine the effect of electoral competition on the structure of trade protection in the United States at the industry-level and at the district-level, respectively. Using sectoral data on tariff and nontariff protection and district level election outcomes, I maintain that within-country variations in U.S. trade protection are explained by the interactions of two factors: the strength of protectionist pressures of domestic constituencies and their political attributes revealed in electoral competition. The results of my analysis demonstrate that tariff protection tends to be targeted to politically competitive districts rather than safe ones and that industries located in politically competitive constituencies are more likely to secure favorable levels of protection than those in safe constituencies. In a related vein, I also find that the political attributes of domestic constituencies modify the relationship between protectionist pressures and trade policy outcomes. My findings offer consistent evidence that electoral competitiveness increases the extent to which comparative disadvantage raises the levels of tariff and nontariff protection both at the level of electoral districts and at the level of industries. Unlike previous research, these findings suggest that representative

policymakers have strong incentives to target trade protection to marginal constituencies rather than to safe constituencies to optimize their electoral prospects. Nevertheless, they do not fully confirm that governing parties always favor marginal constituencies over their core partisan supporters for two reasons. First, the marginality of domestic constituencies could be endogenous to the economic characteristics of voters which determine their trade policy preferences. For instance, if domestic groups are more adversely affected by import competition, they might be more willing to change their ideological preferences and cast their votes to parties that promise larger compensation through protectionist measures. In this case, the effect of constituency marginality would be conflated with the effect of protectionist demands. Second, in some cases, marginal (party competitive) districts do not necessarily mean that they have more swing voters than other districts. If districts have two equally sized groups of strong partisans, that is, if districts have a bimodal distribution of voter partisanship, their margins of votes are still relatively smaller than other districts. Hence even if parties offer more protectionist rents to marginal districts, we do not know whether this is because parties target marginal districts to win a legislative majority or because they favor their core partisan supporters belonging to marginal districts (Cox 2010).

To fill this gap, this chapter extends my findings in two ways. First, I examine the relative merits of the core voter model in the context of U.S. trade politics, considering the effect of voter partisanship on the allocation of protectionist rents across electoral constituencies. Relying on the same dataset employed in Chapters 3 and 4, I evaluate the extent to which the direction and strength of voter partisanship affect the amount of tariff and nontariff protection aggregated to the level of congressional districts. Second, I

investigate the effect of voter partisanship on the relationship between protectionist demands and trade policy outcomes. If it were true that representative policymakers are more likely to respond to protectionist interest groups from competitive constituencies rather than those from safe constituencies, we could expect that the marginal effect of voter demands for protection on trade policy outcomes would vary according to the strength of district support for the incumbent government party.

2. Model

Equation (1) is the modification of the district-level model proposed in Chapter 4. Here, the dependent variable is the aggregate amount of trade protection at the level of congressional districts. The district-level of protection again indicates the extent to which industries located in a given congressional district receive tariff and nontariff protection, respectively. More specifically, it represents the sum of sectoral tariffs or NTB coverage ratios for the four-digit SIC manufacturing industries in district *i*, with each of them weighted by an industry's share of total employees in district *i*.

As explained earlier in greater detail, equation (1) includes three categories of independent variables. First, the strength of constituent demands for protection is captured by *District Comparative Disadvantage*, representing the difference between import-penetration and export dependence at the district level. Another two economic variables, *No High School Degree* and *District Unemployment* each represent the proportion of low-skilled labor and economic downturn, respectively. Like *District Comparative Disadvantage*, these variables indicate voter demands for compensation through protectionist policies. Second, equation (1) includes a set of political variables

related to the abilities of individual representatives to provide distributive benefits to their geographical constituencies, such as seniority and congressional committee membership. In a related vein, the *Number of Districts per State* variable controls for the effect of the size of population in a given state, because protectionist pressures have a better chance of political representation in smaller states (McGillivray 1997, 2004; Hauk 2011).

$$
\begin{aligned}
&\textit{District-Level Protection}_{it} \\
&= \beta_0 + \beta_1 \textit{District Comparative Disadvantage}_{it-1} \\
&+ \beta_2 \textit{Support for the Incumbent Government}_{it-1} \\
&+ \beta_3 \textit{Support for the Incumbent Government}^2_{it-1} \\
&+ \beta_4 \textit{District Comparative Disadvantage}_{it-1} \times \textit{Support for the Incumbent Government}_{it-1} \\
&+ \beta_5 \textit{District Comparative Disadvantage}_{it-1} \times \textit{Support for the Incumbent Government}^2_{it-1} \\
&+ \beta_6 \textit{Seniority}_{it-1} + \beta_7 \textit{Ways and Means Committee}_{it-1} \\
&+ \beta_8 \textit{Committee on Foreign Affairs}_{it-1} + \beta_9 \textit{Labor}_{it-1} \\
&+ \beta_{10} \textit{No High School Degree}_{it-1} + \beta_{11} \textit{District Unemployment}_{it-1} \\
&+ \beta_{12} \textit{Number of Districts per State}_{it-1} + \varepsilon_i
\end{aligned}
\tag{1}
$$

$$
\begin{aligned}
&\partial\textit{District-Level Protection}/\partial\textit{District Comparative Disadvantage} \\
&= \beta_1 + \beta_4 \textit{Support for the Incumbent Government}_{it-1} \\
&+ \beta_5 \textit{Support for the Incumbent Government}^2_{it-1}
\end{aligned}
\tag{2}
$$

Third and more importantly, equation (1) examines the extent to which district support for the incumbent government affects the amount of trade protection targeted to each district. My previous findings show that district competitiveness increases the district level of tariff protection and that competitiveness also strengthens the relationship between protectionist pressures and policy outcomes. Based on these findings, equation (1) includes the *Support for the Incumbent Government* variable and its squared term. In doing so, I assume that there exists a non-linear relationship between the strength of district support for the incumbent government and the district-level of tariff (or nontariff) protection. In equation (1), I also include two multiplicative interaction terms of *District Comparative Disadvantage* with *Support for the Incumbent Government* and its squared term, respectively. These interaction terms imply that the extent to which *District Comparative Disadvantage* in a given congressional district *i* increases the district level of tariff (or nontariff) protection depends on the strength of *District Support for the Incumbent Government*.

The marginal effect of constituent demands for protection on policy outcomes can be expressed by taking the derivative of equation (1) with respect to *District Comparative Disadvantage*. As shown in equation (2), my model hypothesizes that the marginal effect of protectionist demands on the district-level of trade protection has a non-linear relationship with the strength of district support for the incumbent party. As I argued earlier, if protectionist interests in marginal constituencies tend to receive more favorable levels of protection than those in safe constituencies, equation (2) should satisfy two conditions. First, the coefficient for the squared term of the *Support for the Incumbent Government* (= β_5) should be negatively signed and significant. Second, the marginal

effect of *District Comparative Disadvantage* should have its maximum value on the midpoint of the *Support for the Incumbent Government*.

To measure the degree of *Support for the Incumbent Government*, I use two different indicators: *Vote for the Incumbent President* and *Average Vote for the Incumbent President's Party*. On the one hand, *Vote for the Incumbent President's Party* is measured as the district level of the two-party vote share in the most recent presidential election. As I use district presidential vote share normalized around its national mean, *Vote for the Incumbent President*'s Party takes large positive values for its core areas of electoral support, but large negative values for its opposition strongholds. If district vote shares for Republican and Democratic presidential candidates are identical to the national averages, *Vote for the Incumbent President* is coded as zero, implying the highest level of competitiveness.[33] On the other hand, *Average Vote for the Incumbent President's Party* is the average of the two-party vote share that the Incumbent President's Party obtained in presidential, general, and gubernatorial elections over the past four years at the district-level. For instance, it means that *Average Vote for the Incumbent President's Party* in 1996 is computed as the two-party vote share for Democratic candidates in these types of elections that occurred from 1992 through 1995. [34] In 1989, however, *Average Vote for the Incumbent President's Party* will be generated by averaging the two-party vote share for Republican candidates obtained in elections held between 1985 and 1988.

[33] Vote for the Incumbent President is similar to the *Partisan Dominance* variable descried in Chapters 3 and 4. Since *Partisan Dominance* takes the absolute values of district presidential vote shares, it only shows the degree of political competitiveness in a given district without revealing the direction of voter partisanship.

[34] Measuring voter partisanship with the four-year window is suggested by Ansolabehere and Snyder (2006). Since some states have gubernatorial elections in odd years, I consider them part of the four-year window.

3. Empirical Results

Table 5.1 estimates the independent effect of protectionist demands, voter support for the incumbent government, and legislator characteristics on the district-level of tariff protection. As discussed in greater detail in Chapter 4, my findings show that economic variables representing constituent demands for protection have a significant positive association with the district-level of tariff protection. The positive significant coefficients for *District Comparative Disadvantage* suggest that protection tends to be concentrated in constituencies relying on import-competing sectors rather than exporting industries. In a similar vein, the coefficients for *Labor* and *No High School Degree* also indicate that owners of relatively scarce factors (i.e. low-skilled labor) have strong protectionist pressures. However, as shown earlier, I find no consistent evidence on the effect of individual characteristics of legislators. While some of my results imply that seniority and congressional committee membership might increase the district-level of tariff protection, the sign and significance of their coefficients do not remain robust across the different specifications of the model.

[Insert Table 5.1 here]

The results of Table 5.1 reveal also interesting patterns about the relationship between district partisanship and the district-level of tariff protection. In columns 1-4, I measure district support for the incumbent government as its share of the two-party vote for the incumbent president in the most recent election, whereas columns 5-8 consider the average of the two-party vote share for the incumbent's president party in presidential,

gubernatorial, general elections held over the past four years. On the one hand, findings in columns 1-2 and 5-6 suggest that there is no consistent linear pattern between district support for the incumbent government and the district level of tariff protection. In column 2, the negative significant coefficient for *Vote for the Incumbent President* suggests that the district-level of tariff protection would be lower, as districts express stronger support for the incumbent president. The finding in column 5, however, again exhibits the opposite pattern.

The effect of voter partisanship on the allocation of protection is more clearly presented when we include its squared term. The results in columns 3-4 and 7-8 all suggest that there exists an inverted U-shaped relationship between *Support for the Incumbent Government* and the district-level of tariff protection. In column 4, the coefficients for *Vote for the Incumbent President* and its squared equivalent are -0.033 and -0.171, respectively, and they are both statistically significant. Since the value of *Vote for the Incumbent President* ranges from -0.492 to 0.405 in my dataset, this finding suggests that the district-level of protection will be maximized when *Vote for the Incumbent President Party* is around -0.09. As the value for *Vote for the Incumbent President Party* deviates from -0.09, however, the district-level of tariff protection decreases continuously. In other words, it means that the level of tariff protection will be the highest in districts in which voter support for the incumbent president is lower than the national average by 9 percentage points and that districts showing stronger support for the incumbent government or the opposition party are likely to have lower levels of tariff protection.

Similarly, columns 7 and 8 offer more convincing evidence that there is an inverted U-shaped curve relationship between district support for the incumbent president's party and the amount of tariff protection aggregated to the district-level. In columns 7 and 8, the coefficients for *Average Vote for the Incumbent Party* and its squared term suggest that the district-level of tariff protection will be maximized when the value of *Average Vote for the Incumbent President's Party* reaches 0.522 and 0.501, respectively. As *Average Vote for the Incumbent President's Party* moves from these midpoints toward its minimum (=0.155) and maximum (=0.844), the level of tariff protection significantly declines.

[Insert Table 5.2 here]

In Table 5.2, I report the comprehensive results from equation (1) by considering a series of multiplicative interaction terms of protectionist demands and the direction of district partisanship. Unlike Table 5.1, Table 5.2 indicates that district support for the incumbent president's party and the district-level of tariff protection do not have an inverted U-shaped relationship any more. Interestingly, however, Table 5.2. still offers consistent evidence that the extent to which protectionist demands increase the district-level of tariff protection will be maximized when district support for the incumbent president and his party are at a moderate level. By taking the derivative of the equation in each column with respect to the variable capturing protectionist demands, we could estimate the extent to which voter demands for protection raise the amount of tariff protection at the district level. In column 1, the marginal effect of *District Comparative*

Disadvantage on the district-level of tariff protection can be expressed as 0.146+0.257 × *Vote for the Incumbent President* - 1.556 × *Vote for the Incumbent President*^{2}. Similarly, column 2 shows that the marginal effect of *Labor* could be described as 0.035 + 0.018 × *Vote for the Incumbent President* - 0.109 × *Vote for the Incumbent President*^{2}. As all coefficients in these equations are statistically significant, we could infer that both *District Comparative Disadvantage* and *Labor* have the greatest effect on the district-level of tariff protection when *Vote for the Incumbent President* reaches 0.083. As district vote share for the incumbent president is higher or lower than 0.083, the marginal effect of *District Comparative Disadvantage* and *Labor* on the dependent variable also decline.

Now let us consider columns 4-6, in which district partisanship is measured as the average of the two-party vote share for the incumbent president's party in all other elections over the past four years. My findings again clearly demonstrate that the marginal effect of protectionist demands on the amount of tariff protection at the district-level still have an inverse U-shaped curve relationship with the district-level of support for the incumbent president's party. Columns 4 and 5 each show that the extent to which *District Comparative Disadvantage* and *Labor* increases the dependent variable will be maximized when *Average Vote for the President's Party* converges to 0.524 and 0.574, respectively. For districts having higher or lower levels of support for the incumbent president's party than these values, the effects of voter demands for protectionist measures significantly decrease. More specifically, column 6 indicates that an inverted U-shaped curve between district's electoral support for the incumbent party and the amount of tariff protection remains robust, when we consider a lagged value of the dependent variable. The results in column 6 show that *District Comparative Advantage*

and *Labor* are most likely to receive higher levels of tariff protection, if the average of the two-party vote share for the incumbent president's party reaches 0.493 and 0.618, respectively.

