Protecting Free Trade:
The Political Economy of Rules of Origin

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Abstract

The design of rules of origin in free trade agreements (FTAs) arouses spirited lobbying campaigns that mostly escape public attention. This article argues that the domestic groups generally most favorable to FTAs differ in their preferences over rules of origin: industries with large returns to scale favor strict rules of origin to gain scale economies in an FTA, while industries with multinational supply chains prefer lenient rules of origin to accommodate offshore procurement. An econometric analysis of rules of origin in the North American Free Trade Agreement finds tougher rules of origin the higher the external trade protection and the larger the returns to scale, and more permissive rules of origin the greater the involvement in foreign sourcing. The results suggest that rules of origin may be critical to building domestic coalitions for FTAs. Industry preferences toward rules of origin therefore have important implications for the politics of FTA ratification.

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The spread of free trade agreements (FTAs) has raised concern about the standards governments use to determine who qualifies for preferential treatment in an FTA, known as rules of origin. Barton et al. caution that "bilateral arrangements could ultimately undermine interest in more global trade relations… and strict rules of origin may exacerbate the diversion of trade that arises from such preferential access."[1] Gilpin considers regionalization "a very important challenge to the WTO trade regime" because FTAs "employ industry-specific 'rules of origin' to restrict imports."[2] Mansfield and Milner suggest that FTAs are more protectionist than customs unions, "since elaborate rules of origin… are necessary to enforce [an FTA]."[3]

Though rules of origin have gained salience of late, they are easily seen as arbitrary technicalities because of their complex, esoteric nature. Rules of origin mainly operate on the basis of tariff classification shifts: a product earns preferential treatment if it has a different Harmonized Tariff System (HTS) classification than its imported inputs at a specified statistical level.[4] Alongside the change in tariff code standard there may be additional value content or technical process tests. In a value content test, such as the requirement in the North American Free Trade Agreement (NAFTA) that automobiles contain 62.5 percent originating materials, a minimum share of final value must be

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[1] Barton, et al. 2006, xii.

[2] Gilpin 2000, 109.

[3] Mansfield and Milner 1999, 616.

[4] The HTS nomenclature classifies products into twenty-one sections arranged by two-digit chapter, four-digit heading, six-digit subheading, and eight-digit item. For example, rules of origin requiring a change in tariff chapter inside the FTA would grant preferential treatment to pastries made from imported flour and marmalade prepared with imported oranges because pastries and flour (and marmalade and oranges) belong to different HTS chapters; however, yogurt containing fresh milk from outside the FTA would not qualify because all dairy products are classified in the same HTS chapter.

produced in the FTA to qualify for preferential treatment. A technical process test grants preferential treatment when specific stages of manufacturing occur inside the FTA: for example, "yarn forward" or "triple transformation" rules allow apparel to be traded freely only when FTA countries undertake all stages of production from yarn to fabric to cloth.

Whether rules of origin demonstrate empirical regularities remains unknown because systematic analysis of their determinants is scant. This article suggests that these regulations can be understood in terms of the incentives for industry groups to seek rules of origin of varying restrictiveness. I argue that industry demands for rules of origin respond to a policy variable, the level of external trade protection, and two technological variables, the returns to scale in production and the extent of multinational supply chains. In brief, highly protected industries are likely to favor strict rules of origin to alleviate adjustment costs from trade liberalization in an FTA; industries with large returns to scale tend to prefer tough rules of origin to block foreign entrants from fragmenting the FTA market and hindering cost reduction; and industries dependent on offshore procurement generally want lenient rules of origin to accommodate foreign sourcing of inputs.

The article tests these propositions by examining how characteristics of U.S. industries conditioned the rules of origin in NAFTA. Because NAFTA provided a template for future FTAs, the dynamics uncovered in the structure of its rules of origin are likely to operate in other FTAs involving the United States, if not more widely. Using a two-stage Tobit model with instrumental variables to correct for endogeneity in the determination of preexisting trade barriers, I find that NAFTA rules of origin were more restrictive the higher the level of trade protection and the larger the returns to scale, and more permissive the greater the involvement in cross-border production. The results suggest that tough rules of origin help to neutralize dissent from heavily protected industries and gain the support of industries with large returns to scale, but risk alienating industries with multinational supply chains. By illuminating domestic influences on rules of origin—an important policy area that has not been previously examined—the article

provides useful implications for the politics of FTA ratification.

The emphasis on technological considerations does not deny that organizational and institutional factors also are likely to affect rules of origin. If the political influences on rules of origin parallel the determinants of trade protection generally, then rules of origin should be tougher in geographically concentrated industries, large industries with manufacturing operations in many electoral districts, and industries with institutionally powerful representatives. In the empirical models, however, rules of origin were less restrictive in geographically concentrated and large, politically decentralized industries. At least for U.S. industries in NAFTA, hypotheses about the politics of who gets protected explain tariff and non-tariff barriers better than rules of origin. The article therefore leaves organizational and institutional sources of industry influence over trade agreements as a puzzle for future research.

Trade and Domestic Politics: Who Gets Protected?

The study of trade protection focuses on two issues: what do industry groups want and how are they organized? What industry groups want follows the distributional effects of trade: in the short run, when factors of production are relatively fixed, import-competing specific factors prefer more trade protection than export-oriented specific factors.[5] When industries face import competition, multinational linkages through intra-firm trade mitigate protectionist pressures.[6]

Because the trade preferences of industries have been extensively developed, recent research examines organizational and institutional factors. Busch and Reinhardt propose that industry mobilization increases with geographic concentration because

[5] Hiscox 2002; Alt and Gilligan 1994. The "protection for sale" model formalizes this effect as the inverse import penetration ratio, which is exports divided by imports. Grossman and Helpman 1994.

[6] Milner 1988.

closeness reduces collective action costs; consistent with this hypothesis, they show that the incidence of non-tariff barriers in the United States increases with geographic concentration.[7] Others counter that an industry's distribution across political boundaries matters more than spatial proximity because groups must be spread across many electoral districts to influence representatives in majority-rule systems.[8] In this vein, McGillivray suggests that large, politically dispersed industries wield greater influence than concentrated ones, though her empirical model reveals higher tariffs for both types of industries.[9] Also important is the location of industry in relation to institutional sources of power such as majority party status, seniority, and committee assignments because representatives can use agenda control and committee membership to channel protection to favored groups, particularly when parties are weak. For example, Hansen finds that industries represented by Democrats on the House Ways and Means Committee prevail more frequently in trade remedy decisions.[10]

Whether forms of protection such as rules of origin respond to the same influences remains unknown. Generally speaking, rules of origin are redistributive, so policymakers have incentives to manipulate them in response to domestic pressures. They also can be made product-specific, as trade negotiators need not set a uniform standard to determine which goods qualify for preferential treatment. The ability to differentiate rules of origin to a product's unique characteristics allows trade negotiators to devise measures that please industry groups. Moreover, their complex and technical nature, which obscures how many and to whom rents have been redistributed, elegantly

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[7] Busch and Reinhardt 1999.

