Volume Title: Trade and Protectionism, NBER-EASE Volume 2

Volume Author/Editor: Takatoshi Ito and Anne O. Krueger, editors

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-38668-6

Volume URL: http://www.nber.org/books/ito_93-2

Conference Date: June 19-21, 1991

Publication Date: January 1993

Chapter Title: The Political Economy of Trade Protection in the Republic of China on Taiwan

Chapter Author: Tain-Jy Chen, Chi-ming Hou

Chapter URL: http://www.nber.org/chapters/c8080

Chapter pages in book: (p. 339 - 359)

12 The Political Economy of Trade Protection in the Republic of China on Taiwan

Tain-Jy Chen and Chi-ming Hou

The Republic of China on Taiwan (ROC) has consistently adopted both an export-expansion policy and an import-substitution policy concurrently. While the export-expansion policy has been widely scrutinized and generally regarded as an important driving force behind Taiwan's economic success, the import-substitution policy has received relatively little examination, especially with regard to how it was formulated and its effects on economic development. This paper has the limited purpose of analyzing some aspects of the principal instruments of import substitution, namely, tariff policy and import controls.

12.1 Tariff and Nontariff Policies

12.1.1 Tariff Rates

Table 12.1 shows both the nominal tariff rates and the "average tariff burden" in Taiwan. The nominal tariff rate is the average rate of all tariff items in the tariff schedule. The average tariff burden is the ratio of total tariff revenue to total value of merchandise imports before tariffs and hence does not take into account the effect of prohibitive tariff rates. The nominal rates (simple average) remained around 40 percent throughout the 1950s, 1960s, and 1970s. In 1974, the average nominal tariff rate reached a high of 55.7 percent. Thereafter, it began to decline gradually, reaching 39.1 percent in 1979.

Tain-Jy Chen is a research fellow at the Chung-Hua Institution for Economic Research, Taipei. The late Chi-ming Hou was a visiting senior research fellow at the Chung-Hua Institution for Economic Research and Charles A. Dana Professor of Economics at Colgate University.

The authors wish to express their sincere thanks to Meng-chun Liu for his work in the construction of the models used in this paper. Liu is an assistant research fellow at the Chung-Hua Institution for Economic Research.

Table 12.1 **Tariff Rates and Tariff Revenue: Taiwan**

Year	Nominal Tariff Rates (%)		Average Tariff Burden (%)	Tariff Revenue as % of Total Tax Revenue
1955	47.0		20.9	14.6
1961	38.8		12.8	17.3
1965	35.4		14.8	20.8
1971	39.1		11.3	19.3
1974	55.7		10.1	27.6
1975	52.7		11.4	23.8
1976	49.1		10.6	23.5
1977	46.2		10.8	23.3
1978	43.6		11.3	24.2
1979	39.1		10.6	23.6
	Column I	Column II		
1980	36.0	31.2	8.1	20.1
1981	36.0	31.2	7.5	17.6
1982	36.0	31.0	7.3	16.2
1983	36.0	31.0	7.7	17.4
1984	36.0	30.8	8.0	17.8
1985	32.8	26.5	7.7	16.0
1986	31.8	22.8	7.8	17.2
1987	. . .	19.4	7.0	15.2
1988	. . .	12.6	5.8	13.3
1989	. . .	9.7	7.0	13.2
1990	. . .	9.7	5.4	9.5

Source: Nominal tariff rates are adopted from Mao and Tu (1991, table 7). Average tariff burden and tariff revenue as percentages of total revenue are the authors' calculations based on *Yearbook of Tax Statistics, Republic of China* (various issues).

It continued to decline after 1980, when the two-column tariff schedule was enacted. Column I tariffs applied to the countries that did not grant preferential tariffs (most-favored nation [MFN] treatment) to the ROC and hence had to pay higher tariffs for their commodity exports to Taiwan, while Column II tariffs applied to the countries that granted a preferential trade status to Taiwan. In practice, except for the Communist states, virtually all free-world trade partners were categorized as Column II countries. Nevertheless, the average nominal tariff rate in that category did not fall below 30 percent until after 1985. For Column I countries, the average nominal tariff rate remained above 35 percent before 1985. Significant import liberalization has taken place since 1985, and, consequently, the average nominal tariff rate has been substantially reduced.

A similar pattern of evolution can be observed for the average tariff burden. It was above 12 percent in the 1960s and began to decline in the 1970s. It was

11.3 percent in 1971 and reached 7.5 percent in 1981. Thereafter, it remained at nearly 8 percent until 1986. By 1988, it was down to 5.8 percent. According to the four-year (1989–92) tariff reduction plan announced by the government in November 1988, the average tariff burden will be reduced to 3.5 percent in 1992, about the same level as the average of the industrialized members of the OECD. The average nominal tariff rate, according to the plan, will be reduced to 7 percent by 1992.