The key findings in Table 5.2 are presented graphically in Figure 5.1. In each graph, horizontal lines indicate the degree of district support for the incumbent president (and for his party), whereas vertical lines represent the marginal effects of protectionist pressures on the district-level of protection. An asterisk indicates that the marginal effect of constituent demands for protection on the district level of tariff protection is statistically significant at the 95% level.

[Insert Figure 5.1 here]

Figure 5.1 clearly demonstrates that a moderate level of district support for the incumbent president's party strengthens the relationship between protectionist demands and trade policy outcomes. All four graphs show that there exists an inverted U-shaped curve relationship between the strength of district support for the incumbent administration and the marginal effect of district-level demands for protection. As explained in detail above, two graphs on the first row indicate that the marginal effect of *District Comparative Disadvantage* and *Labor* on the dependent variable will be significantly higher, when *Vote for the Incumbent President* is closer to 0.083. Similarly, the bottom row of Figure 5.1 demonstrates that District Comparative Disadvantage and Labor have the greatest effects on the district-level of tariff protection, when Average District Vote for the Incumbent President's Party becomes closer to 0.524 and 0.574,

respectively. As suggested in Chapters 3 and 4, these findings suggest that while protectionist pressures from domestic constituencies are one of the most important factors explaining the allocation of protectionist rents across electoral constituencies, their effects on policy outcomes are conditioned by the political characteristics of domestic constituencies. All other things being equal, protectionist demands are more likely to increase the level of protection in politically competitive districts than in safe ones.

Figure 5.1, however, reveals another interesting pattern regarding the effect of voter partisanship on the allocation of protectionist rents across the electorate. In all four graphs, the extent to which protectionist demands increase the district-level of trade protection is relatively greater in core areas of electoral support for the incumbent government rather than in strongholds for the opposition party. If two districts support the incumbent government party and the opposition party to the same degree, protectionist interests are more likely to increase the level of protection in the former rather than in the latter. For instance, the graph in the top left-hand corner shows that if the values of *Vote for the Incumbent President* for two districts are 0.3 and -0.3, the marginal effect of *District Comparative Disadvantage* would be 0.083 and -0.071, respectively. The graph in the top right-hand corner similarly indicates that under the same circumstances, the degree to which Labor increases the district-level of tariff protection would be 0.03 in the former and 0.019 in the latter.

Moreover importantly, Figure 5.1 demonstrates that *District Comparative Disadvantage* in opposition strongholds does not exert a significant positive effect on the district-level of tariff protection, once district support for the opposition party reaches a certain threshold. As can be seen in the top left-hand corner of Figure 5.1, *District*

Comparative Disadvantage starts to have a negative association with the district-level of tariff protection, as *Vote for the Incumbent President* is smaller than -0.23. The graph in the bottom left corner also shows that the marginal effect of *District Comparative Disadvantage* turns negative, as district share of the *Average Vote for the Incumbent President's Party* decreases below the 0.025 threshold. In these two graphs, District Comparative Disadvantage and the district level of tariff protection has the highest negative association when district support for the incumbent president and his party reaches its minimum at the value of -0.492 and 0.015, respectively.

Let us now consider Tables 5.3 and 5.4, which report the effects of district partisanship on the allocation of protectionist rents generated from nontariff measures across electoral constituencies. Here the dependent variable is the district-level of nontariff protection. As described in previous chapters, it indicates the extent to which all manufacturing industries in a given district are subjected to import controls in terms of price, quantity, and quality (Kono 2006).

[Insert Table 5.3 here]

In Table 5.3, I estimate the independent effects of district partisanship on the district-level of nontariff protection. Unlike Tables 5.1, Table 5.3 does not offer consistent evidence on the effects of voter partisanship on the structure of nontariff protection.[35] On the one hand, Table 5.3 suggests that there would be a negative significant association between district support for the incumbent president and the

[35] As discussed in Chapters 3 and 4, my findings show that constituency competitiveness does not exert a significant independent effect on the amount of nontariff protection both at the level of congressional districts and at the industrial sectors.

district-level of nontariff protection. In columns 1 and 3, the district level of nontariff protection tends to decrease, as the value of *Vote for the Incumbent President* and *Average Vote for the Incumbent President's Party* increases, respectively. Although not fully presented in Table 5.3, these finding remain robust even when we do not consider the lagged value of the district-level of tariff protection. On the other hand, Table 5.3 also offers some evidence that the district-level of tariff protection reaches its minimum when *Average Vote for the Incumbent President's Party* becomes 0.658. In column 4, the coefficients on *Average Vote for the Incumbent President's Party* and its squared term suggest that there would be a U-shaped curved relationship between voter support for the incumbent president's party and the amount of nontariff protection aggregated to the district-level. However, as shown in column 5, these coefficients do not maintain statistical significance if we control for the effect of the district-level of tariff protection in previous years.[36]

[Insert Table 5.4 here]

Table 5.4 includes a set of multiplicative interaction terms between variables indicating district-level of protectionist demands and voter partisanship. In doing so, I evaluate the extent to which voter partisanship modifies the relationship between protectionist interests and trade policy outcomes. In columns 1-3, I find no evidence of a significant effect of district support for the incumbent president. None of the estimated

[36] The existing literature acknowledges that tariff protection might increase or decrease the level of nontariff protection. For more details, see section 3.2 in Chapter 4.

coefficients for multiplicative interaction terms of protectionist interests with *Vote for the Incumbent President* and with its squared terms are statistically significant.

If we consider voter support for the incumbent president's party in presidential, general, and gubernatorial elections, however, my model provides more clear-cut evidence. In column 4, the coefficients for the interaction term of *District Comparative Disadvantage* with *Average Vote for the Incumbent President's Party* and its squared term are 21.972 and -21.2, respectively. These findings suggest that the extent to which *District Comparative Disadvantage* increases the dependent variable would be maximized when the district average of the two-party vote share for the incumbent president's party over the past four years converges toward 0.518. Column 6 also exhibits almost identical patterns. The estimated coefficients for multiplicative interaction terms between *District Comparative Disadvantage* and district partisanship indicate that *District Comparative Disadvantage* is most likely to increase the district-level of nontariff protection when *Average Vote for the Incumbent President's Party* converges toward 0.53. Nevertheless, Table 5.4 does not provide robust evidence on the relationship between district partisanship and the district-level of nontariff protection. In column 4, the coefficients for *Average Vote for the Incumbent President's Party* and its squared term suggest that the district-level of tariff protection would reach its minimum when *Average Vote for the Incumbent President's Party* is closer to 0.56. As shown in columns 5 and 6, however, they fail to reach statistical significance if we consider the marginal effect of labor or the lagged value of the district-level of tariff protection.

4. Robustness Check

To test the robustness of my findings, this section examines the relationship between voter partisanship for the majority party in the legislature and the allocation of protectionist rents across electoral districts. I re-estimate equation (1) described above, using two indicators of voter partisanship. First, *Vote for the Majority Party in Congress* is generated from the majority party's share of the two-party vote in the most recent presidential election in each district. As in *Vote for the Incumbent President's Party*, *Vote for the Majority Party in Congress* uses district presidential vote shares normalized around their national mean. Secondly, *Average Vote for the Majority Party in Congress* denotes the average share of the two-party vote that the majority party in Congress obtained in presidential, gubernatorial and general elections held over the past four years.

[Insert Table 5.5 here]

Table 5.5 reports the extent the extent to which district support for the majority party affects the amount of tariff protection concentrated in a given district. Columns 1 and 5 indicate that two indicators of district support for the majority party in Congress both have a negative significant coefficient. These results suggest that as voter support for the majority party in the legislature increases, the district-level of tariff protection tends to decline. As shown in columns 2 and 6, however, these coefficients do not meet standards of statistical significance, if we include the lagged dependent variable to our model. On the other hand, the remaining columns in Table 5.5 clearly demonstrate that there is an inverted U-shaped relationship between the strength of voter support for the

majority party in Congress and the level of tariff protection. Column 3 shows that the district-level of tariff protection reaches its maximum in district, in which the majority party's vote share in the recent presidential election is greater than the national average by about 7 percentage points. Similarly, columns 7 and 8 indicate that the district-level of tariff protection increases until the average vote share that the majority party received in presidential, gubernatorial and general elections that occurred during the past four years converges around 0.43 and 0.52, respectively.

In Table 5.6, I include the multiplicative interaction terms of district-level protectionist interests with district support for the majority party and its squared term in various ways. In doing so, I examine the extent to which voter support for the majority party in the legislature modifies the relationship between protectionist interests of constituencies and trade policy outcomes. As discussed in the previous section, my findings in Table 5.6 indicate that the marginal effect of protectionist interests on the level of tariff protection has an inverted U-shaped relationship with the degree of district support for the majority party in Congress. In column 1, the interaction terms of *District Comparative Disadvantage* with *Vote for the Majority Party in Congress* and its squared term are -0.366 and -0.417, respectively. These results suggest that the extent to which *District Comparative Disadvantage* increase the district-level of tariff protection will be greatest when the value of *Vote for the Majority Party in Congress* converges toward 0.21, that is, the majority party's share of district presidential vote is greater than the national average by about 21 percentage points. This finding suggests that if district support for the majority party in Congress is measured from normalized presidential vote,

the marginal effect of *District Comparative Disadvantage* tends to be higher in both marginal districts and districts express less supporting for the majority party in Congress.

[Insert Table 5.6 here]

However, columns 4-6 offer further confirmation that district competitiveness amplifies the impact of voter demands for protectionist measures on the aggregate amount of tariff protection in a given district. The multiplicative interaction terms in columns 4 and 5 suggest that the marginal effects of *District Comparative Disadvantage* will be maximized when *Average Vote for the Majority Party in Congress* has a value of 0.467. The declining portion of the inverted U-shaped curve indicates that as *Average Vote for the Majority Party in Congress* deviates from 0.467, the degree to which *District Comparative Disadvantage* increases tariff protection will decline. In a related vein, the findings in column 6 also suggest that the marginal effects of *District Comparative Disadvantage* and *Labor* will reach their maxima if the average vote share for the majority party in Congress in a given district becomes closer to 0.53 and 0.49, respectively.

Figure 5.2 summarizes graphically the core findings of Table 5.6. In Figure 5.2, inverted U-shaped curves show that the extent to which constituent demands for protection actually increase the district level of tariff protection depends on the strength of district partisanship. As demonstrated in Figure 5.1, Figure 5.2 offers further confirmation that both import-competing sectors and labor tend to exert larger effects on the district-level of protection in politically competitive districts than in districts showing

strong support for the majority party in the legislature. Nevertheless, graphs in the first row suggest that the marginal effects of protectionist pressures significantly decline, as districts show more support for the majority party in Congress.[37] Given that the incumbent president's party is mostly in the minority in Congress during the period of my investigation, these findings seem to support my earlier point that the degree to which protectionist demands increase the district-level of tariff protection is relatively larger in core areas of electoral support for the incumbent government rather than in strongholds for the opposition party.

5. Conclusion

The empirical analysis in this chapter demonstrates that district partisanship exerts a significant effect on the allocation of protectionist rents across electoral constituencies. I find that there exists an inverted U-shaped curve between district support for the incumbent president (and his party) and the district-level of tariff protection. I also show that the extent to which protectionist demands such as district comparative disadvantage and labor increase the district-level of tariff and nontariff protection is maximized at a moderate level of district support for the incumbent party. All of these results are pretty consistent with the key findings presented in Chapters 3 and 4: first, marginal constituencies and industries located in marginal constituencies tend to receive higher

[37] In my dataset, the Clinton Administration and the Bush Administration have a majority control of both chambers of Congress for the 103rd Congress (1993-1994) and for the 107th Congress (2003-2004), respectively. Although not presented here, I examined the extent to which the partisan conflict between the President and Congress affect the relationship between the political characteristics of districts (e.g. competitiveness and partisanship) and the district-level of trade protection. While including dummy variables for divided government did not affect my key findings discussed so far, it is not clear whether the partisan conflict and divided government reinforce the incentives for the incumbent government to concentrate protection on marginal constituencies.

levels of trade protection; and second, political competitiveness amplifies the marginal effects of protectionist demands on policy outcomes.

Unlike previous chapters, however, this chapter finds that the incumbent governments are still concerned with their core partisan supporters. The results of my analysis indicate that while protection tends to be concentrated on marginal constituencies rather than on safe constituencies, the marginal effects of protectionist pressures on policy outcomes are larger in constituencies supporting the incumbent president's party rather than in the opposition's strongholds. These findings imply that the incumbent governments are most likely to target protection to marginal constituencies, somewhat less to their core partisan supporters, and least to its opposition strongholds.