[8] Rogowski 1987.

[9] This effect is present in electoral systems with weak parties; coalition building is not important in strong-party systems, where party leaders will channel rents to marginal districts. McGillivray 2004.

[10] Hansen 1990.

satisfies Magee, Brock, and Young's "principle of optimal obfuscation."[11] Thus, there is reason to expect that industry lobbies influence the design of rules of origin. How they do this is the subject of the next section.

Theory and Hypotheses

The analytical approach develops hypotheses about the motives for industries to lobby to influence rules of origin in identifiable ways. Insights into the political determinants of who gets protected—namely, the organization and institutional factors reviewed in the last section—inform the empirical analysis later in the article. But the theoretical framework focuses squarely on the demand side.

The hypotheses build from two assumptions: first, industry groups lobby to influence the rule of origin until the marginal benefit of political activity ceases to exceed its marginal cost; second, rule of origin restrictiveness is correlated with the direction and intensity of this lobbying effort, other things equal.[12] Connecting industry preferences to policy outcomes in this way further supposes that trade negotiators are sensitive to industry pressures and that rules of origin are determined unilaterally, not strategically.

The expectation that trade negotiators know industry preferences and try to satisfy them is not farfetched. Since trade negotiators usually lack the technical understanding to grasp the practical differences between different rules of origin, they tend to rely on industry representatives for advice. More generally, industry pressure in the negotiation phase informs trade negotiators about how the terms of an FTA will affect future lobbying on domestic ratification. The need for industry backing to ratify an FTA means that "trade negotiators look for particularized benefits they can offer important industries

[11] Magee, Brock, and Young 1989.

[12] Working from similar assumptions, Findlay and Wellisz model endogenous tariff formation as a function of relative lobbying expenditures. Findlay and Wellisz 1982.

in exchange for their support."[13] As a U.S. trade official explains, "[w]e sit down and evaluate who will be pissed off or will support this" in an effort to persuade legislators that "we have all these important sectors on board, and the sensitive sectors are quiet."[14] Trade negotiators therefore have incentives to be responsive to industry groups because minimizing domestic opposition improves the chances of legislative approval of an FTA.

By comparison, the presumption that rules of origin are set unilaterally is descriptively inaccurate. Because my purpose is to develop hypotheses about industry lobbying, I omit interstate bargaining for simplicity. Where industry preferences in prospective FTA members align, the omission is not problematic; it is when national interests diverge that strategic interaction comes to the fore. To the extent that conflicting national preferences are compromised or traded off in interstate negotiations, industry lobbying in the domestic sphere will have less influence on the terms of an FTA. However, the omission will not bias the estimated effects of industry preferences on rules of origin as long as strategic factors are not correlated with the main explanatory variables—and it is not apparent that they should be.

Before identifying the key influences on industry preferences, I will clarify what is to be explained: rule of origin restrictiveness. Rules of origin can be viewed on a continuum of trade restrictiveness, as represented in Figure 1. Different points on the continuum have different implications for the production strategies of firms using inputs from outside the FTA—"non-originating materials" in the jargon of trade law—because rules of origin influence private choices about where to procure, process, and assemble intermediate goods. At one end of the range, permissive rules of origin allow trade deflection: firms using non-originating materials can export to the least protected market and transship freely inside the FTA. At the point where rules of origin are just restrictive

[13] Destler 2006, 179.

[14] Cameron and Tomlin 2000, 167.

enough to prevent trade deflection, the effect is to induce firms using non-originating materials to source more inputs inside the FTA. Toward the other end of the range, prohibitive rules of origin lead firms using non-originating materials to forgo the benefits of tariff preferences in the FTA because compliance is too costly.

How industry groups value these potential outcomes provides the basis for testable hypotheses about the demand for rules of origin. In the theoretical argument, three factors are critical to industry lobbying: the level of trade protection toward countries outside the FTA; the size of the returns to scale in production; and the dependence of FTA producers on multinational supply chains.

External Trade Protection

External trade protection influences industry preferences on rules of origin for two reasons. The first is trade deflection: tariff-protected industries have incentives to seek rules of origin that prevent outside imports from entering via FTA partners. The second is circumvention: industries with antidumping and countervailing duty orders, safeguards, or quotas have incentives to seek rules of origin that deter outsiders from evading extant non-tariff barriers by producing inside the FTA. While the effects are the same, I discuss each separately.

Starting with tariffs, the benefits of restrictive rules of origin to block trade deflection are greater the higher the tariff. When tariffs are low, transshipment from elsewhere in the FTA is less likely and downward price pressure after the liberalization of trade with FTA partners is minimal anyway; correspondingly, the incentives for domestic producers to seek tough rules of origin are low. As tariffs rise, however, rules of origin that block trade deflection segment FTA markets and prevent the equalization of prices in the FTA, generating rents for both intermediate and finished goods producers. In these circumstances, restrictive rules of origin create "hidden protection" for intermediate goods by encouraging finished goods producers to shift procurement from low-cost

sources outside the FTA to high-cost FTA suppliers. Finished goods producers also gain protection to the extent that foreign rivals forgo cheaper sources of supply outside the FTA and buy more inputs from FTA suppliers to satisfy the rules of origin.[15]

In principle, producers of both intermediate and finished goods may be eager for as much protection as they can get (except insofar as they operate multinational supply chains, as noted later in this section), so prohibitive rules of origin are better than ones that merely restrict transshipment and induce increased FTA procurement by outsiders. But the additional lobbying expenditure to achieve this outcome is worthwhile only when tariff protection is significant. For outsiders, the opportunity cost of not satisfying the rule of origin is a function of the tariff preference lost by producing with too many non-originating materials; the incentive to comply with the rule of origin to save on tariff payments therefore rises with the tariff. As a result, the higher the tariff, the tougher the rule of origin must be to discourage outsiders from satisfying it. This means that the rents FTA producers earn from additional restrictiveness in the rule of origin increase with the size of the tariff, so industry groups will seek more restrictive rules of origin the higher the tariff on their output.

Non-tariff barriers affect the demand for rules of origin similarly. Here the risk for FTA producers is circumvention of national non-tariff barriers by foreign competitors, since most non-tariff barriers are country-specific. As an example, suppose the United States imposes antidumping duties on semiconductors from Japan, while Mexico has no non-tariff barriers on semiconductors from any source. In this scenario, Japanese producers could try to circumvent U.S. antidumping duties by exporting semiconductors to Mexico and transshipping them to the United States—indeed, this can occur whether or not the United States has an FTA with Mexico. An FTA, however, enhances the incentives for circumvention: if rules of origin are too lax, Japanese semiconductors

[15] Krueger 1999; Krishna and Krueger 1995.

exported to Mexico could be assembled into consumer electronics and then sent to the United States as a different article of commerce, evading the antidumping order on the imported input while trading the finished good freely in the FTA. In this case, tough rules of origin would compel consumer electronics producers in Mexico to buy U.S.-made semiconductors instead of Japanese ones to qualify for preferential treatment, bolstering non-tariff protection for the U.S. semiconductor industry.