12.1.2 Import Controls

In Taiwan, direct import controls are as important as tariffs in regulating the flow of trade. Importable commodities may be subject to three types of controls: (i) commodities that cannot be imported at all by private importers; (ii) commodities that may be imported, but under strict controls; and (iii) commodities that are imported but where the consent of certain branches of the government is required or restrictions on the qualifications of importers or countries of origin may be imposed. Over the years, the number of items under the first category (i.e., prohibited) has been reduced from 4.8 percent of all importable items in 1956 to 0.03 percent in 1987. The number of items under the second category (i.e., controlled) has been reduced from 46 percent of all importable commodities in 1956 to 1.6 percent in 1987. The number of items under the third category (i.e., restricted) has also been reduced.

It should be noted that many import restrictions are imposed for reasons of national defense, environmental protection, and sanitation and health as well as for the protection of government monopolies and the agricultural sector. Restrictions on countries of origin are designed sometimes to correct trade imbalances (e.g., restrictions on imports from Japan, with which Taiwan has had large trade deficits) and sometimes to fend off products from competitive countries.

These import controls are regarded by many as more restrictive than high tariffs. In the 1950s and 1960s, almost half of importable items were classified in prohibited or controlled categories. Dramatic liberalization took place in the 1970s and 1980s. Today, less than 2 percent of the importable commodities are still prohibited or controlled. But other restrictive measures, such as those imposed on the sources of imports and the eligibility of importers, are still commonplace. The various branches of the government whose consent for certain imports is necessary are often those whose job it is to protect the interests of the import-competing industries.

12.1.3 Changes in Trade Policy

The government of the ROC began the reconstruction and development of Taiwan after the island was retroceded to China in 1945. Economic difficulties abounded, and there was rampant inflation, budgetary deficits, trade deficits, a shortage of foreign exchange, a lack of infrastructure, and low living standards. To deal with all these economic ills, the government adopted a host of

policies, among them high tariff barriers, quantitative import restrictions, exchange controls, and currency overvaluation. All these policies were highly fashionable then in certain circles of the economic profession and were generally labeled as import-substitution policies. Government officials believed that these policies not only could solve all the current economic problems but could also nurture the infant industries and bring about economic development. Thus, in the 1950s, high tariff rates and import controls were instituted to protect industries such as textiles, flour, sugar, plywood, plastics, cement, and paper that the government wanted to develop. Import restrictions and high tariffs were also imposed on luxury goods to save foreign exchange.

This import-substitution policy did have the effect of promoting domestic production, but the home market was soon saturated. By 1959, capacity utilization rates in a broad spectrum of industries had fallen to very low levels. From 1958 to 1961, a series of measures such as currency devaluation, provision of export incentives, establishment of tax-free export-processing zones, etc. were adopted to promote exports. In fact, the export expansion strategy can be said to have begun in July 1955, when provisions were made for the rebate of import duty, the defense surtax, and the commodity tax in order to encourage the processing of imported materials for export.

Despite the export-promotion strategy, import substitution as a key economic policy was not discontinued. Import controls and protective tariff rates remained in effect. Some products, such as textiles and certain agricultural products, which had already grown to be the main sources of exports, continued to be protected.

High tariffs, coupled with controls on nearly half the import items, successfully suppressed imports during the course of export expansion. Under the pegged exchange rate, a trade surplus began to develop and grow. The surplus amounted to U.S. $105 million in 1970 and U.S. $766 million in 1973. The successive trade surpluses forced the Central Bank to neutralize the exchange market by injecting a flood of new money. The surging money supply threatened price stability and forced the government to switch policies. Bold import liberalization measures were undertaken in 1972 and 1974. The measures brought the controlled and prohibited import items to less than 3 percent, and that proportion stayed virtually unchanged until the mid-1980s, when a trade surplus reemerged and grew to a very high proportion of GNP.

More extensive import liberalization and deeper tariff cuts were undertaken in the 1980s owing to political pressure from the U.S. government as well as swelling trade surpluses. The United States has been Taiwan's major trade partner, and the ballooning trade imbalance in Taiwan's favor produced a strong American demand that Taiwan open its domestic market. As a result, tariff concessions were successively made, and nontariff trade barriers were removed one after another. In fact, since 1980, the ROC government has been forced to revise its tariff schedule virtually every year.

12.2 Empirical Models of Trade Protection

In his survey of the literature regarding the political economy of tariff protection, Baldwin noted the "widespread disagreement as to which of the various competing hypotheses best explains the structure of protection within industrial democracies" (Baldwin 1984, 573). The disagreement may be even more widespread when we come to discuss a developing country lying between democracy and dictatorship. Nevertheless, in our empirical modeling of Taiwan's trade protection, we shall examine two models to see their relevance for the analysis of Taiwan's tariff and nontariff protection measures.

The first model is the interest group model. This model views the government as "intermediates who balance the conflicting interest of various groups in society in order to maximize their likelihood of remaining in power" (Baldwin 1984, 573). In a democratic society, these interest groups are tied to voting power or campaign effectiveness, which eventually decide the election outcome. In that scenario, political decisions depend on the preferences of voters and interest groups, with the state having little independent influence. This view is exemplified in Olson (1965) and Brock and Magee (1978).