TABLE 5.1 District Support for the Incumbent President's Party and the District-Level of Tariff Protection, 1989-2004

	Dep. Variable = District-Level of Tariff Protection							
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
District Comparative Disadvantage	0.132***	0.019***	0.134***	0.019***	0.133***	0.018***	0.137***	0.019***
	(0.006)	(0.004)	(0.006)	(0.004)	(0.006)	(0.004)	(0.006)	(0.004)
Vote for the Incumbent President	0.021	-0.032***	0.001	-0.033***				
	(0.015)	(0.011)	(0.016)	(0.011)				
Vote for the Incumbent President^2			-0.947***	-0.171**				
			(0.124)	(0.081)				
Average Vote for the Incumbent President's Party					0.041**	0.005	1.091***	0.421***
					(0.020)	(0.014)	(0.203)	(0.132)
Average Vote for the Incumbent President's Party^2							-1.045***	-0.413***
							(0.201)	(0.130)
Seniority	0.007**	-0.005**	0.008***	-0.004**	0.007**	-0.004**	0.007**	-0.004*
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
Ways and Means Committee	0.024**	0.009	0.026***	0.009	0.024**	0.008	0.024**	0.009
	(0.010)	(0.007)	(0.010)	(0.007)	(0.010)	(0.007)	(0.010)	(0.007)
Committee on Foreign Affairs	-0.0005	0.003	0.002	0.004	-0.001	0.004	0.001	0.005
	(0.008)	(0.006)	(0.008)	(0.006)	(0.008)	(0.006)	(0.008)	(0.006)
Labor	0.033***	0.008***	0.033***	0.008***	0.033***	0.008***	0.033***	0.008***
	(0.001)	0.000	(0.001)	0.000	(0.001)	0.000	(0.001)	0.000
No High school Degree	0.027***	0.0002	0.028***	0.0003	0.027***	0.0001	0.027***	0.0003
	(0.001)	0.000	(0.001)	0.000	(0.001)	0.000	(0.001)	0.000
District Unemployment	0.017***	0.026***	0.017***	0.026***	0.017***	0.025***	0.017***	0.025***
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Number of Districts per state	-0.002***	-0.000**	-0.002***	-0.000**	-0.002***	-0.000**	-0.002***	-0.000*
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lagged District Level of Tariff Protection		0.424***		0.423***		0.426***		0.425***
		(0.007)		(0.007)		(0.007)		(0.007)
Constant	-0.847***	-0.217***	-0.831***	-0.216***	-0.869***	-0.217***	-1.121***	-0.319***
	(0.015)	(0.010)	(0.015)	(0.010)	(0.018)	(0.012)	(0.052)	(0.034)
R-squared	0.717	0.839	0.72	0.839	0.717	0.839	0.719	0.839
Number of Observations	6794	4578	6794	4578	6800	4584	6800	4584

* p<0.10, ** p<0.05, *** p<0.01; Robust standard errors in parentheses.

TABLE 5.2 District Support for the Incumbent President's Party and the Marginal Effects of Constituent Demands on Tariff Protection, 1989-2004

	Dep. Variable = District-Level of Tariff Protection					
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
District Comparative Disadvantage (DCD)	0.146***	0.126***	0.033***	-0.382**	0.136***	-0.341***
	(0.012)	(0.011)	(0.007)	(0.150)	(0.011)	(0.091)
Vote for the Incumbent President	-0.112***	-0.270***	0.095***			
	(0.022)	(0.050)	(0.027)			
Vote for the Incumbent President^2	-0.176	0.705***	0.496***			
	(0.192)	(0.249)	(0.180)			
Vote for the Incumbent President × DCD	0.257***		-0.023			
	(0.059)		(0.029)			
Vote for the Incumbent President^2 × DCD	-1.556***		-0.986***			
	(0.434)		(0.232)			
Vote for the Incumbent President × Labor		0.018***	-0.008***			
		(0.004)	(0.002)			
Vote for the Incumbent President^2 × Labor		-0.109***	-0.017			
		(0.016)	(0.013)			
Average Vote for the President's Party				0.03	-0.929*	-0.927***
				(0.292)	(0.515)	(0.300)
Average Vote for the President's Party^2				-0.037	0.704	0.918***
				(0.289)	(0.522)	(0.302)
Average Vote for the President's Party × DCD				2.031***		1.384***
				(0.620)		(0.372)
Average Vote for the President's Party^2 × DCD				-1.928***		-1.287***
				(0.620)		(0.367)
Average Vote for the President's Party × Labor					0.140***	0.061***
					(0.039)	(0.023)
Average Vote for the President's Party^2 × Labor					-0.122***	-0.062***
					(0.040)	(0.023)
Seniority	0.007**	0.006**	-0.004	0.007**	0.006**	-0.004
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
Ways and Means Committee	0.028***	0.027***	0.006	0.024***	0.026***	0.009
	(0.009)	(0.009)	(0.006)	(0.009)	(0.009)	(0.006)
Committee on Foreign Affairs	0.004	0.004	0.004	0.001	0.002	0.006
	(0.008)	(0.008)	(0.005)	(0.008)	(0.008)	(0.005)
Labor	0.033***	0.035***	0.009***	0.033***	-0.005	-0.006
	(0.001)	(0.001)	(0.001)	(0.001)	(0.009)	(0.005)
No High School Degree	0.028***	0.027***	0	0.028***	0.027***	0.0000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
District Unemployment	0.017***	0.017***	0.027***	0.017***	0.017***	0.025***
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
Number of Districts per State	-0.209***	-0.222***	-0.034**	-0.220***	-0.223***	-0.023
	(0.033)	(0.033)	(0.014)	(0.033)	(0.032)	(0.014)
Lagged District Level of Tariff Protection			0.410***			0.422***
			(0.015)			(0.015)
Constant	-0.847***	-0.861***	-0.231***	-0.859***	-0.563***	0.013
	(0.016)	(0.017)	(0.011)	(0.070)	(0.125)	(0.072)
R-squared	0.722	0.839	0.839	0.719	0.84	0.84
Number of Observations	6794	4578	4578	6800	4584	4584

* p<0.10, ** p<0.05, *** p<0.01; Robust standard errors in parentheses.

FIGURE 5.1 District Support for the Incumbent President's Party and the Marginal Effect of Protectionist Interests on the District-Level of Tariff Protection

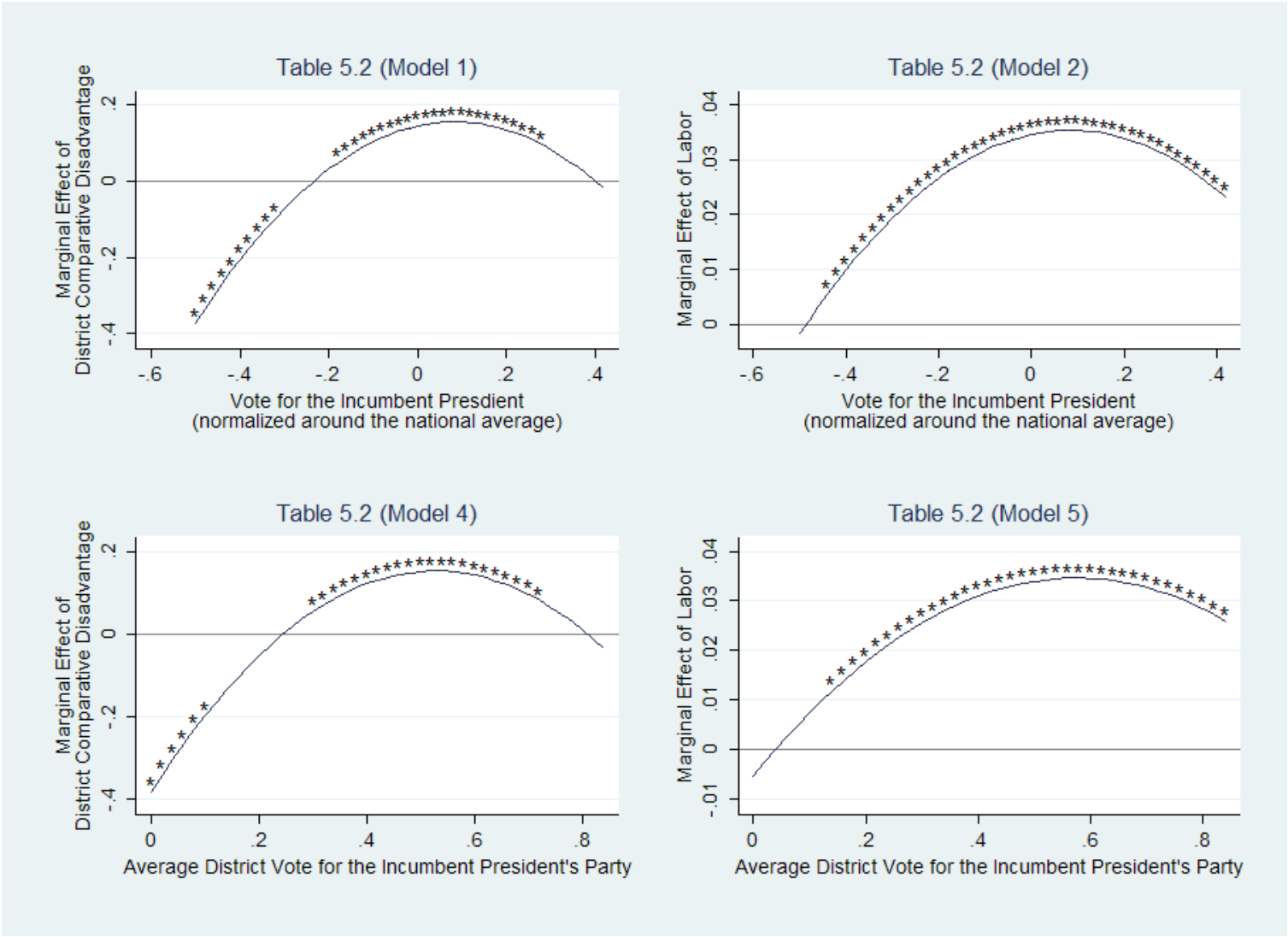


TABLE 5.3 District Support for the Incumbent President's Party and the District-Level of Nontariff Protection in the 1990s

	Dep. Variable = District-Level of Non-tariff Protection				
Independent Variables	(1)	(2)	(3)	(4)	(5)
District Comparative Disadvantage (DCD)	1.156***	1.156***	1.182***	1.266***	1.183***
	(0.148)	(0.148)	(0.147)	(0.140)	(0.147)
Vote for the Incumbent President	-1.160***	-1.164***			
	(0.342)	(0.401)			
Vote for the Incumbent President^2		0.054			
		(1.674)			
Average Vote for the President's Party			-1.394**	-7.003*	-4.886
			(0.591)	(3.753)	(4.123)
Average Vote for the President's Party^2				5.323*	3.242
				(3.211)	(3.527)
Seniority	-0.014	-0.014	-0.014	-0.014	-0.014
	(0.014)	(0.014)	(0.015)	(0.014)	(0.015)
Ways and Means Committee	-0.041	-0.041	-0.023	-0.039	-0.032
	(0.147)	(0.147)	(0.142)	(0.137)	(0.141)
Committee on Foreign Affairs	-0.221	-0.221	-0.208	-0.289*	-0.208
	(0.149)	(0.150)	(0.152)	(0.151)	(0.153)
Labor	0.169***	0.169***	0.167***	0.161***	0.167***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
No High School Degree	0.082***	0.082***	0.084***	0.077***	0.084***
	(0.015)	(0.015)	(0.016)	(0.014)	(0.016)
District Unemployment	-0.107***	-0.107***	-0.118***	-0.123***	-0.118***
	(0.039)	(0.039)	(0.040)	(0.037)	(0.040)
Number of Districts per State	-0.36	-0.361	-0.445	-0.184	-0.457
	(0.340)	(0.341)	(0.345)	(0.313)	(0.346)
Lagged District Level of Tariff Protection	-13.23	-13.235	-13.026		-12.896
	(11.796)	(11.807)	(11.961)		(11.965)
Constant	-1.158***	-1.158***	-0.359	1.19	0.56
	(0.282)	(0.286)	(0.327)	(1.043)	(1.159)
R-squared	0.817	0.817	0.816	0.809	0.816
Number of Observations	382	382	382	431	382

* p<0.10, ** p<0.05, *** p<0.01; Robust standard errors in parentheses.

TABLE 5.4 District Partisanship and the Marginal Effect of Constituent Demands on Nontariff Protection

	Dep. Variable = District-Level of Non-tariff Protection					
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
District Comparative Disadvantage (DCD)	1.279***	1.244***	1.247***	-4.273	1.266***	-4.279
	(0.169)	(0.140)	(0.178)	(2.856)	(0.141)	(3.073)
Vote for the Incumbent President	-1.029***	0.737	1.14			
	(0.384)	(1.302)	(1.361)			
Vote for the Incumbent President^2	3.004	-1.419	-2.272			
	(2.188)	(5.830)	(7.290)			
Vote for the Incumbent President × DCD	-0.142		0.875			
	(1.296)		(1.462)			
Vote for the Incumbent President^2 × DCD	-3.206		-7.97			
	(5.120)		(5.786)			
Vote for the Incumbent President × Labor		-0.106	-0.139			
		(0.084)	(0.085)			
Vote for the Incumbent President^2 × Labor		0.156	0.245			
		(0.368)	(0.416)			
Average Vote for the President's Party				-17.44***	-8.808	-19.004
				(5.471)	(11.966)	(16.723)
Average Vote for the President's Party^2				15.55***	8.212	18.209
				(5.223)	(10.774)	(15.677)
Average Vote for the President's Party × DCD				21.972**		21.015*
				(10.910)		(12.229)
Average Vote for the President's Party^2 × DCD				-21.2**		-19.662*
				(10.136)		(11.817)
Average Vote for the President's Party × Labor					0.318	0.541
					(0.901)	(1.011)
Average Vote for the President's Party^2 × Labor					-0.378	-0.611
					(0.859)	(0.978)
Seniority	-0.038	-0.042	-0.052	-0.04	-0.033	-0.038
	(0.063)	(0.064)	(0.069)	(0.063)	(0.063)	(0.068)
Ways and Means Committee	-0.063	-0.068	-0.077	-0.059	-0.051	-0.053
	(0.141)	(0.144)	(0.149)	(0.138)	(0.138)	(0.143)
Committee on Foreign Affairs	-0.298*	-0.319**	-0.226	-0.301*	-0.309*	-0.218
	(0.153)	(0.153)	(0.153)	(0.156)	(0.159)	(0.163)
Labor	0.162***	0.158***	0.162***	0.160***	0.098	0.051
	(0.009)	(0.011)	(0.011)	(0.010)	(0.233)	(0.257)
No High School Degree	0.073***	0.073***	0.080***	0.073***	0.077***	0.079***
	(0.013)	(0.013)	(0.015)	(0.015)	(0.014)	(0.017)
District Unemployment	-0.110***	-0.110***	-0.104***	-0.117***	-0.123***	-0.114***
	(0.037)	(0.036)	(0.039)	(0.037)	(0.037)	(0.040)
Number of Districts per State	-0.093	-0.092	-0.353	-0.165	-0.177	-0.405
	(0.308)	(0.306)	(0.343)	(0.313)	(0.316)	(0.357)
Lagged District Level of Tariff Protection			-0.147			-0.12
			(0.120)			(0.115)
Constant	-1.095***	-0.985***	-1.037***	3.815***	1.316	3.824
	(0.264)	(0.262)	(0.292)	(1.436)	(3.324)	(4.422)
R-squared	0.809	0.81	0.818	0.811	0.809	0.818
Number of observations	431	431	382	431	431	382

* p<0.10, ** p<0.05, *** p<0.01; Robust standard errors in parentheses.