Officially, FTA rules of origin are unrelated to the administration of trade remedy laws: separate "marking rules" determine country of origin when products are made in multiple locations or composed of imported inputs. Originating status therefore does not release a product from applicable non-tariff barriers against non-FTA countries. But in practice there are several reasons why an FTA enhances the risk of circumvention of national non-tariff barriers. First, most FTAs permit self-certification of country of origin by the manufacturer or the importer, creating opportunities for cheating. Second, FTAs have no common enforcement of antidumping and countervailing duty orders, safeguards, or quotas, so it is challenging for national authorities to trace the value of non-originating materials in merchandise imported from FTA partners. Third, as imports increasingly contain foreign inputs, national authorities face greater difficulty administering separate customs regimes for FTAs and trade remedy laws. As a result, marking requirements are less likely to detect foreign content in products satisfying FTA rules of origin.

This reasoning suggests that national non-tariff barriers also influence industry lobbying on rules of origin. The tougher the rule of origin, the higher the compliance costs of satisfying it; the higher the compliance costs, the more likely it is that outsiders will decline to produce and/or buy more inside the FTA. The marginal benefit of additional restrictiveness in the rule of origin therefore increases with the level of non-tariff protection.

Hypothesis 1: the higher the level of external trade protection, the more restrictive the rule of origin that industry groups will seek.

Returns to Scale

The returns to scale in production are important to industry preferences on rules of origin because the benefits of an FTA depend on the size of the scale economies that producers gain as the market is opened.[16] An FTA helps producers gain scale economies in two ways. First, free trade encourages firms to concentrate production for the entire FTA at fewer locations. If there are unexploited economies of scale, expanding output or consolidating fragmented operations reduces unit costs, and the benefits of restructuring after an FTA is formed increase the larger the returns to scale. Second, FTAs retain trade barriers against non-FTA countries. This allows producers in the FTA to internalize the cost-reduction effects of access to an enlarged, preferential market—as long as new entry does not fragment this market.

Because industries with large returns to scale have the potential to gain more from an FTA than industries with constant returns to scale, the gains from prohibitive rules of origin are larger. Generally speaking, the incentives to exclude outsiders from investing in an FTA, as Froot and Yoffie demonstrate, are greater in the presence of scale economies.[17] When returns to scale are large, an increase in the market share of foreign rivals reduces opportunities for FTA producers to concentrate production. Prohibitive

[16] This assumes that certain goods can be made more cheaply when they are produced on a larger scale. Thus, while all producers in a country face the same supply function for industry-specific factors, production costs also depend on the size of the inputs employed: factor costs and the scale of output together determine productivity. Returns to scale are represented as the slope of the curve that relates average costs to the scale of production.

[17] Froot and Yoffie 1991.

rules of origin provide a means to restrain entry because high compliance costs discourage foreign competitors from producing and/or sourcing more inside the FTA. Deterring foreign entrants from enhancing their market presence helps FTA producers consolidate operations and ride down their cost curves. The steeper the cost curve (that is, the larger the returns to scale), the greater the gains from excluding outsiders and the tougher the rule of origin that industry groups will seek.

Producers with large returns to scale also prefer restrictive rules of origin over permissive ones more strongly than producers with constant returns to scale. As the discussion of external trade barriers noted, foreign rivals that choose to satisfy the rule of origin in effect pay an entry fee—the cost of sourcing more expensive FTA inputs—to earn preferential treatment, channeling rents to FTA producers. These rents are greater the larger the returns to scale because normally foreign rivals will transfer only a portion of their productive capacity to the FTA. Entry into the FTA market is not cost effective unless it occurs on a large scale, but the more production that foreign competitors move to the FTA the more they sacrifice scale economies in their home plants. If foreigners are to share in the benefits of the FTA, therefore, increased FTA production is better than allowing foreign rivals to transship freely at existing scales of output and factor costs. This suggests that the marginal benefit of additional restrictiveness in the rule of origin increases with the returns to scale: industry groups will lobby for more restrictive rules of origin the larger the returns to scale.

> Hypothesis 2: the larger the returns to scale in production, the more restrictive the rule of origin that industry groups will seek.

Multinational Supply Chains

Multinational supply chains affect industry preferences because rules of origin are based on the use of non-originating materials, not the nationality of the producer—their

function is to discriminate against firms that do not substantially transform their goods, generate a specified share of total value, or perform certain technical processes inside the FTA. Generally intensive use of non-originating materials is more prevalent among firms headquartered outside an FTA. But the more that FTA producers use foreign-made inputs, the harder it is for rules of origin to differentiate them from outsiders. Overly restrictive rules of origin therefore may disrupt the offshore operations of FTA producers.

Because FTA producers with multinational supply chains face higher production costs if their inputs are excluded from free trade privileges, they have incentives to lobby against rules of origin that are too stringent. Multinational firms closely integrated with foreign affiliates generally oppose protectionism because trade barriers disrupt intra-firm trade.[18] Outsourcing to unaffiliated foreign suppliers has the same effect: global sourcing requires unimpeded trade across the borders that connect the supply chain's links. Thus, multinational supply chains are likely to restrain prohibitive rules of origin, even when external trade protection is high or returns to scale are large.

However, FTA producers using foreign-made inputs face diminishing returns from lobbying for less restrictive rules of origin. Multinational supply chains tend to involve large sunk costs in terms of capital expenses for plant and equipment, and information, search, and negotiation costs for identifying production sites abroad or contracting with foreign suppliers. As a result, lobbying for hospitable rules of origin is less expensive than restructuring supply chains after an FTA is formed—to a point. Beyond some optimum, easier rules of origin disproportionately help outsiders; the marginal benefit of additional leniency turns negative at the point where FTA producers would prefer to bring part of their supply chain inside the FTA to satisfy rules of origin that prevent foreign rivals from transshipping freely. Thus, while the direction of the effect is negative—FTA producers with multinational supply chains will seek less

[18] Milner 1988.

restrictive rules of origin than those with operations contained inside the FTA—the desired restrictiveness is not likely to decline across all levels of offshore procurement.

> Hypothesis 3: the greater the dependence on multinational supply chains, the less restrictive the rule of origin that industry groups will seek (at least to an optimum level of permissiveness).

The next two sections test these hypotheses in an econometric analysis of rules of origin in NAFTA. Presently there are no empirical studies of the determinants of rules of origin at the industry level. The rest of the article fills this gap.