TABLE 5.5 District Support for the Majority Party in Congress and the District-Level of Tariff Protection, 1989-2004

	Dep. Variable = District-Level of Tariff Protection							
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
District Comparative Disadvantage	0.133***	0.018***	0.134***	0.018***	0.133***	0.018***	0.137***	0.019***
	(0.011)	(0.006)	(0.011)	(0.006)	(0.011)	(0.006)	(0.011)	(0.006)
Vote for the Majority Party in Congress	-0.131***	-0.009	-0.120***	-0.01				
	(0.014)	(0.010)	(0.014)	(0.010)				
Vote for the Majority Party in Congress^2			-0.850***	-0.159***				
			(0.123)	(0.060)				
Average Vote for the Majority Party in Congress					-0.130***	0.014	0.874***	0.408***
					(0.019)	(0.012)	(0.204)	(0.111)
Average Vote for the Majority Party in Congress^2							-1.003***	-0.398***
							(0.203)	(0.112)
Seniority	0.007**	-0.004*	0.007**	-0.004*	0.006**	-0.004*	0.006**	-0.004*
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
Ways and Means Committee	0.024***	0.008	0.026***	0.009	0.025***	0.008	0.025***	0.009
	(0.009)	(0.006)	(0.009)	(0.006)	(0.009)	(0.006)	(0.009)	(0.006)
Committee on Foreign Affairs	0.001	0.004	0.003	0.004	0.001	0.004	0.003	0.004
	(0.008)	(0.005)	(0.008)	(0.005)	(0.008)	(0.005)	(0.008)	(0.005)
Labor	0.033***	0.008***	0.033***	0.008***	0.033***	0.008***	0.033***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
No High school Degree	0.027***	0.0000	0.027***	0.0000	0.027***	0.0000	0.027***	0.0000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
District Unemployment	0.017***	0.025***	0.017***	0.025***	0.018***	0.025***	0.018***	0.025***
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Number of Districts per state	-0.242***	-0.035**	-0.223***	-0.033**	-0.242***	-0.034**	-0.229***	-0.032**
	(0.033)	(0.014)	(0.033)	(0.014)	(0.033)	(0.014)	(0.033)	(0.014)
Lagged District Level of Tariff Protection		0.426***		0.425***		0.426***		0.425***
		(0.015)		(0.015)		(0.015)		(0.015)
Constant	-0.847***	-0.215***	-0.833***	-0.213***	-0.787***	-0.222***	-1.028***	-0.317***
	(0.016)	(0.011)	(0.016)	(0.011)	(0.018)	(0.012)	(0.050)	(0.030)
R-squared	0.719	0.839	0.721	0.839	0.718	0.839	0.719	0.839
Number of observations	6794	4578	6794	4578	6800	4584	6800	4584

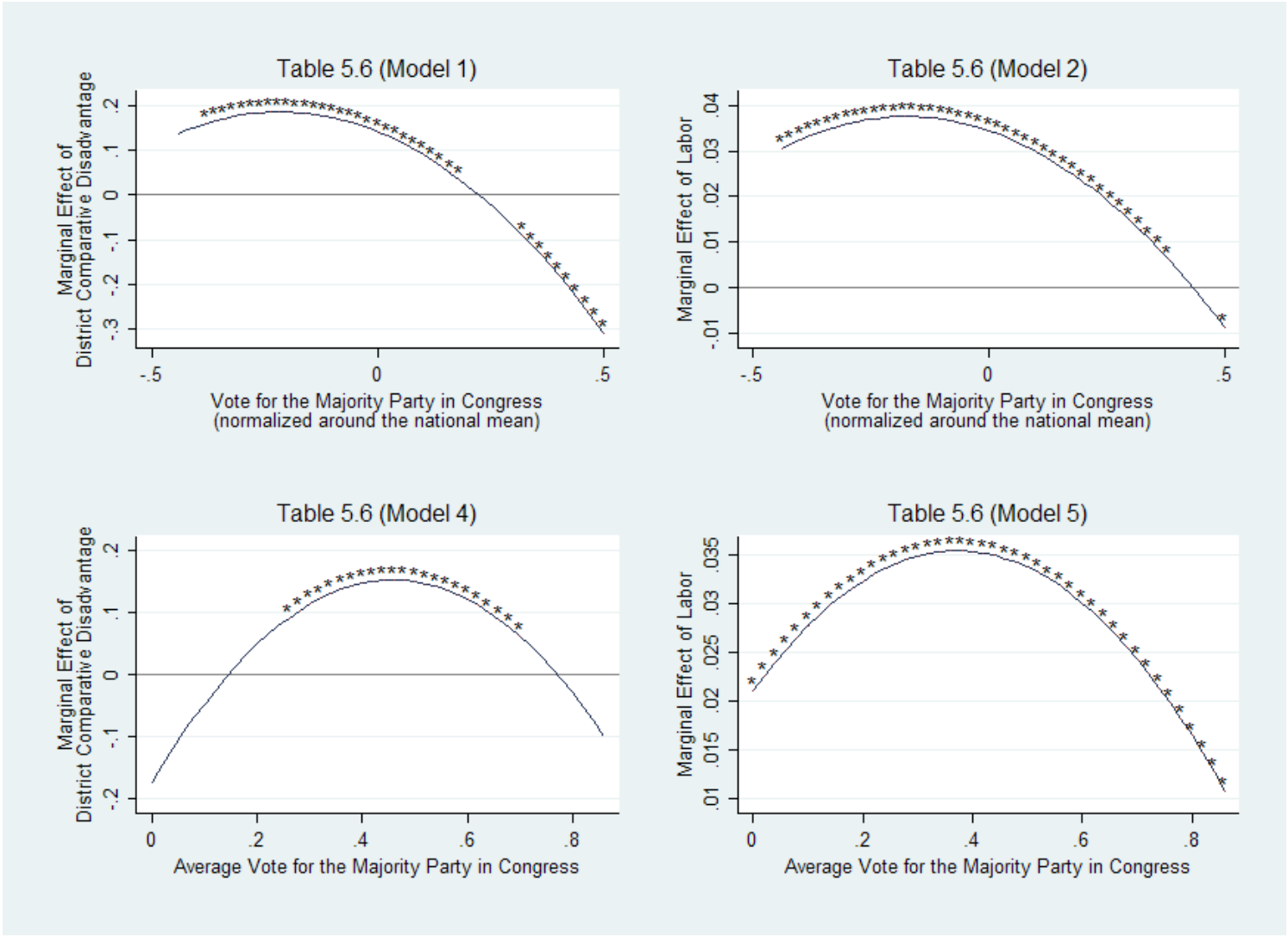
* p<0.10, ** p<0.05, *** p<0.01; Robust standard errors in parentheses.

TABLE 5.6 District Support for the Majority Party in Congress and the Marginal Effect of Constituent Demands for Tariff Protection

	Dep. Variable = District-Level of Tariff Protection					
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
District Comparative Disadvantage (DCD)	0.140***	0.127***	0.029***	-0.174	0.137***	-0.277***
	(0.011)	(0.010)	(0.007)	(0.162)	(0.011)	(0.088)
Vote for the Majority Party in Congress	0.061***	0.447***	0.069**			
	(0.021)	(0.044)	(0.031)			
Vote for the Majority Party in Congress^2	-0.366*	0.865***	0.582***			
	(0.198)	(0.252)	(0.167)			
Vote for the Majority Party in Congress × DCD	-0.417***		0.025			
	(0.057)		(0.032)			
Vote for the Majority Party in Congress^2 × DCD	-0.964**		-0.929***			
	(0.452)		(0.229)			
Vote for the Majority Party in Congress × Labor		-0.036***	-0.006***			
		(0.003)	(0.002)			
Vote for the Majority Party in Congress^2 × Labor		-0.101***	-0.028**			
		(0.016)	(0.012)			
Average Vote for the Majority Party in Congress				0.125	-0.287	-0.856***
				(0.290)	(0.520)	(0.303)
Average Vote for the Majority Party in Congress^2				-0.184	0.582	0.859***
				(0.288)	(0.513)	(0.299)
Average Vote for the Majority Party in Congress × DCD				1.427**		1.163***
				(0.648)		(0.361)
Average Vote for the Majority Party in Congress^2 × DCD				-1.558**		-1.106***
				(0.630)		(0.360)
Average Vote for the Majority Party in Congress × Labor					0.077*	0.061***
					(0.040)	(0.023)
Average Vote for the Majority Party in Congress^2 × Labor					-0.104***	-0.062***
					(0.039)	(0.023)
Seniority	0.007**	0.006**	-0.004*	0.007**	0.007**	-0.004
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
Ways and Means Committee	0.025***	0.023***	0.007	0.025***	0.025***	0.008
	(0.009)	(0.008)	(0.006)	(0.009)	(0.009)	(0.006)
Committee on Foreign Affairs	0.003	0.006	0.006	0.003	0.004	0.005
	(0.008)	(0.008)	(0.005)	(0.008)	(0.008)	(0.005)
Labor	0.033***	0.034***	0.009***	0.033***	0.021**	-0.006
	(0.001)	(0.001)	(0.001)	(0.001)	(0.010)	(0.006)
No High School Degree	0.027***	0.026***	0	0.027***	0.026***	0.0000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
District Unemployment	0.017***	0.019***	0.026***	0.018***	0.019***	0.025***
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
Number of Districts per State	-0.219***	-0.239***	-0.030**	-0.223***	-0.227***	-0.026*
	(0.033)	(0.034)	(0.014)	(0.033)	(0.032)	(0.014)
Lagged District Level of Tariff Protection			0.422***			0.420***
			(0.014)			(0.015)
Constant	-0.836***	-0.845***	-0.229***	-0.869***	-0.846***	-0.012
	(0.016)	(0.017)	(0.011)	(0.069)	(0.129)	(0.074)
R-squared	0.727	0.732	0.839	0.72	0.726	0.84
Number of observations	6794	6794	4578	6800	6800	4584

* p<0.10, ** p<0.05, *** p<0.01; Robust standard errors in parentheses.

FIGURE 5.2 District Support for the Majority Party in Congress and the Marginal Effect of Protectionist Interests on the District-Level of Tariff Protection



Chapter 6

Particularism and the Skill-Bias of Tariff Structure in Democracies

1. Introduction

Why do some countries have trade protection biased more toward skill-intensive industries than others? This chapter examines the political and economic determinants of the structure of tariff protection across democracies. Specifically, it aims to explain the conditions under which governments maintain higher tariff rates for skill-intensive industries rather than unskilled-intensive industries. The latest studies suggest that the skill-bias of tariff protection has a positive association with a country's long-term output growth, because skill-intensive industries produce more positive externalities than unskilled-intensive industries (Nunn and Trefler 2006, 2009). The existing literature, however, has paid more attention to variation in the average level of trade protection across countries rather than varying patterns of trade barriers.

In this chapter, I maintain that variation in the skill-bias of tariff protection across countries depends on two factors: first, a country's factor endowments that determine the median voter's trade policy preferences, and second, the degree of political particularism that affects the responsiveness of representative policymakers to rent-seeking behaviors of special interest groups. Relying on Mayer's (1984) median voter model of trade and its extensions (Milner and Kubota 2005; Tavares 2008; Kono 2008), I maintain that the

skill-bias of tariff protection tends to be higher in developed countries than in less developed countries. As the capital-labor ratio of the median voter (= K/L) increases, the median voter is likely to be less supportive of imports of capital- and skill- intensive goods but more supportive of imports of lower-earning and unskilled-intensive goods. I also argue that the extent of skill-bias of tariff protection is likely to decline, as the degree of political particularism in electoral systems increases. Representative policymakers have a stronger incentive to offer higher tariffs on skilled-intensive industries, when electoral systems moderate the incentives for individual legislators to respond to rent-seeking behaviors of special interest groups. I test my arguments, using data on tariff protection on 29 industrial sectors in 52 democracies from 1988 through 2004.

The remainder of this chapter is organized as follows. In section 2, I briefly review the existing literature on the skill-bias of trade protection. Based on previous research, it generates a set of hypotheses regarding the effects of factor endowments and electoral institutions on the skill-bias of tariff protection. Section 3 describes the variables and indicators used in the statistical analysis. Section 4 reports regression results for my model, and section 5 concludes.