Variables, Data, and Methods

The hypotheses developed in the last section consider the motives for industry groups to lobby to influence the restrictiveness of rules of origin. In principle, political activity can be measured in terms of campaign contributions and other proxies for lobbying expenditures, though such data reveal little about industry preferences on any specific policy issue. Alternatively, case analysis of the statements of industry representatives at public hearings permits inferences about the substance of unobservable contacts between industry groups and trade negotiators.[19] While both methods have value, I instead choose to focus on the product of lobbying effort—policy outcomes—to facilitate statistical testing of the hypotheses on a large number of observations. A correlation between the preferences imputed to industry groups and the rules of origin in an FTA offers powerful circumstantial evidence that actual lobbying behavior matches theoretical expectations.

The dependent variable in the analysis, NAFTA ORIGIN RULE, is derived from Estevadeordal's index of rule of origin restrictiveness. The index categorizes rules of

[19] For example, see Chase 2005, 205–213.

origin based on three assumptions: restrictiveness increases the larger the required change in tariff classification; a change in tariff classification with a value content test is more restrictive than one with no such test; and a technical process test is the most restrictive of all.[20] The coding, shown in Table 1, ranges from one (least restrictive) to seven (most restrictive). Figure 2 displays the distribution of NAFTA rules of origin for 5,021 six-digit HTS product lines. About three-quarters of all products must change tariff heading or tariff chapter to attain originating status. Another 9 percent require value content tests and 13 percent require technical process tests.

To generate the dependent variable, I average rule of origin index values over all HTS products in a four-digit Standard Industry Classification (SIC) code. Though NAFTA rules of origin are common standards adopted by United States, Canada, and Mexico, my argument implies that industry preferences can be induced from the structure of NAFTA ORIGIN RULE. Accordingly, I measure all of the independent variables for U.S. industries in 1992. The units of analysis are four-digit SIC codes.

For external trade protection, I measure tariffs and non-tariff barriers. MFN TARIFFS is duties collected divided by U.S. imports for all countries except Canada, Mexico, and Israel. Non-tariff barriers are quantified in NTB COVERAGE, which measures the share of imports in an industry that are subject to a non-tariff barrier in the U.S. market. The data are from the United Nations Conference on Trade and Development (UNCTAD), which reports the incidence of "core non-tariff measures" at the six-digit HTS level.[21] To construct NTB COVERAGE, I weight the non-tariff coverage ratio by U.S. imports for all products in an SIC code such that:

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[20] Estevadeordal 2000.

[21] UNCTAD organizes non-tariff measures into three categories: quantity restrictions, finance measures, and price control measures. There are thirty-three sub-categories of non-tariff measures. UNCTAD 1995.

$$NTB\ Coverage = \frac{\sum_{i=1}^{n}(NTM_i * M_i)}{\sum_{i=1}^{n}(M_i)}$$

In this formula, NTM_i is the proportion of tariff lines covered by core non-tariff measures in the HTS product code indexed by i and M_i is the value of imports of the product. The first hypothesis predicts that both MFN TARIFFS and NTB COVERAGE will be positively associated with NAFTA ORIGIN RULE.

To measure RETURNS TO SCALE, I estimate the slope of industry cost curves by calculating variations in value added per worker in plants of different sizes.[22] In this measure, values at or near zero indicate constant returns to scale, while positive values indicate economies of scale and negative values indicate diseconomies of scale. The second hypothesis predicts a positive association between RETURNS TO SCALE and NAFTA ORIGIN RULE.

Multinational supply chains are measured as trade under the Offshore Assembly Program (OAP) as a share of total shipments.[23] OFFSHORE ASSEMBLY effectively measures dependence on foreign inputs because it includes subcontracting between unaffiliated parties (offshore outsourcing) and trade between affiliated firms (intra-firm trade). The third hypothesis expects OFFSHORE ASSEMBLY to be negatively associated

[22] Each observation is generated by regressing the logarithm of value added per worker relative to all plants in an industry on the logarithm of workers per plant for different plant size classes. The coefficient on the logarithm of workers per plant in this regression is the elasticity of unit costs with respect to scale. For a description of the measure, see Chase 2003, 149–151.

[23] Section 9802 of the U.S. Tariff Code allows companies importing merchandise previously exported for foreign processing to exclude the domestic content of these products from their tariff assessment and pay duties only on the value added abroad. OFFSHORE ASSEMBLY has foreign value added (import value minus U.S. content) in the numerator and industry shipments in the denominator.

with NAFTA ORIGIN RULE.

The models also include control variables to capture organizational and institutional influences on policy outcomes. These controls are necessary to account for the policymaking process, which may or may not satisfy industry demands. INDUSTRY CONCENTRATION is the share of total shipments made by the four largest firms. GEOGRAPHIC CONCENTRATION is industry concentration across geography.[24] Because concentrated groups are thought to be better able to gain trade protection, INDUSTRY CONCENTRATION and GEOGRAPHIC CONCENTRATION should be positively associated with NAFTA ORIGIN RULE. McGillivray counters that the influence effect of political dispersion outweighs the mobilization effect of geographic and industrial concentration in electoral systems with weak parties. To capture the political strength of industries in electoral geography, ELECTORAL CONCENTRATION is a Herfindahl index of industry concentration across electoral districts; INDUSTRY SIZE is total employment in the industry; and LARGE, DECENTRALIZED INDUSTRIES is an interactive term specified as the inverse of ELECTORAL CONCENTRATION divided by INDUSTRY SIZE.[25] If large and politically dispersed industries more easily gain protection, then ELECTORAL CONCENTRATION will be negatively associated with NAFTA ORIGIN RULE while INDUSTRY SIZE and LARGE, DECENTRALIZED INDUSTRIES will be positively associated with NAFTA ORIGIN RULE. Two more variables represent the institutional advantages of agenda control: DEMOCRATIC LEADERSHIP and REPUBLICAN LEADERSHIP are the number of Democratic (Republican) Party leaders and

[24] Busch and Reinhardt 1999.

[25] McGillivray 2004, 85–87. To map county employment into Congressional districts, I estimate employment as the midpoint of the reported interval in cases where the real figure was suppressed to maintain confidentiality. Counties with more than one Congressional district are assumed to be homogenous in terms of industry employment across districts.

committee chairs in the House of Representatives with the industry in their district.[26] If more senior representatives are able to channel protection to favored industries, then both variables will be positively related to NAFTA ORIGIN RULE.

In the estimation of the models, two methodological issues must be addressed: first, the potential endogeneity of MFN TARIFFS and NTB COVERAGE as regressors, and second, censoring in the observed values on the dependent variable, NAFTA ORIGIN RULE.

Beginning with the endogeneity issue, some of the factors conditioning the restrictiveness of rules of origin also influence tariffs and non-tariff barriers. To correct for endogeneity bias in the estimates for NAFTA ORIGIN RULE, the models employ instrumental variables. In this method, exogenous factors influencing MFN TARIFFS and NTB COVERAGE but not NAFTA ORIGIN RULE are included as instruments in the first-stage estimates and then predicted values for MFN TARIFFS and NTB COVERAGE are entered in the second-stage equations for NAFTA ORIGIN RULE. In the reduced-form equations for MFN TARIFFS and NTB COVERAGE, the exogenous factors and the direct influences on NAFTA ORIGIN RULE appear as instruments. By design, the first-stage equation is over-determined in that it includes variables affecting NAFTA ORIGIN RULE that may not be theoretically relevant to MFN TARIFFS or NTB COVERAGE. The purpose of the first-stage estimation is not to test hypotheses about the determinants of tariff and non-tariff barriers, but rather to utilize factors correlated with these measures to produce unbiased estimates for NAFTA ORIGIN RULE.

In the analysis in the next section, I estimate separate reduced-form equations for MFN TARIFFS and NTB COVERAGE using the same set of exogenous variables. To identify relevant instruments, I select variables employed in studies of the determinants of tariffs

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[26] This measure is a count of the number of representatives with more than 250 workers in the industry in their district. See Hansen 1990.

and non-tariff barriers.[27] The reduced-form equations distinguish INTERMEDIATE IMPORTS, which is the consumption share of imports in product codes containing the word "parts" in the description, and FINISHED IMPORTS, which is the consumption share of total imports minus parts imports. EXPORT DEPENDENCE is exports as a share of industry shipments. HOURLY WAGE, which is the average hourly wage of production workers in the industry, and R&D EMPLOYMENT, the percentage of workers in the industry employed in research and development, are measures of skill-intensity. CAPITAL-LABOR RATIO, which is capital expenditures divided by payroll, measures factor use. The last three variables capture elements of comparative costs not reflected in trade patterns.

The second methodological issue is censoring in the dependent variable, NAFTA ORIGIN RULE, which takes on a minimum of one and a maximum of seven. With limited dependent variables, the linear regression model is inappropriate as ordinary least-squares will generate predicted values for NAFTA ORIGIN RULE less than one and greater than seven. Censoring is also present in the instrumented variables, MFN TARIFFS and NTB COVERAGE, which cannot be less than zero or greater than one. To correct for censoring, I use the censored regression or Tobit model.[28] The method of analysis is two-limit Tobit, where observations are censored at the top and bottom of the range.[29]

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[27] For example, Gawande and Bandyopadhyay 2000; Trefler 1993; Ray 1981.

[28] The models were estimated using the IVTOBIT command in Stata 9.0. IVTOBIT generates corrected standard errors to account for sampling variance and covariance between the predicted values for the endogenous variable and the other explanatory variables in the second stage.

[29] For NAFTA ORIGIN RULE, there are 363 uncensored observations, zero left-censored observations at 1.00, and eighteen right-censored observations at 7.00. Because NAFTA ORIGIN RULE is not restricted to integer values due to averaging across products, the models cannot be estimated in Probit.

Tobit Results

The presentation of the results begins by evaluating the first-stage models for MFN TARIFFS and NTB COVERAGE, and then discusses the second-stage models for the dependent variable of interest, NAFTA ORIGIN RULE. Appendix A reports descriptive statistics; Appendix B lists the sources for the data.

First-Stage Estimates for MFN TARIFFS *and* NTB COVERAGE

In the first part of the analysis, MFN TARIFFS and NTB COVERAGE are a function of the explanatory factors that condition NAFTA ORIGIN RULE and a set of exogenous influences on trade protection that are not directly related to NAFTA ORIGIN RULE. The purpose of the first-stage model is simply to evaluate whether the instruments are valid. For validity, instruments must be relevant (correlated with the instrumented variable) and exogenous (uncorrelated with the disturbance in the second-stage model).

To evaluate relevance, I examine the coefficients in the reduced-form equations and perform Wald tests of the null hypothesis that the instrument coefficients jointly are equal to zero. Results for NTB COVERAGE are in Table 2 and MFN TARIFFS in Table 3. To conserve space, I show first-stage estimates for the instruments alone. In both tables, the models differ only in the explanatory variables included in the second stage.

In Table 2, five of the six instruments are significant at the .05 level. Non-tariff barriers are less prevalent in industries intensively using INTERMEDIATE IMPORTS. EXPORT DEPENDENCE, HOURLY WAGE, and R&D EMPLOYMENT also are negatively associated with NTB COVERAGE. The positive sign for CAPITAL-LABOR RATIO indicates that capital-intensive industries have more non-tariff barriers, controlling for the other instruments. The Wald test easily rejects the null hypothesis that the instruments are not good predictors of NTB COVERAGE at the .001 level.

In Table 3, three of the exogenous instruments are consistently significant at the .05 level. The most relevant determinants of tariffs are FINISHED IMPORTS, EXPORT

DEPENDENCE, and HOURLY WAGE. CAPITAL-LABOR RATIO is also significant in all models except the second, but INTERMEDIATE IMPORTS and R&D EMPLOYMENT are not significant. The Wald test again strongly indicates that the instruments have explanatory value.

The relevance of the instruments is unsurprising, as previous studies have demonstrated that these variables are correlated with trade protection. There is no simple way to verify that they are exogenous, however. Theoretically, it is hard to imagine how broad factor-intensity considerations such as HOURLY WAGE, R&D EMPLOYMENT, or CAPITAL-LABOR RATIO would directly influence industry lobbying on rules of origin. It is also difficult to discern a predictable relationship with trade patterns because rules of origin can protect import-competing producers and exporters alike. Intuition therefore suggests that the instruments enter the process of determining rules of origin only through their influence on the endogenous variables, MFN TARIFFS and NTB COVERAGE.

To test this reasoning, I evaluate the explanatory value of the instruments as regressors for NAFTA ORIGIN RULE by adding one at a time to the second-stage models.[30] In the models with NTB COVERAGE as the instrumented variable, the null hypothesis that an instrument has a zero coefficient cannot be rejected for five of the six instruments; only CAPITAL-LABOR RATIO is statistically significant. In the models with MFN TARIFFS as the instrumented variable, CAPITAL-LABOR RATIO and INTERMEDIATE IMPORTS are statistically significant. For the other instruments, exclusion from the second-stage models appears warranted. Overall, while the validity of the instruments cannot be conclusively established, empirical testing combined with theoretical intuition provides reasonable confidence that the relationship between external trade protection and NAFTA ORIGIN RULE in the second-stage models is purely the influence of the instrumental variables on MFN TARIFFS and NTB COVERAGE.

[30] The estimates will be biased if the reduced-form equation is not overidentified, so this test effectively assumes that in every model at least two of the excluded instruments are valid. See Murray 2006, 116–118.

Second-Stage Estimates for NAFTA ORIGIN RULE

In the second-stage estimates for NAFTA ORIGIN RULE, the predicted values for MFN TARIFFS and NTB COVERAGE in the first stage are entered as fixed regressors. The instrumented form of external trade protection captures basic motives to lobby for tough rules of origin to prevent non-participants in an FTA from evading extant tariffs and non-tariff barriers. In addition to incentives to maintain external trade protection, I expect considerations based on the returns to scale and the extent of multinational supply chains to enter industry calculations to seek rules of origin of varying restrictiveness.