2. Existing Explanations

In their recent work, Nunn and Trefler (2006, 2009) point out that a country's long-term output growth is determined by the structure of tariff protection, not by the average level of tariff protection. Extending Grossman and Helpman's (1994) model for "Protection for Sale," Nunn and Trefler argue that the skill-bias of tariff protection enhances a country's output growth for several reasons. First, lower tariffs on unskilled-intensive industries

increase consumer surplus by reducing the price distortion within the tradable sectors. Second, higher protection for skill-intensive industries provides more positive externalities because it stimulates demands for skilled-labor and therefore promotes the accumulation of human capital. The features of skill-intensive industries, such as complicated production processes and relationship-specific investments also promote institutional and legal environments which enhance long-term growth. Protectionist measures for unskilled-industries, however, result in a slowdown in economic growth by lowering the relative returns to skilled-labor.

Using sectoral data on tariffs and output growth in 59 countries over 25 years, Nunn and Trefler offer convincing evidence that neither the average tariff nor the variance of tariffs across industries is correlated with output growth. Their findings show that countries with higher tariffs on skill-intensive industries grow faster than those with higher tariffs on unskilled-intensive industries. A country's long-term growth has a positive significant association with the skill-bias of tariff protection, that is, the ratio of tariffs in skill-intensive industries to tariffs in unskilled-intensive industries. Interestingly, however, Nunn and Trefler do not clearly specify the political conditions under which governments are more likely to provide relatively higher tariffs for skill-intensive industries than unskilled-intensive industries. They suggest that the skill-bias of tariff protection will be higher in "good institutions" which induce policymakers to put more weight on consumer surplus and future growth rather than on campaign contributions from organized industrial sectors (Nunn and Trefler 2006, p.35).

The issues of the skill-bias of tariff protection have rarely been addressed in the political economy literature on trade policy outcomes. As discussed in greater detail in

the previous chapters, existing research has focused more on clarifying either the impact of group lobbying on the structure of protection within a country or the influence of domestic political institutions on the average level of trade openness at the national level.

There have been a few notable exceptions. Lü, Scheve, and Slaughter (2012) explain why in almost all countries, unskilled-intensive industries tend to receive higher tariff protection than skill-intensive industries. They point out that protection is biased toward lower-earning and unskilled-intensive industries even in developing countries, in which skill-intensive industries are the relatively scarce factors of production and need more compensation through protectionist measures. Based on individual policy opinion in the U.S. and China, Lü, Scheve, and Slaughter find that individual voters' aversion to inequality induces lower-earning and unskilled-intensive industries to become the frequent recipients for trade protection. Consequently, their findings suggest that varying patterns of trade protection across countries might be explained by the structure of sector-specific trade policy preferences of individuals.

On the other hand, Milner and Mukherjee (2009) propose that democratization increases the skill-bias of tariff protection in developing countries. Relying on the Heckscher-Ohlin model and the Stolper-Samuelson theorem, they start with the assumption that sectoral trade policy preferences of domestic interests are determined by their factor endowments. Because of the relative abundance of low-skilled labor over capital and skilled labor in developing countries, low-skilled workers in developing countries are intensively employed in labor-intensive, exporting sectors producing low-skilled goods. Skilled workers, however, would seek more compensation from

protectionist measures, as they need to compete with skill-intensive import competing goods.

Here, Milner and Mukherjee argue that democratization, by increasing political pressures from both unskilled and skilled workers, generates the skill-bias in trade barriers in developing countries. Democratization reduces the relative endowments of capital of the median voter, as it extends more political rights to citizens. The shift of political power from wealthier to poorer individuals induces democratic leaders to satisfy the trade policy preferences of the unskilled median voter by lowering trade barriers on unskilled goods. However, democracy also provides policymakers with a strong incentive to offer higher levels of protection for skill-intensive industries. As democratization increases electoral competition, policymakers become more responsive to protectionist demands from skill-intensive, import-competing sectors that provide campaign contributions.

While insightful, Milner and Mukherjee's proposition regarding the trade policy preference of the median voter seems to require further elaboration. As they pointed out, micro-level studies of trade policy preferences show that in developing countries, unskilled-workers are more pro-trade than skilled workers (Mayda and Rodrik 2005; Mayda, O'Rourke, and Sinnott 2007). Nevertheless, the pro-trade attitude of the median voter in developing countries does not necessarily mean that the low-skilled median voter prefers to set lower tariffs barriers on unskilled import-competing goods.

Moreover, it should be noted that the existing literature provides competing predictions about the sector-specific trade policy preferences of the median voter. For instance, Kono (2008) maintains that democratization leads the median voter to prefer

lower tariffs on capital- and skill-intensive goods but higher tariffs on labor-intensive goods. Based on Mayer's (1984) median voter theorem of international trade, Kono assumes that the median voter's trade policy preferences are determined by his relative factor endowments of capital and labor, as well as by factor endowments of trade partners. The median voter relatively well-endowed with capital compared to the national average would oppose imports of capital- and skill-intensive goods but support imports of labor-intensive goods. In contrast, the median voter who is less endowed with capital compared to the national mean is expected to support imports of capital- and skill-intensive goods but oppose imports of labor-intensive, low-skilled goods. In this vein, Kono argues that the latter tendency becomes more prevalent during democratization because the expansion of political rights makes the median voter more capital-poor but labor-abundant.

In this vein, I extend the findings of previous studies by explaining variations in the skill-bias of tariff protection across democracies. I maintain that the extent to which tariff protection is biased toward skilled-intensive industries is explained by the interaction between two factors: factor endowments and political particularism in electoral institutions. Relying on Mayer's (1984) median voter theorem of international trade and its extensions (Dutt and Mitra 2002; Milner and Kubota 2005; Kono 2008; Tavares 2008), I maintain that factor endowments affect the sector-specific trade policy preferences of the median voter. Specifically, I hypothesize that the median voter's demands for protectionist measures for unskilled-intensive industries would decrease, as a country becomes more capital abundant. In contrast, the median voter in a labor-abundant country prefers to maintain higher protection against low-skilled intensive

goods. The median voter in a capital-abundant country is relatively better endowed with capital than the median voter in a labor-abundant country. If Kono's (2008) argument is correct, the extent to which the median voter prefers higher trade barriers on capital- and skill-intensive goods, but lower trade barriers on labor-intensive, low-skilled goods would increase, as a country becomes relatively more capital-abundant and labor-scarce. Therefore, we can expect that an increase in the relative abundance of capital compared to labor of the median voter (= K/L) would have a positive association with the skill-bias of tariff protection. The median voter in a capital abundant country is more likely to prefer relatively higher tariffs on capital- and skill-intensive goods but lower tariffs on labor-intensive, low-skilled goods than the median voter in a labor abundant country.

Secondly, I also hypothesize that political particularism conditions the degree to which the representative policymakers extract campaign contributions from industries seeking protectionist measures. Nunn and Trefler (2006) maintain that tariff protection is more likely to be biased toward skill-intensive industries rather than unskilled-intensive ones, when representative policy makers effectively control rent-seeking behaviors of special industry groups. If an increase in the skill-bias of trade protection yields more consumer surplus and enhances long-term growth, we can expect that the skill-bias of trade protection will be higher in electoral systems in which policymakers have more incentives to offer public goods to the interests of broad, national constituencies rather than to those of narrow, particular constituencies.

The existing literature on comparative political institutions suggests that the extent to which elected representatives respond to particular demands of domestic interests depends on the institutional features of electoral systems. One of the most

common arguments is that proportional representation (PR) system are likely to offers more public goods for broad, national interests than single-member district with plurality (SMDP) systems. Researchers point to several reasons why SMDP systems are more likely to favor geographically-targeted projects rather than broad, redistributive programs. In most cases, SMDP legislators generally face stiff electoral competition as they are directly voted by local constituencies in many small districts. Thus compared to PR legislators chosen by party leaders in large districts, SMDP legislators are more vulnerable to particularistic local demands (Rogowski 1987; Mansfield and Busch 1995; Milessi-Ferretti, Perotti, and Rostagno. 2002; Grossman and Helpman 2005), and hence more likely to engage in universal logrolling (Weingast, Shepsle and Johnson 1981).

Besides, party leaders in SMDP systems also tend to prefer locally-targeted programs rather than broad redistributive programs. To fulfill the requirement of a majority winner, parties should receive 50% plus one vote in 50% plus 1 district. In SMDP systems, therefore, parties are more likely to concentrate distributive benefits on some key marginal districts containing political moderates and swing voters, which could be easily swayed by the promise of economic benefits (Persson and Tabellini 1999). In contrast, multi-party coalitions in PR systems are more likely to generate redistributive tax policies through legislative bargaining in order to gain electoral support from broad, national coalitions of voters (Austen-Smith 2000; Verardi 2003; Roland Verardi 2003; Iversen and Soskice 2004).

Instead of using a majoritarian-proportional dichotomy, another line of research analyzes how various components of electoral institutions simultaneously affect particularistic incentives of elected officials in policy decisions. Cox (1990) and Myerson

(1993) suggest that large electoral districts increase the incentives for individual legislators to serve narrow particularistic interests rather than the median voter's preference, since large district magnitude increases the number of candidates entering the election and also widens ideological distance between candidates. In a similar vein, Carey and Shugart (1995) point out that if candidates should compete against other candidates from the same party, large district magnitude still offers strong incentives for legislators to cultivate personal votes by providing locally-targeted projects. To capture the extent to which electoral institutions generate personal vote-seeking incentives, Carey and Shugart (1995) develop the Particularism Index in which electoral systems are ranked according to the following three variables: (1) "Ballot" which indicates the extent of party leaders' control over candidate nomination and ballot rank; (2) "Pool" which measures the extent to which candidates depend on the reputation of their parties or co-partisans; (3) "Vote" which specifies the number and nature of votes that electorates cast. Each variable is coded as 0, 1, and 2, and 2 denotes electoral systems where candidates have the strongest incentive to offer pork to cultivate personal votes.

The Carey-Shugart's Index of Particularism suggests that legislators are likely to offer policies aimed at national, broad constituencies rather than particularistic local constituencies when the following conditions are met: (1) parties completely control candidates' access to and ranks on ballots; (2) political careers of individual candidates are determined by the electoral success of their parties or co-partisans; and (3) the electorate cast a single vote for a political party, not individual candidates. However, the effect of district magnitude on personal-vote seeking activities remains indeterminate in their coding scheme. Carey and Shugart expect that in electoral systems where the

reputation of individual candidates is more important than party names, high district magnitude enhances intra-party competition, and also induces legislators to build a personal reputation through particularism in public policies. If party labels overshadow candidate reputation in elections, low district magnitude generates particularistic policies for a small sector of population. This is because when district magnitude is small, geographical constituencies tend to have homogeneous policy preferences, and parties are also likely to maximize the chances of winning office by selecting candidates who have stable linkages to the electorate.

The main point of the literature on political institutions and particularism is that electoral systems affect the types of constituencies that representative policymakers are motivated to target to maximize their chance of winning power. If the skill-bias of tariff protection has the features of public goods that benefit broad, national constituencies, we could expect that political particularism tends to reduce the ratio of tariffs on skill-intensive goods over tariffs on unskilled-intensive goods. When applied to the Carey-Shugart classification scheme, this means that the skill-bias of tariff protection has a negative association with elements of electoral systems that strengthen the incentives of legislators to seek personal votes.

3. Empirical Research Design

This section sets out the model I use to explain variations in the skill-bias of tariff structure in 58 democracies from 1989 through 2004. The dependent variable in my model is the extent to which tariff protection is biased toward skill-intensive industries at the national level. Our independent variables include a country's factor endowments, the

degree of political particularism in electoral systems, and a set of control variables related to trade policy decisions in democracies.

3.1. Dependent Variable

To measure the skill-bias of tariff protection, I collect industry-level data from the World Bank's Trade, Production, and Protection (TPP) Database (Nicita and Olarreaga 2006). The TPP database offers information on trade flows, output, and tariff and non-tariff protection for 28 manufacturing sectors at the 3-digit International Standard Industrial Classification (ISIC) level.

Based on Nunn and Trefler (2006), I measure the extent to which tariff protection is biased toward skill-intensive industries for a given country, as shown in equation (1) below.

$$\textit{Skill-Bias of Tariff Protection}_{it} = \tau_i^{skill} - \tau_i^{unskill} \tag{1}$$

Here, τ_c^{skill} and $\tau_c^{unskill}$ are defined as the output-weighted average tariffs for skill-intensive industries and for unskilled-intensive industries in country *i*, respectively. To classify industries into skill-intensive and unskilled-intensive industries, I consider the ratio of skilled workers and unskilled workers for industries which are proposed in Nunn and Trefler (2006) and Milner and Mukherjee (2009), respectively. These studies define workers with more than 12 years of schooling as skilled workers (= S_i) and all other workers as unskilled (= L_i). Then they compute the ratio of skilled workers over unskilled

workers (=S_i / L_i) to determine a cutoff point dividing industries into skilled and unskilled groups. Using production data for 17 industries in the United States in 1972, Nunn and Trefler consider changes in the S/L ratio across sectors to determine low (=0.27) and high (=0.59) cutoff points, respectively. On the other hand, Milner and Mukherjee (2009) compute the S/L ratio for 29 industries from the latest version of the UNIDO Industrial Statistics Database 2008. They define industries for which the S/L ratio is greater than 0.39 as skilled industries and all other industries as low skilled groups.

To compute the skill-bias of tariff protection from the TPP database, I consider the ranking order of skill-industries suggested in both Nunn and Trefler (2006) and Milner and Mukherjee (2009), as presented in Tables 6.1 and 6.2. I mainly use the high cutoff point (i.e. $S_i / L_i \geq 0.59$) to generate the difference in output-weighted tariff rates for skilled and unskilled industries, although considering other cutoff values as a robustness check.