Table 4 displays the second-stage Tobit estimates for NAFTA ORIGIN RULE using NTB COVERAGE as the instrumented variable. Comparing across models, all of the variables representing industry preferences and political influence have the same signs and significance levels. In all three specifications, the Wald test statistic rejects the null hypothesis of no endogeneity at the .001 level. Instrumenting for NTB COVERAGE is therefore appropriate, as single-equation estimates are biased.

The coefficients in Table 4 conform to theoretical expectations. Notably, RETURNS TO SCALE is positively signed and statistically significant in all of the models: the larger the returns to scale, the more restrictive the rule of origin. This supports the second hypothesis that producers with significant economies of scale will lobby to restrain outsiders from gaining FTA privileges. The statistically significant negative sign for OFFSHORE ASSEMBLY suggests that multinational supply chains motivate lobbying against restrictive rules of origin. The instrumented variable NTB COVERAGE is positively signed and significant: as expected, industries with significant non-tariff barriers received tougher rules of origin to limit circumvention by exporters outside the FTA.

The estimates for the control variables yield two intriguing results. First, GEOGRAPHIC CONCENTRATION has a statistically significant negative effect on NAFTA ORIGIN RULE. While some industries that sought restrictive rules of origin, such as

textiles, may have been regionally concentrated, overall geographic localization was associated with more lax rules of origin. Second, the three proxy variables for political influence in the second model—ELECTORAL CONCENTRATION, INDUSTRY SIZE, and LARGE, DECENTRALIZED INDUSTRIES—are negatively signed, with the last of the three statistically significant at the .05 level. Again this is counterintuitive: the industries thought to have the most political advantages in lobbying received less restrictive rules of origin. Finally, rules of origin were tougher in industries located in the districts of Democratic House leaders and easier in industries located in the districts of Republican House leaders, though neither result is statistically significant.

Table 5 shows the estimates for NAFTA ORIGIN RULE with MFN TARIFFS as the instrumented variable. As in the last set of models, the results are robust to the inclusion of control variables and the Wald test statistic rejects the null hypothesis of no endogeneity at the .001 level in all specifications. RETURNS TO SCALE is again positively signed and significant, as the second hypothesis anticipates, and OFFSHORE ASSEMBLY is negatively signed and significant, consistent with the third hypothesis. MFN TARIFFS also influence rules of origin, as the first hypothesis predicts: industries with higher tariffs received tougher rules of origin to block the use of Mexico (and Canada) as an "export platform" to the United States. In addition, rules of origin were more permissive in LARGE, DECENTRALIZED INDUSTRIES. The other organizational and institutional variables are not statistically significant.

Interpreting the substantive impact of the Tobit coefficients in Table 4 and Table 5 requires additional manipulation. Instead of reporting a single marginal effect for each independent variable, Table 6 displays predicted outcomes for NAFTA ORIGIN RULE with discrete changes in RETURNS TO SCALE, OFFSHORE ASSEMBLY, NTB COVERAGE, and MFN TARIFFS individually, holding other independent variables at their mean values. These figures reveal large marginal effects for external trade protection: NAFTA ORIGIN RULE increases by 1.93 as NTB COVERAGE changes from low to high and 1.19 as MFN TARIFFS

changes from low to high. Given that a one point increase in the rule of origin index is equivalent to adding a value content test to the change in tariff classification standard, this is a substantial effect. The impact of RETURNS TO SCALE, though not as great, is considerable: as industries shift from small diseconomies of scale to moderately large returns to scale, the rule of origin index increases by 0.55 in Table 4 and 0.31 in Table 5. By comparison, the effect of OFFSHORE ASSEMBLY is smaller, as a shift from low to high changes NAFTA ORIGIN RULE by -0.29 in Table 4 and -0.14 in Table 5. This result is consistent with the expectation that industries with extensive multinational supply chains will not want rules of origin to become too permissive.

The findings illuminate two important elements of industry lobbying on NAFTA rules of origin. First, the effect of large returns to scale explains why some industries insisted on tough rules of origin despite low external trade barriers. For instance, automobile executives strenuously complained when the value content rule was set below their desired 65 percent, to which a perplexed U.S. negotiator responded: "We're talking about a 2.5 percent difference on a 2.5 percent tariff."[31] For U.S. firms, a tough value content test was critical to compel foreign rivals to source important inputs in NAFTA so that Japanese assemblers could not satisfy the rule of origin at the same production costs in the period while U.S. firms were restructuring to gain economies of scale. Moreover, German and Korean automakers that were not already established in NAFTA would be deterred from investing in North America if they had to undertake large-scale production of expensive components such as power trains.

Second, the results demonstrate how global procurement restrained the adoption of tough rules of origin in industries with multinational supply chains. Computer equipment and electronic components are two such examples: firms traded intensely with both Mexican and Asian suppliers, so they objected to rules of origin that would

[31] Mayer 1998, 143.

penalize sourcing outside NAFTA. IBM reportedly "had a fit" over plans to require North American production of motherboards, screens, and hard drives for computers.[32] Instead, rules of origin were left flexible, and negotiators agreed on a low common tariff––an externally liberalizing outcome.

Conclusions

Lobby groups have persistently tried to manipulate rules of origin in NAFTA and other FTAs, yet to date there has been no systematic analysis of their industry-level determinants. The findings of this article imply that rules of origin may be critical to forging coalitions between prospective winners of an FTA and neutralizing opposition from industries that expect losses. Notably, the factors associated with support for an FTA are not the same as the factors that motivate lobbying for restrictive rules of origin: industries with large returns to scale seek tougher rules of origin to gain scale economies in an FTA, while industries with multinational supply chains prefer accommodating rules of origin to permit foreign sourcing. At a theoretical level, the study suggests that current trade policy issues such as rules of origin are not easily explained in terms of models of trade in end products made wholly in one country subject to constant returns to scale.

An unresolved puzzle is the policymaking process that aggregates industry demands. In NAFTA, rules of origin were less restrictive in geographically concentrated and large, politically dispersed industries—precisely the industries thought to be most effective at gaining trade protection. One explanation for this anomaly is that existing theories are limited to cases where the legislature makes trade policy, or where legislative principals closely control bureaucratic agents. In the United States under Fast Track, however, legislative influence is indirect because it is exerted at the delegation and ratification stages. In this setting, influential industries may not be geographically

[32] Cameron and Tomlin 2000, 90.

concentrated, large and politically dispersed, or located in the districts of powerful representatives. Instead, industries important to potential veto points—specific legislators whose votes are needed for ratification—are likely to be favored.[33] Future research should examine how many and what types of legislative votes actually hinge on provisions such as rules of origin to illuminate how these special forms of trade protection affect the political viability of FTAs.

[33] For example, the introduction of the yarn-forward rule of origin in NAFTA induced six members of North Carolina's House delegation to support ratification in 1993 after opposing Fast Track in 1991. Destler 2006, 180–182.

Appendix A. Sources of Study Variables

Dependent Variable

NAFTA ORIGIN RULE: Rule of origin index values were provided at author's request from Estevadeordal 2000.

Independent Variables

NTB COVERAGE: Coverage ratios were compiled from UNCTAD 1995. Import weights are from USITC Interactive Tariff and Trade Dataweb, http://dataweb.usitc.gov.

MFN TARIFFS: Tariff rates were calculated from USITC Interactive Tariff and Trade Dataweb, http://dataweb.usitc.gov.

OFFSHORE ASSEMBLY: OAP trade was provided at author's request from Feenstra, Hanson, and Swenson 2000. Shipments are from U.S. Department of Commerce 1997.

RETURNS TO SCALE; INDUSTRY CONCENTRATION; INDUSTRY SIZE; HOURLY WAGE; CAPITAL-LABOR RATIO: Calculated from U.S. Department of Commerce 1997.

GEOGRAPHIC CONCENTRATION: Busch and Reinhardt 1999. These data are available at: http://userwww.service.emory.edu/~erein/research/#geocon.

ELECTORAL CONCENTRATION; DEMOCRATIC LEADERSHIP; REPUBLICAN LEADERSHIP: Industry employment by county was compiled from U.S. Department of Commerce 1994. Counties were aggregated into Congressional districts using a mapping file for the 102nd

Congress provided at author's request from Ladewig 2006.

INTERMEDIATE IMPORTS; FINISHED IMPORTS; EXPORT DEPENDENCE: Import values are from Schott 2004. These data are available at: http://www.som.yale.edu/faculty/pks4/files/international/parts_imports_7201_20040413.dta. Exports are from USITC Interactive Tariff and Trade Dataweb, http://dataweb.usitc.gov. Shipments are from U.S. Department of Commerce 1997.

R&D EMPLOYMENT: Calculated from data provided at author's request by the U.S. Bureau of Labor Statistics.

Appendix B. Descriptive Statistics.

Variable	*Mean*	*Std. dev.*	*Min.*	*Max.*
NAFTA ORIGIN RULE	4.880	1.112	2.000	7.000
NTB COVERAGE	0.184	0.302	0.000	1.000
MFN TARIFFS	0.046	0.041	0.000	0.268
RETURNS TO SCALE	0.074	0.092	-0.296	0.600
OFFSHORE ASSEMBLY	0.007	0.025	0.000	0.308
INDUSTRY CONCENTRATION	0.402	0.213	0.000	0.980
GEOGRAPHIC CONCENTRATION	0.438	0.109	0.184	0.790
ELECTORAL CONCENTRATION	0.036	0.042	0.003	0.375
INDUSTRY SIZE (10^{-4})	3.698	5.232	0.070	43.990
LARGE, DECENTRALIZED INDUSTRIES (10^{3})	-0.005	0.018	-0.264	-0.000
DEMOCRATIC LEADERSHIP	2.157	3.309	0.000	28.000
REPUBLICAN LEADERSHIP	2.272	3.407	0.000	27.000
INTERMEDIATE IMPORTS	0.016	0.034	0.000	0.294
FINISHED IMPORTS	0.134	0.168	0.000	1.000
EXPORT DEPENDENCE	0.134	0.148	0.000	1.385
HOURLY WAGE	10.536	2.910	4.957	21.279
R&D EMPLOYMENT	0.008	0.014	0.000	0.082
CAPITAL-LABOR RATIO	0.193	0.189	0.014	1.698

Table 1. Coding for NAFTA ORIGIN RULE

Index Value	*Description*
1	Change in tariff item (8-digit HTS)
2	Change in tariff subheading (6-digit HTS)
3	Change in tariff subheading + value content test
4	Change in tariff heading (4-digit HTS)
5	Change in tariff heading + value content test
6	Change in tariff chapter (2-digit HTS)
7	Change in tariff chapter + technical process test

Table 2. Tobit Estimates for Instruments for NTB COVERAGE

	(1)	*(2)*	*(3)*
INTERMEDIATE IMPORTS	-0.576*	-0.722*	-0.580*
	(0.287)	(0.324)	(0.280)
FINISHED IMPORTS	0.129*	0.128	0.115
	(0.065)	(0.072)	(0.064)
EXPORT DEPENDENCE	-0.160*	-0.203*	-0.144*
	(0.073)	(0.082)	(0.072)
HOURLY WAGE	-0.022***	-0.024***	-0.022***
	(0.005)	(0.005)	(0.005)
R&D EMPLOYMENT	-2.191**	-2.754***	-2.281***
	(0.712)	(0.795)	(0.701)
CAPITAL-LABOR RATIO	0.218***	0.224***	0.220***
	(0.056)	(0.062)	(0.055)
Wald χ^2 test of coefficients	41.36***	51.01***	39.57***

Note: Only the exogenous instruments are displayed. Cell entries are two-limit Tobit coefficients, with a lower limit at 0 and an upper limit at 1. Standard errors are in parentheses. $N = 381$.

***p < .001 **p < .01 *p < .05

Table 3. Tobit Estimates for Instruments for MFN TARIFFS

	(1)	*(2)*	*(3)*
INTERMEDIATE IMPORTS	-0.018	-0.036	-0.027
	(0.049)	(0.050)	(0.048)
FINISHED IMPORTS	0.047***	0.046***	0.043***
	(0.011)	(0.012)	(0.011)
EXPORT DEPENDENCE	-0.050***	-0.055***	-0.046***
	(0.013)	(0.013)	(0.013)
HOURLY WAGE	-0.006***	-0.006***	-0.006***
	(0.001)	(0.001)	(0.001)
R&D EMPLOYMENT	-0.048	-0.118	-0.096
	(0.129)	(0.132)	(0.127)
CAPITAL-LABOR RATIO	0.023*	0.021	0.025*
	(0.010)	(0.011)	(0.010)
Wald χ^2 test of coefficients	124.20***	122.26***	117.18***

Note: Only the exogenous instruments are displayed. Cell entries are two-limit Tobit coefficients, with a lower limit at 0 and an upper limit at 1. Standard errors are in parentheses. $N = 379$.