[Insert Tables 6.1 and 6.2 here]

3.2. Independent Variables

The first independent variable is factor endowments that capture the effects of capital accumulation on the skill-bias of protection. As discussed above, I hypothesize that the national capital-labor ratio affects the sector specific trade policy preferences of the median voter. Following Tavares (2008), I use the natural logarithm of GDP per capita as a proxy for the relative abundance of capital to labor of the median voter. While capital stock per capita could be considered another indicator of capital accumulation (Nehru and

Dhareshwar 1993; Alvarez, Cheibub, Limongi and Przeworski 1996), the limited availability of this variable significantly reduces the sample size in my analysis.[38]

Our second independent variable is the degree of political particularism in electoral systems. I use a set of indicators from the Database of Particularism to examine the relationship between the incentives for individual legislators to build personal support and the skill-bias of tariff protection (Wallack, Gaviria, Panizza, and Stein 2003; Johnson and Wallack 2007). [39] As in the Index of Particularism by Carey and Shugart (1995), the Database of Particularism begins from the assumption that the extent to which electoral systems promote personal-vote seeking incentives of legislators is mainly determined by three components: *Ballot*, *Pool*, and *Vote*. However, there are some differences in their coding schemes. Carey and Shugart maintain that electoral districts in SMDP systems operate almost like those in closed-list PR systems. In coding *Ballot*, *Pool*, and *Vote*, therefore, they give both SMDP and list-PR systems 0 values which means that legislators have the least incentive to seek personal vote base at the local district level.

In contrast, Wallack et al. maintain that legislators in SMDP systems have stronger incentives to build a personal base of support than those in list-PR systems, and make a distinction between these two systems as follows. In coding *Ballot*, they code SMDP systems as equal to 1, which indicates that parties mostly control candidate nomination but voters still exert some effects on the choice of political parties. Only closed-list PR systems and one-party systems are coded as 0. On the scale of *Pool*, they code SMDP systems as equal to 2 because candidates in SMDP systems do not usually

[38] The World Bank's TPP database offers sectoral data on protection for 58 democracies from 1989 through 2004, whereas capital stock per capita in the ACLP Political Database is only available for the period from 1987 through 1990.

[39] Johnson and Wallack (2007) have updated and expanded Wallack et al. (2003)'s Database of Political Particularism. There are no significant differences in their coding schemes.

rely on electoral support for other candidates. In terms of *Vote*, they also assign 2 to SMDP systems in which electorates cast a single vote only for candidates, not for parties.

I employ the following six variables from the Database of Political Particularism as follows. I evaluate the effects of *Ballot*, *Pool*, and *Vote* to examine the ways in which certain elements of electoral institutions affect the skill-bias of tariff protection, respectively. I also generate the variable *Particularism* which is the mean of *Ballot*, *Pool*, and *Vote* and recode them following Hicken and Simmons (2007).[40] In doing so, I examine the extent to which the general tendency of particularism in electoral systems affects patterns of trade protection across countries. Additionally, I consider two other variables in the Database of Political Particularism that rank electoral systems according to the degree of personal vote incentives across different tiers. The *Pers_Rank* and *Dom_Rank* variables indicate the extent to which legislators to seek a personal vote in their more personalistic tier and in their most dominant tier, respectively. The value of these variables range from 1 to 13, based on the Carey-Shugart ranking scheme. Large positive values in all of these indicators mean that electoral systems induce legislators to build personal support by responding to rent-seeking behavior of special interest groups. If the skill-bias of tariff protection is higher in systems where elected officials have strong incentives to offer broad-based redistributive programs for a national constituency, but lower in systems where elected representatives are easily captured by particularistic interests, the coefficients for all five indicators should be negatively signed and significant.

[40] In Hicken and Simmons (2007), the values of Parindex below 0.5 are recoded as 0, values between 0.5 and 1.5 are coded as 1, and values above 1.5 are coded as equal to 2.

My analysis also includes the following control variables to gauge the effects of socioeconomic factors on patterns of trade protection: the natural logarithm of population, trade, GDP per capita growth, the import penetration of skill-intensive industries, the import penetration of unskilled-intensive industries, and a dummy variable indicating whether a country is a member of the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO). To control for the effect of trade openness, the *Trade* variable is measured as the sum of exports and imports of goods and services measured as a share of GDP. If integration into international markets increases the skill-bias of protection, the coefficients for *Trade* would be positively signed. The import penetration of skill-intensive industries ($S/L \geq 0.59$) and unskilled-intensive industries ($S/L < 0.59$) capture the effects of sector-specific trade policy preferences of domestic constituencies. Since high import penetration increase protectionist demands of domestic groups, we might expect that the skill-bias of tariff protection would be increased by the import penetration of skilled-industries and decreased by the import-penetration of unskilled industries. Data on socioeconomic variables are collected from the latest version of the World Development Indicators by the World Bank (World Bank 2011).[41]

Additionally, I consider the effects of regime types in some specifications. Following the convention in the literature, I use the Polity score from the Polity IV Project (Marshall and Jaggers 2010) to control for the effect of the degree of democracy on the skill-bias of tariff protection.[42] The Polity IV Project differentiates regime types, considering the following institutional features: competitiveness and openness of executive recruitment, constraint on chief executive, and competitiveness of political

[41] Data are available at the website of the World Development Indicator by World Bank (http://data.worldbank.org/indicator).
[42] For more details, see the Polity IV project website: http://www.systemicpeace.org/polity/polity4.htm

participation. To indicate the degree of democracy for a given country in each year, the Polity IV dataset offers the *Polity* score, which is a composite regime index ranging from -10 (for a highly autocratic regime) to +10 (for a highly democratic regime). It is generally assumed that the Polity scores below zero mean autocratic regimes, whereas the *Polity* scores between +1 to +6, and +7 to +10 indicate partial- and full- democracies, respectively. In this chapter, I focus on the skill-bias of tariff protection in partial and full democracies, respectively.

3.3. Model

To examine the relationship between the aforementioned variables and the skill-bias of tariff protection, I estimate equation (2) below.

$$
\begin{aligned}
&\textit{Skill-Bias of Tariff Protection}_{it} \\
&= \beta_0 + \beta_1 \, \textit{log GDPpc}_{it-1} \\
&+ \beta_2 \, \textit{Political Particularism}_{it-1} \\
&+ \beta_3 \, \textit{log GDPpc} \times \textit{Political Particularism}_{it-1} \\
&+ \beta_4 \, \textit{log Population}_{\,it-1} + \beta_5 \, \textit{GATT\_WTO}_{it-1} \\
&+ \beta_6 \, \textit{Trade}_{it-1} + \beta_7 \, \textit{GDPpc Growth}_{it-1} \\
&+ \beta_6 \, \textit{Import Penetration Skilled}_{\,it-1} + \beta_7 \, \textit{Import Penetration Unskilled}_{it-1} + \varepsilon_i
\end{aligned}
\qquad (2)
$$

As explained above, the dependent variable in my model is the skill-bias of tariff protection measured as the difference between the output-weighted average tariff for skill-intensive industries ($S/L \geq 0.59$) and unskilled-intensive industries ($S/L < 0.59$). Large positive values in the skill-bias of tariff protection indicate that governments offer higher levels of protection to skilled industries. Thus if the coefficients of independent variables are negatively signed and significant, it means that they tend to increase the levels of protection for unskilled-intensive industries.

Equation (2) evaluates the extent to which factor endowments and political particularism explain variation in the skill-bias of tariff protection across countries. In equation (2), I also include a multiplicative interaction term between factor endowments and political particularism to estimates their marginal effects on the dependent variable. If capital accumulation has a positive association with the skill-bias of tariff protection, the coefficient for the log of GDP per capita ($= \beta_1$) should be positively signed and significant. Also, if political particularism induces policymakers to provide higher tariff rates on unskilled industries rather than skilled ones, the estimated coefficients for all indicators of political particularism should have negative significant coefficients.

4. Empirical Findings

The model in equation (2) is tested for pooled cross-sectional and time-series data on 52 democracies for the period from 1989 through 2004 for which the TPP database allows us to examine variation in the skill-bias of tariff protection across countries. Here I do not consider countries that have polity scores less than 6, as I assume that electoral institutions have substantial effects on policy choice in consolidated democracies.

Table 6.3 reports the result of estimating equation (2), using the skill-bias of tariff structure based on the rank-order of the skill-intensity (= S_i /L_i) for 21 industries in Nunn and Trefler (2006) and for 29 industries in Milner and Mukherjee (2009), respectively. In Table 6.3, I estimate equation (2) using both random and fixed-country effects. Columns 1 and 2 indicate that the Hausman p-value (=0.0004) rejects the null hypothesis that differences in the estimated coefficients are not systematic. Thus, while the results in columns 1 and 2 are pretty similar, fixed-effects estimators are preferred over random-effects estimators. In columns 3 and 4, however, the Hausman p-value (=.37) suggests no correlation between unobserved country-specific effects and independent variables.

[Insert Table 6.3 here]

Let us first consider the effects of Political Particularism in the skill-bias of tariff protection. In the previous section, I hypothesized that the skill-bias of tariff protection would be higher in systems where elected officials have strong incentives to pursue trade policy for a broad, national constituency as a whole, given the positive externalities generated from skill-intensive industries. Tariff protection is likely to be targeted to unskilled-industries rather than to skilled industries, if elected officials have strong political incentives to direct targetable benefits toward narrow, particularistic constituencies at the local levels.

The results in Table 6.3 provide convincing evidence that electoral systems exert significant influence on the skill-bias of tariff protection, because they affect the degree of personal vote seeking incentives of representative policymakers. In all columns of

Table 6.3, the estimated coefficients for *Parindex* remain negative and significant. As previously mentioned, large positive values in the dependent variable represent tariff protection biased toward skill-intensive industries. The negative significant coefficients for *Parindex*, therefore, suggest that the skill-bias of tariff protection is likely to be lower in candidate-centered electoral systems in which policymakers are more likely to cater to special interest lobby groups. For instance, column 2 shows that if the value of *Parindex* increases from 0 to 1, then the skill-bias of tariff structure will decrease by 8.225 points. The remaining columns also demonstrate that the skill-bias of tariff protection tends to decline when electoral institutions create the incentives for legislators to rely on their personal reputation rather than electoral success of parties.

[Insert Table 6.4 here]

In Table 6.4, I evaluate the effects of different indicators of political particularism on the skill-bias of tariff protection. Columns 1 and 2 demonstrate that the coefficients for *Dom_Rank* and *Pers_Rank* are both negatively signed and significant. The *Dom_Rank* and *Pers_Rank* variables group countries into 13 categories according to the degree of personal vote incentives in the most dominant tier and more personalistic tier in a given country, respectively. Large positive values indicate strong particularism in electoral systems. The negative significant coefficients for Dom_Rank and Pers_Rank thus suggest that political particularism reduces the skill-bias of tariff protection, even if we consider personal vote seeking incentives in multi-tier systems. In columns 3-5, I examine the individual effects of *Ballot*, *Vote*, and *Pool* on the dependent variable. In

doing so, I investigate the degree to which individual elements of electoral institutions are related to variation in the structure of trade barriers. While the coefficients for all three indicators are all negatively signed, only the *Pool* variable has a significant association with the skill-bias of tariff protection. These results suggest that the more individual candidates rely on their individual reputation rather than the electoral success of their co-partisans, the lower the level of tariff protection for skilled-intensive industries.

On the other hand, I do not find confirming evidence for the effects of factor endowments on the skill-bias of tariff protection. As discussed above, I hypothesized that capital accumulation induces governments to provide higher tariff protection to skill-intensive industries rather than to unskilled-intensive industries. I assume that the median voter in developed, capital-abundant countries is likely to be pro-trade about imports of labor-intensive, unskilled goods, but prefers protectionist measures against imports of capital- and skill- intensive goods. In Tables 6.3 and 6.4, the coefficients for the log of GDP per capita are positively signed but insignificant in most specifications. Interestingly, however, the findings in Tables 6.3 and 6.4 also demonstrate that the coefficients for the multiplicative interaction terms between the indicators of particularism and the log of GDP per capita are positive and statistically significant. The capita-labor ratio at the national level moderates the relationship between political particularism in electoral systems and the skill-bias of tariff protection. These results offer consistent evidence that capital accumulation reduces the degree to which personal vote incentives reduce the skill-bias of protection.

I check the robustness of my findings using different samples. Table 6.5 presents the estimation results for equation (2) for 58 countries which have the Polity score greater

than 0. As shown in previous tables, the findings in Table 6.5 clearly demonstrate that the skill-bias of tariff protection declines, as electoral systems provide representative policymakers with more incentives to build personal support bases from particular constituencies. As shown earlier, the estimated coefficients for the *Parindex* and *Dom_Rank* variables still remain positive and significant, even if we control for the effect of the degree of democracy and country-specific fixed effects. The coefficient for their interaction term with the logarithm of GDP per capita also indicate that the extent to which political particularism reduce the skill-bias of tariff protection will be lower in capital-abundant countries than in labor-abundant countries. In Table 5.6, it should be also noted that the logarithm of GDP per capita has a significant, positive association with the dependent variable, once we include partial democracies to our sample. This finding challenges the literature which maintains that the unskilled median voter in developing countries prefers to set lower trade barriers against imports of unskilled goods (Milner and Mukherjee 2009).

[Insert Tables 6.5 and 6.6 here]

In Table 6.6, I consider three different measures of the skill-bias of tariff protection, considering three different cutoff values in the skill-intensity of industries ($=S_i/L_i$). As explained above, I define industries with the S/L ratio greater than 0.59 as skilled industries and all others with unskilled industries. Following Nunn and Trefler (2006) and Milner and Mukherjee (2009), I compute the skill-bias of tariff protection again, using low (=0.25) and medium (0.39) cutoff values. Then I re-estimate equation

(2). The findings in Table 6.6 suggest that the logarithm of GDP per capita consistently exerts a significant, positive effect on the skill-bias of tariff structure across different specifications of cutoff values. If we more loosely define the meaning of skilled-industries, however, the coefficients for institutional variables do not retain their statistical significance. As shown in columns 2 and 3, neither regime types nor political particularism in electoral institutions does not have a significant association with the structure of tariff protection, if we expand the scope of skilled-industries.