***p < .001 **p < .01 *p < .05

Table 4. Tobit Estimates for NAFTA ORIGIN RULE **using** NTB COVERAGE

	(1)	*(2)*	*(3)*
NTB COVERAGE	4.220***	3.587***	4.459***
	(0.930)	(0.754)	(0.975)
RETURNS TO SCALE	3.292**	2.445**	3.462**
	(1.028)	(0.864)	(1.059)
OFFSHORE ASSEMBLY	-9.624**	-8.584**	-10.207**
	(3.031)	(2.818)	(3.139)
INDUSTRY CONCENTRATION	0.623	0.604	0.686
	(0.422)	(0.468)	(0.457)
GEOGRAPHIC CONCENTRATION	-2.304*		-2.616*
	(1.078)		(1.124)
ELECTORAL CONCENTRATION		-5.677	
		(2.962)	
INDUSTRY SIZE		-0.005	
		(0.013)	
LARGE, DECENTRALIZED INDUSTRIES		-18.326*	
		(7.526)	
DEMOCRATIC LEADERSHIP			0.062
			(0.040)
REPUBLICAN LEADERSHIP			-0.051
			(0.039)
Constant	4.612***	3.923***	4.660***
	(0.340)	(0.268)	(0.364)
Log likelihood	-523.6	-535.8	-521.0
Wald χ^2	29.01***	35.70***	30.34***
Wald test of exogeneity	19.43***	19.65***	19.49***

Note: Cell entries are two-limit Tobit coefficients, with a lower limit at 1 and an upper limit at 7. Standard errors are in parentheses. $N = 381$.

***$p < .001$ **$p < .01$ *$p < .05$

Table 5. Tobit Estimates for NAFTA ORIGIN RULE **using** MFN TARIFFS

	(1)	*(2)*	*(3)*
MFN TARIFFS	14.272***	13.737***	15.455***
	(3.334)	(3.287)	(3.520)
RETURNS TO SCALE	1.767*	1.523*	1.845*
	(0.732)	(0.692)	(0.739)
OFFSHORE ASSEMBLY	-4.509*	-4.184*	-4.673*
	(2.071)	(2.069)	(2.101)
INDUSTRY CONCENTRATION	0.200	0.194	0.261
	(0.296)	(0.356)	(0.319)
GEOGRAPHIC CONCENTRATION	-0.154		-0.299
	(0.627)		(0.637)
ELECTORAL CONCENTRATION		-2.985	
		(2.275)	
INDUSTRY SIZE		-0.001	
		(0.011)	
LARGE, DECENTRALIZED INDUSTRIES		-16.604**	
		(6.003)	
DEMOCRATIC LEADERSHIP			0.023
			(0.030)
REPUBLICAN LEADERSHIP			-0.012
			(0.030)
Constant	4.022***	4.036***	3.982***
	(0.250)	(0.241)	(0.273)
Log likelihood	246.7	240.2	250.9
Wald χ^2	32.11***	36.50***	35.20***
Wald test of exogeneity	13.51***	11.15***	15.08***

Note: Cell entries are two-limit Tobit coefficients, with a lower limit at 1 and an upper limit at 7. Standard errors are in parentheses. $N = 379$.

***$p < .001$ **$p < .01$ *$p < .05$

Table 6. Marginal Effects

Value of:	*Predicted value for* NAFTA ORIGIN RULE	
RETURNS TO SCALE	*Table 4*	*Table 5*
Low (-0.018)	4.54	4.64
High (0.166)	5.08	4.95
Change from low to high	0.55	0.31
OFFSHORE ASSEMBLY	*Table 4*	*Table 5*
Low (0.000)	4.88	4.83
High (0.032)	4.59	4.69
Change from low to high	-0.29	-0.14
NTB COVERAGE	*Table 4*	
Low (0.000)	4.11	
High (0.486)	6.04	
Change from low to high	1.93	
MFN TARIFFS		*Table 5*
Low (0.005)		4.20
High (0.088)		5.39
Change from low to high		1.19

Note: Categories for RETURNS TO SCALE, OFFSHORE ASSEMBLY, NTB COVERAGE, and MFN TARIFFS are values at one standard deviation below the mean (low) and one standard deviation above the mean (high). Predicted values for NAFTA ORIGIN RULE are averaged across the three models in Table 4 and Table 5, conditional on non-limit outcomes, with all other variables held constant at their mean values.

Figure 1. Rule of Origin Restrictiveness

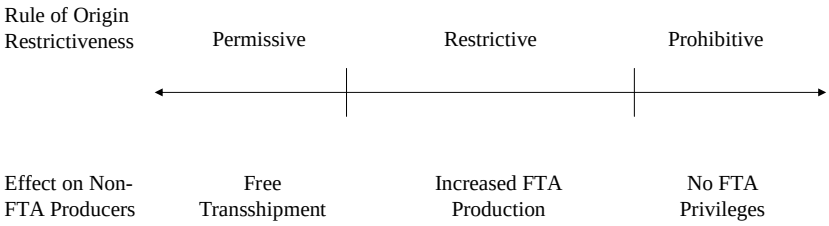
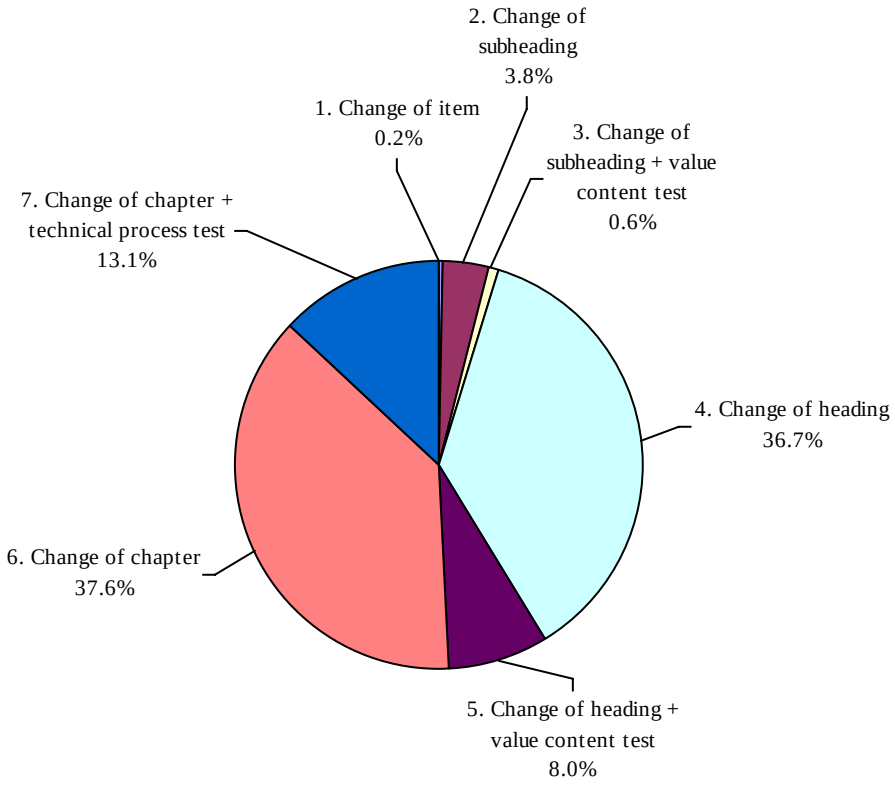


Figure 2. Distribution of NAFTA Rules of Origin



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