5. Conclusion

How do we explain varying patterns of trade protection across countries? Why do some countries target higher levels of protection to skill-intensive industries rather than unskilled-intensive industries?

This chapter answers these questions by investigating the political and economic determinants of the skill-bias of tariff protection across democracies. Using a time-series cross sectional data on 29 industries in 52 democracies from 1989 through 2004, it examines the relationship between factor endowments, electoral institutions, and the structure of tariff protection. Relying on the literature on international trade and political institutions, I maintain that factor endowments and personal vote incentives in electoral systems interactively determine the skill-bias of tariff protection. While factor endowments affect the sector-specific trade policy preference of the median voter, electoral systems determine the extent to which policymakers favor the collective interests of broad, national constituencies rather than those of narrow, particularistic groups. My analysis provides two key findings: first, the skill-bias of tariff structure is

higher in electoral systems which effectively control the incentives of policymakers to build personal support bases; second, the extent to which political particularism in electoral systems reduces the skill-bias of tariff protection declines, as the capital-labor ratio at the national level increases. These results suggest that the structure of trade protection is determined not only by the economic characteristics of domestic constituencies that shape their trade policy preferences, but also by institutional arrangements of domestic political systems that affect the incentives of representative policymakers in trade policy decisions.

TABLE 6.1 Skill-Intensity of Industries in Nuun and Trefler (2006)

ISIC Revision 2	Industry Description	S_i / L_i	Δ% in skill
323	Leather & Travel Goods	0.079	
331	Wood Products	0.128	62.03
322	Textile & Clothing	0.132	3.13
321	Textile & Clothing	0.132	0.00
332	Furniture	0.154	16.67
372	Non-ferrous metals	0.184	19.48
362	Glass and glass products	0.201	9.24
361	Pottery, china and earthenware	0.201	0.00
369	Other non-metallic mineral products	0.201	0.00
	Low cutoff point		
371	Iron & Steel	0.266	32.34
324	Footwear	0.315	18.42
	Medium cutoff point		
341	Paper products	0.397	26.03
382	Non-electric machinery	0.414	4.28
355	Rubber products	0.462	11.59
384	Transport equipment	0.466	0.87
	High cutoff point		
354	Manufacture of miscellaneous products of petroleum and coal	0.593	27.25
353	Petroleum refineries	0.593	0.00
383	Electric Machinery	0.617	4.05
352	Manufacture of other chemical products	0.718	16.37
351	Manufactured fertilizers/chemicals	0.731	1.81
385	Professional Equipment	0.797	9.03

Notes: The skill-intensity in Nuun and Trefler (2006, 2009) is generated from the ratio of skilled and unskilled workers for 17 industries in the United States in 1972. Industry code in Nuun and Trefler are converted to ISIC Revision 2 for consistency with sectoral data on tariff rates in the World Bank's TPP database.

TABLE 6.2 Skill-Intensity of Industries in Milner and Mukherjee (2009)

ISIC Revision 2	Industry Description	S_i / L_i	Δ% in skill
314	Tobacco	0.075	
323	Leather & Travel Goods	0.091	21.33
332	Furniture	0.125	37.36
313	Beverages	0.126	0.80
331	Wood Products	0.138	9.52
361	Pottery, china and earthenware	0.14	1.45
311	Food Products	0.164	0.00
372	Non-ferrous metals	0.176	7.32
322	Textile & Clothing	0.193	9.66
321	Textile & Clothing	0.193	0.00
369	Other non-metallic mineral products	0.205	6.22
324	Footwear	0.216	5.37
362	Glass and glass products	0.216	0.00
	Low cutoff point		
356	Plastic	0.258	19.44
371	Iron & Steel	0.283	9.69
355	Rubber products	0.352	24.38
	Medium cutoff point		
341	Paper Products	0.391	11.08
342	Printing, Publishing	0.397	1.53
381	Fabricated Metal Products	0.404	1.76
382	Non-electric machinery	0.426	5.45
384	Transport Equipment	0.465	9.15
	High cutoff point		
390	Other manufactured product	0.587	26.24
351	Manufactured fertilizers/chemicals	0.592	0.85
383	Electric Machinery	0.611	3.21
353	Petroleum refineries	0.63	3.11
354	Manufacture of miscellaneous products of petroleum and coal	0.63	0.00
385	Professional Equipment	0.726	15.24

Notes: The skill-intensity in Milner and Kubota (2009) is based on the Industrial Statistics Database (2008) by the UNIDO.

TABLE 6.3 The Effects of Factor Endowments and Political Particularism on the Skill Bias of Tariff Protection in Democracies (with polity score > 6)

	Dep. Variable = Skill Bias of Tariff Structure			
	Nuun and Trefler		Milner and Mukherjee	
	RE	FE	RE	FE
Independent Variables	(1)	(2)	(3)	(4)
Parindex	-7.113***	-8.225***	-13.245***	-20.283***
	(2.678)	(2.954)	(4.767)	(6.444)
Log GDPpc	0.903	-0.024	2.226***	2.339
	(0.550)	(1.083)	(0.844)	(2.357)
Parindex × Log GDPpc	0.810***	0.938***	1.511***	2.480***
	(0.313)	(0.347)	(0.553)	(0.756)
Log Population	0.491	15.954***	0.795	27.115***
	(0.381)	(2.908)	(0.528)	(6.281)
GATT/WTO	-0.262	-0.573	-0.438	-0.838
	(0.562)	(0.549)	(1.189)	(1.197)
Trade Flows	0.015*	-0.004	0.016	-0.029
	(0.008)	(0.010)	(0.015)	(0.021)
GDPpc growth	-0.013	0.031	0.057	0.136**
	(0.026)	(0.026)	(0.056)	(0.056)
Import Penetration of Skilled Industries	0.38	-0.538	3.512**	1.033
	(0.709)	(0.694)	(1.486)	(1.512)
Import Penetration of Unskilled Industries	-0.145	-0.345	-0.586	-1.479
	(0.759)	(0.731)	(1.612)	(1.596)
Constant	-18.700**	-263.19***	-40.862***	-473.18***
	(7.781)	(43.208)	(11.651)	(93.364)
R-squared	0.111	0.224	0.381	0.247
Observations	311	311	312	312
Hausman Test	0.004		0.377	

* p<0.10, ** p<0.05, *** p<0.01; Standard errors in parentheses. Country-fixed effects are included in columns 2 and 4.

TABLE 6.4 Different Indicators of Political Particularism and the Skill Bias of Tariff Protection in Democracies (with polity score > 6)

	Dep. Variable = Skill Bias of Tariff Structure				
Independent Variables	(1)	(2)	(3)	(4)	(5)
Dom_Rank	-4.008***				
	(1.207)				
Log GDPpc	2.458	2.792	3.223	2.903	3.669
	(2.405)	(2.449)	(2.507)	(2.275)	(2.513)
Dom_Rank × Log GDPpc	0.428***				
	(0.132)				
Pers_Rank		-2.704**			
		(1.210)			
Pers_Rank × Log GDPpc		0.329**			
		(0.134)			
Ballot			-11.443		
			(8.649)		
Ballot × Log GDPpc			1.347		
			(0.899)		
Pool				-19.15***	
				(5.730)	
Pool × Log GDPpc				2.156***	
				(0.627)	
Vote					-12.719
					(9.929)
Vote × Log GDPpc					1.34
					(1.044)
Log Population	30.130***	28.486***	27.023***	30.302***	28.380***
	(6.307)	(6.408)	(6.255)	(6.193)	(6.423)
GATT/WTO	-0.968	-1.011	-0.972	-0.86	-0.931
	(1.220)	(1.226)	(1.212)	(1.194)	(1.218)
Trade Flows	-0.036*	-0.034	-0.029	-0.037*	-0.028
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
GDPpc growth	0.143**	0.150**	0.141**	0.140**	0.132**
	(0.058)	(0.059)	(0.058)	(0.056)	(0.058)
Import Penetration of Skilled Industries	1.743	0.991	0.655	1.906	0.865
	(1.506)	(1.557)	(1.527)	(1.512)	(1.529)
Import Penetration of Unskilled Industries	-1.735	-1.162	-1.042	-1.497	-1.136
	(1.627)	(1.632)	(1.610)	(1.590)	(1.624)
R-squared	0.247	0.239	0.226	0.25	0.219
Observations	300	300	312	312	312

* p<0.10, ** p<0.05, *** p<0.01; Standard errors in parentheses. Country-fixed effects are included.

TABLE 6.5 The Effects of Regimes Types, Factor Endowments and Political Particularism on the Skill Bias of Tariff Protection in Democracies (with polity score > 0)

	Dep. Variable = Skill Bias of Tariff Structure					
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
Polity2	0.436	0.421	0.431	0.411	0.399	0.397
	(0.392)	(0.429)	(0.401)	(0.395)	(0.394)	(0.395)
Parindex2	-15.75**					
	(6.814)					
Parindex2 × Log GDPpc	1.99**					
	(0.809)					
Dom_Rank		-2.944**				
		(1.276)				
Dom_Rank × Log GDPpc		0.313**				
		(0.140)				
Pers_Rank			-1.612			
			(1.245)			
Pers_Rank × Log GDPpc			0.21			
			(0.139)			
Ballot				-7.816		
				(8.945)		
Ballot × Log GDPpc				0.967		
				(0.935)		
Pool					-9.365	
					(5.847)	
Pool × Log GDPpc					1.095*	
					(0.645)	
Vote						-9.605
						(10.309)
Vote × Log GDPpc						1.087
						(1.094)
Log GDPpc	5.757**	7.063***	6.481***	6.516***	6.665***	6.800***
	(2.376)	(2.563)	(2.451)	(2.504)	(2.321)	(2.517)
Log Population	23.24***	26.12***	24.24***	23.73***	25.5***	24.7***
	(6.502)	(6.588)	(6.611)	(6.424)	(6.433)	(6.599)
GATT/WTO	-1.388	-1.696	-1.523	-1.472	-1.467	-1.453
	(1.304)	(1.356)	(1.335)	(1.314)	(1.312)	(1.317)
Trade Flows	-0.037	-0.049**	-0.040*	-0.036	-0.041*	-0.035
	(0.023)	(0.025)	(0.023)	(0.023)	(0.023)	(0.023)
GDPpc growth	0.110*	0.114*	0.118**	0.113**	0.117**	0.104*
	(0.056)	(0.065)	(0.058)	(0.057)	(0.057)	(0.057)
Import Penetration of Skilled Industries	0.387	0.491	0.377	0.353	0.426	0.371
	(0.516)	(0.532)	(0.528)	(0.519)	(0.520)	(0.521)
Import Penetration of Unskilled Industries	1.29	1.096	1.65	1.619	1.496	1.56
	(1.739)	(1.791)	(1.776)	(1.745)	(1.746)	(1.756)
Constant	-449.5***	-504.1***	-470.8***	-462.9***	-492.9***	-481***
	(96.826)	(98.767)	(98.582)	(99.075)	(96.764)	(96.989)
R-squared	0.253	0.25	0.247	0.241	0.243	0.237
Observations	328	311	316	328	328	328

* p<0.10, ** p<0.05, *** p<0.01; Standard errors in parentheses. Country-fixed effects are included.

TABLE 6.6 The Effects of Regimes Types, Factor Endowments and Political Particularism on the Skill Bias of Tariff Protection with Different Cutoff Values

	Dep. Variable = Skill Bias of Tariff Structure		
	S/L ≥ 0.59	S/L ≥ 0.39	S/L ≥ 0.25
Independent Variables	(1)	(2)	(3)
Polity2	0.436	0.351	-0.073
	(0.392)	(0.312)	(0.301)
Parindex	-15.750**	-6.006	1.648
	(6.814)	(5.434)	(5.229)
Log GDPpc	5.757**	3.603*	3.106*
	(2.376)	(1.895)	(1.823)
Parindex × Log GDPpc	1.990**	0.829	-0.002
	(0.809)	(0.645)	(0.621)
Log Population	23.243***	9.951*	-6.019
	(6.502)	(5.185)	(4.989)
GATT/WTO	-1.388	-0.841	-0.168
	(1.304)	(1.040)	(1.001)
Trade Flows	-0.037	-0.026	-0.001
	(0.023)	(0.018)	(0.017)
GDPpc growth	0.110*	0.112**	0.078*
	(0.056)	(0.045)	(0.043)
Import Penetration of Skilled Industries	0.387	0.173	0.011
	(0.516)	(0.412)	(0.396)
Import Penetration of Unskilled Industries	1.29	0.233	-0.343
	(1.739)	(1.387)	(1.335)
Constant	-449.489***	-204.355**	70.104
	(98.767)	(78.767)	(75.792)
R-squared	0.253	0.132	0.046
Observations	328	328	328

* p<0.10, ** p<0.05, *** p<0.01; Standard errors in parentheses. Country-fixed effects are included.

Chapter 7

Conclusion: Moving Forward

This dissertation addresses the following questions regarding trade policy in democracies: How do we explain varying patterns of trade protection within and across countries? How do representative policy-makers choose the recipients of protectionist measures and regulations among domestic groups hurt by trade liberalization? Why do elected officials provide favorable levels of trade protection to protectionist interests groups which lack the abilities to actively engage in lobbying and campaign contributions? More specifically, what are the political characteristics of domestic constituencies that receive favorable levels of protectionist rents?

My dissertation research starts by acknowledging that two dominant approaches in the existing literature on trade policy offer partial and incomplete answers to these questions. The interest group model of trade policy maintains that sectoral levels of trade protection would be higher for protectionist groups which can effectively overcome collective action problems in pursuing a common group interest. Empirical research on endogenous protection has provided convincing evidence that the economic and organizational characteristics of industrial sectors exert significant influence on their lobbying efforts and, hence, the levels of protection that they obtain from governments. The interest group model, however, does not explain why representative policymakers often concentrate distributive benefits from trade barriers to particular industries which do not conduct protectionist lobbying significantly or to declining industries which do not have enough resources to devote to lobbying activities. On the other hand, institutional

explanations for trade policy tend to regard trade openness of countries as a public good that maximize the welfare of a society as a whole. While demonstrating the formal design and nature of domestic political systems affect the average of trade openness, these studies have paid relatively scant attention to varying patterns of trade barriers within and across countries.

In this vein, this dissertation focuses on analyzing the structure of trade protection and more specifically, the allocation of protectionist rents across the electorate. I maintain that to explain varying patterns of trade barriers within and across countries, we need to consider the interaction of two factors: first, the economic structure of domestic interests which delineate the scope and characteristic of political cleavages over trade policy; second, electoral institutions and conditions which define the political importance of partisan and geographical constituencies to elected officials. First, the structure of domestic interests refers to the ways in which domestic interests shape policy coalitions over the level of trade openness. The extent to which domestic groups demand protectionist relief is influenced by their economic characteristics in the market, such as types of industrial sectors (i.e. import-competing and exporting sectors) and types of factors of production (i.e. capital and labor). Nevertheless, protectionist pressures from domestic groups are not automatically translated into trade policy outcomes. Distributive rents yielded by trade barriers are concentrated on small sector of population but its costs are dispersed across the entire population. These features of trade policy induce representative policymakers to concentrate protectionist rents on particular groups of electoral constituencies to optimize their electoral prospects. Therefore, secondly, electoral institutions and conditions determine the ways in which trade policy preferences

of domestic groups are mapped into policy outcomes. The extent to which protectionist interests receive favorable levels of protection is significantly influenced by electoral institutions and conditions, which define types of domestic constituencies from which representative policymakers garner electoral support. In empirical chapters of my dissertation, these two key concepts are operationalized differently according to whether I examine patterns of trade protection within and across countries.

Within-Country Variation in Levels of Trade Protection across the Electorate

Chapters 3, 4, and 5 examine the structure of trade protection in the United States from 1989 through 2004. Specifically, these chapters focus on evaluating the extent to which protectionist interests and their electoral characteristics affect the allocation of protectionist rents across industrial sectors and across electoral constituencies. In Chapter 3 and 4, I argue that industries geographically concentrated in politically competitive constituencies are likely to secure higher levels of tariff protection rather than those in safe constituencies and that district-level of tariff protection is greater in districts having two equally sized groups of partisans rather than in districts showing stable, strong support for either the Republican or the Democratic party. I also maintain that electoral competitiveness of domestic constituencies amplifies the marginal effect of protectionist demands on trade policy outcomes. The estimates of my models demonstrate that the extent to which industry comparative disadvantage raises the level of tariff and nontariff protection itself is much greater for industries concentrated in marginal constituencies rather than for those in safe ones both at the district-level and at the industry-level. My finding that governments are more responsive to protectionist demands from competitive

constituencies rather than those from safe ones remain robust, even after controlling the direction and strength of voter partisanship for the incumbent president's party and the majority party in Congress. Chapter 5 demonstrates that the incumbent president's party is still concerned with their core partisan voters. My results demonstrate that the incumbent president's party is most likely to target protection to marginal constituencies, somewhat less to their core partisan supporters, and least to its opposition strongholds.

The analyses presented in Chapters 3-5 contribute to our understanding of the structure of U.S. trade barriers over the past fifteen years. Previous research offers competing explanations about the effects of the political representation of industrial sectors on trade policy outcomes, based on panel data on trade barriers during a particular year. Some argue that a certain level of geographical distribution of industrial employment across congressional districts affects sectoral levels of trade protection. Others argue that regional concentration on the electoral map matters more for the inter-structure of trade protection, since weak parties in the U.S. induce policymakers to protect industries in safe constituencies. My findings in these chapters do not confirm previous findings. Using extensive data on district-level election outcomes, and the distribution of industrial employment on the electoral map for the period of fifteen years, I show that the distribution of industrial employment on the electoral map itself does not exert significant influence on sectoral levels of protection and that protectionist interests in competitive constituencies are more likely to receive higher levels of protection. Chapters 3-5 also aim to contribute to the ongoing debate about extant models of distributive politics. In these chapters, I examine the relative merits of swing voter and core voter model in a previously unexplored context – electoral targeting in the allocation

of protectionist rents across electoral constituencies. These chapters acknowledge the fact that testing the validity of the swing voter model should be differentiated from testing the validity of the core voter model, unless we have detailed information about the distribution of voter partisanship within electoral constituencies.

The findings in Chapters 3-5 generate the following questions for future research. Under what conditions do governments concentrate protectionist rents on competitive constituencies over safe ones, and vice versa? How do factor mobility and political institutions affect the ways in which governments allocate protectionist rents across the electorate? Do executive and legislative institutions exert the same influence on the structure of tariff and nontariff protection, respectively? How does the partisan alignment between government branches affect the extent to which the incumbent president's party incentives to concentrate protection to marginal constituencies to maximize its chance of winning majority in the legislature? What are the implications of these findings for the structures of trade protection in other countries under different electoral and institutional settings?

Varying Patterns of Trade Protection across Democracies

Chapter 6 explores the political and economic determinant of the structure of trade protection at the national level. Specifically, it focuses on explaining variation in the extent of skill bias in tariff protection in 29 industries in 52 democracies. Like Chapters 3-5, Chapter 6 considers the interaction between the structure of domestic interests over trade openness and electoral institutions that determine the political importance of particular electoral constituencies to elected representatives.

Under the assumption that higher levels of protection to skill-intensive industries generate positive externalities and thus promote long-term economic growth, I argue that the skill-bias of tariff protection is determined by the interaction between two factors: first, a country's factor endowments (i.e. the relative ratio of capital to labor) which determine the sector-specific trade policy preferences of the median voter; secondly, electoral systems that affect the political incentives for individual legislators to cultivate personal-support base. As the capital-labor ratio of the median voter (= K/L) increases, the median voter is more likely to oppose of capital- and skill-intensive goods but more supportive of imports of unskilled-intensive goods. The degree of the skill-bias of tariff protection, however, tends to decline, as electoral institutions encourage personal-vote seeking activities of individual legislators. My empirical analysis demonstrate that the skill-bias of tariff structure is higher in party-centered systems which effectively mute the incentives of policymakers to build personal support bases through pork-barrel strategies and that extent to which political particularism in electoral systems reduce the skill-bias of tariff protection declines, as the capital-labor ratio at the national level increases.

Chapter 6 suggests that the median voter's trade policy preferences changes according to a country's factor endowments and that electoral systems affect the ways in which the sector-specific policy preferences of the medina voter are reflected in trade policy outcomes. These findings generate several research questions for future research. How do the collective demands from the median voter for redistribution affect the level and patterns of trade protection across countries? What are the political conditions under which political leaders choose to change the levels of trade barriers to respond to redistributive demands of the median voter rather than to provide social welfare programs? And how does the incumbent's government partisanship influence the allocation of protectionist rents across industrial sectors and across owners of

factors of production? In this vein, another venue for future research in this area is to articulate theoretical links including the mobility of factors of production, democratic institutions, trade policy, and welfare spending.

Appendices

APPENDIX A. Political Competitiveness and State-Level Protection from 1989-2004

	Dep. Variable = State-Level Tariff Protection					
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
State Comparative Disadvantage (SCD)	0.0414***	0.0405***	0.0413***	0.0411***	0.0322***	0.0244**
	(0.0108)	(0.0125)	(0.0121)	(0.0109)	(0.0118)	(0.0121)
Partisan Dominance	-0.0975	-0.1093	0.7096***			
	(0.1029)	(0.1301)	(0.1978)			
Partisan Dominance × SCD		0.0313	0.0646			
		(0.2113)	(0.2053)			
Partisan Dominance × Labor			-6.923***			
			(1.2862)			
Closeness to 50-50				0.0402	-0.0708	0.2778*
				(0.0564)	(0.0812)	(0.1583)
Closeness to 50-50 × SCD					0.2844*	0.4517***
					(0.1499)	(0.1628)
Closeness to 50-50 × Labor						-2.6713**
						(1.0438)
Labor	-0.196	-0.1976	0.0939	-0.1223	-0.1233	-0.0283
	(0.2036)	(0.2041)	(0.2055)	(0.1951)	(0.1945)	(0.1969)
No High School Degree	0.1923	0.1937	0.1866	0.1871	0.1867	0.1868
	(0.1202)	(0.1207)	(0.1173)	(0.1209)	(0.1205)	(0.1198)
State-Level Unemployment	-3.566***	-3.564***	-3.523***	-3.602***	-3.583***	-3.636***
	(0.2281)	(0.2287)	(0.2223)	(0.2244)	(0.2240)	(0.2237)
Seniority	0.0007	0.0007	0.0008	0.0007	0.0007	0.0006
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
Committee on Finance	0.0098	0.0099	0.0111*	0.01	0.0102	0.0118*
	(0.0064)	(0.0065)	(0.0063)	(0.0064)	(0.0064)	(0.0064)
Committee on Banking, Housing, and Urban Affairs	0.0105*	0.0105*	0.0095*	0.0089	0.0099*	0.009
	(0.0057)	(0.0057)	(0.0055)	(0.0056)	(0.0056)	(0.0056)
Lagged District-Level Protection	0.6036***	0.6038***	0.6135***	0.5977***	0.5982***	0.6029***
	(0.0256)	(0.0256)	(0.0250)	(0.0250)	(0.0250)	(0.0249)
Constant	3.3439***	3.3423***	3.2667***	3.3633***	3.3473***	3.3831***
	(0.2192)	(0.2197)	(0.2139)	(0.2179)	(0.2174)	(0.2166)
R-squared	0.877	0.876	0.874	0.88	0.879	0.877
Number of Observations	528	528	528	528	528	528

* p<0.10, ** p<0.05, *** p<0.01; Standard errors in parentheses.

APPENDIX B. Voter Partisanship and State-Level Protection from 1989-2004

	Dep. Variable = State-Level Tariff Protection					
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
State Comparative Disadvantage (SCD)	0.0444***	0.0583***	0.0655***	0.0413***	-0.2438	-0.1391
	(0.0112)	(0.0137)	(0.0136)	(0.0110)	(0.1994)	(0.2037)
Vote for President	-0.0194	-0.0145	-0.1418			
	(0.0289)	(0.0315)	(0.0953)			
Vote for President^2	0.5295	0.6274	5.0750***			
	(0.5574)	(0.5617)	(1.1501)			
Vote for President × SCD		0.0336	0.063			
		(0.0681)	(0.0673)			
Vote for President^2 × SCD		-1.4709*	-2.282***			
		(0.8504)	(0.8621)			
Vote for President × Labor			0.7861			
			(0.6396)			
Vote for President^2 × Labor			-41.6***			
Average Vote for the President's Party				-0.2887	-0.543	-2.973***
				(0.3354)	(0.3797)	(1.0996)
Average Vote for the President's Party^2				0.2842	0.5102	2.6783**
				(0.3236)	(0.3673)	(1.0539)
Average Vote for the President's Party × SCD					1.035	0.6375
					(0.7911)	(0.8099)
Average Vote for the President's Party^2 × SCD					-0.9112	-0.5543
					(0.7728)	(0.7927)
Average Vote for the President's Party × Labor						16.098**
						(7.1185)
Average Vote for the President's Party^2 × Labor						-14.364**
						(6.8924)
Labor	-0.0442	-0.0594	-0.0002	-0.1217	-0.1423	-4.5766**
	(0.2149)	(0.2198)	(0.2168)	(0.1962)	(0.1964)	(1.8434)
No High School Degree	0.197	0.1839	0.1461	0.1913	0.1792	0.1698
	(0.1202)	(0.1203)	(0.1196)	(0.1217)	(0.1217)	(0.1209)
State-Level Unemployment	-3.658***	-3.65***	-3.522***	-3.61***	-3.597***	-3.63***
	(0.2299)	(0.2304)	(0.2284)	(0.2277)	(0.2274)	(0.2267)
Seniority	0.0007	0.0009	0.0009	0.0007	0.0006	0.0004
	(0.0006)	(0.0006)	(0.0006)	(0.0005)	(0.0006)	(0.0006)
Committee on Finance	0.0103	0.0103	0.0110*	0.01	0.0099	0.0128**
	(0.0064)	(0.0064)	(0.0063)	(0.0064)	(0.0064)	(0.0065)
Committee on Banking, Housing, and Urban Affairs	0.0092	0.0084	0.0078	0.0089	0.0079	0.0067
	(0.0058)	(0.0058)	(0.0057)	(0.0056)	(0.0056)	(0.0056)
Lagged District-Level Protection	0.5898***	0.5960***	0.6135***	0.5971***	0.6033***	0.6100***
	(0.0267)	(0.0277)	(0.0281)	(0.0255)	(0.0257)	(0.0256)
Constant	3.4027***	3.3921***	3.3831***	3.4439***	3.5041***	4.2071***
	(0.2203)	(0.2205)	(0.2166)	(0.2412)	(0.2449)	(0.3762)
R-squared	0.88	0.879	0.877	0.88	0.881	0.881
Number of Observations	528	528	528	528	528	528

* p<0.10, ** p<0.05, *** p<0.01; Standard errors in parentheses.

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