The second model, the national interest model, holds the opposite point of view. It views the state as an autonomous decision maker, formulating policies in line with the "national interest." National interest may cover broad areas of concern, such as national security, price stability, rapid economic growth, equity, national prestige, etc. The model seems to be a natural portrait of an authoritarian regime. It is also called the "bureaucratic authoritarian" model by Findlay and Wellisz (1982). The difference between the two models is obvious, and they represent two contrasting styles of policy-making. In the interest group model, the government responds to the demands of the pressure groups with the sensitivity of responses in line with the group's political leverage. In essence, the structure of tariffs is set in a political "market" where equilibrium is reached when demand for protection matches the state's willingness to supply it. In contrast, in the national interest model, the government behaves according to certain "principles" that it applies irrespective of the amount of pressure (Lavergne 1983, 3).

In the real world, both models may find a certain explanatory power. Hence, they are not mutually exclusive. Even in an apparent "autonomous" state like Taiwan, pressure groups may find ways and means to influence political decisions. In order to consolidate its power base, the state used economic interests to glue together its loyalists (Chu 1989). This includes Mainland entrepreneurs who made the exodus to Taiwan with the Nationalist government, local business conglomerates that maintain an intimate relation with the party, etc. In an autonomous regime, these favored constituents may act as de facto pressure groups.

In the following study, we shall examine the explanatory power of both

models when applied to Taiwan's structure of trade protection in 1981 and 1986, the most recent years for which input-output tables provide the necessary data. In the 1980s, the state's degree of autonomy had been considerably lessened from previous years, and democratic elements had begun to emerge in society. The ruling KMT party started to face real challenges from independent politicians in elections; political pluralism was taking shape, climaxing in the formation of an opposition party in 1986. Taiwan also emerged as one of the world's major trading countries in the 1980s, and surging trade surpluses made it susceptible to international protectionism. In sum, the autonomous state gradually dissolved in the 1980s, and we expect the patterns of protection in 1981 and 1986 to reveal some of the changes in the political arena.

We shall examine the protection structure in terms of both tariff and nontariff barriers. The nontariff barriers are presumably the protection measures favored by the executive branch of the government for they afford the bureaucrats more discretionary power. While any revision of the tariff schedule, including reclassification of import items among permissible, controlled, and prohibited categories, must be approved by the legislative branch, the imposition of the aforementioned administrative restrictions on permissible imports was in the power of the executive branch.

How to measure the degree of protection provided by nontariff barriers is an unresolved issue. Various indexes have been proposed in the literature. In this paper, in addition to adopting an aggregated index, we shall also employ a disaggregated measurement for analysis. First, according to the classification in Taiwan's tariff schedule, all import items fit into one of the following six nontariff barrier (NTB) categories in accordance with its administrative regulations, or lack thereof:

1. Controlled or prohibited (denoted NTB1);
2. Facing a producer-only import restriction (denoted NTB2);
3. Facing a public-enterprise-only import restriction (denoted NTB3);
4. Facing a sources-of-import restriction (denoted NTB4);
5. Facing a special-agency-licensing restriction (denoted NTB5);
6. Freely importable (denoted NTB6).

The objects of our study are the four-digit industry sectors laid out in the input-output tables, each sector containing a number of seven-digit tariff items defined in the Customs Import Tariff (Schedule) of the Republic of China. Each item fits into one of the above NTB categories, and the distribution of these items is a fair representation of the structure of protection in each industry sector. Dividing the number of import items in each category by the total number of import items in the whole industry, we obtain a percentage distribution across six NTB categories, with the percentages always summing to unity. Our task is to see how the above-stated models explain this distribution, which is a disaggregated representation of trade protection.

Note that analyzing the fraction of the industry subject to each kind of protection differs from the traditional probit-model approach to the analysis of nontariff barriers. While the probit model classifies each industry as protected or nonprotected, our approach looks beyond the yes-or-no question by examining the methods of protection. Through joint estimation of the distribution of import controls, we will understand not only how the relevant explanatory variables affect the existence of nontariff barriers but also how these variables determine the composition of barriers. The approach is analogous to the share equation analysis of the choice of inputs.

In the second step, we will follow the traditional approach in formulating an aggregate index to represent nontariff barriers. The index will then enter the two models along with the tariff in a simultaneous-equations setting to examine their goodness of fit. In doing so, we basically view nontariff measures and tariffs as two policy options open simultaneously to policymakers. The choices may be made simultaneously as the policymakers choose the policy mix that minimizes the cost of protection, or maximizes their likelihood of remaining in power, or fits into whatever objective function they may adhere to. The choices may also be made sequentially, as in Ray (1981), where U.S. policymakers were depicted as choosing tariffs first and complementing them with nontariff protection measures when necessary.

We largely follow Chang (1986) in choosing the explanatory variables. The interest group model comprises the following explanatory variables:

CR4: Four-firm concentration ratio. It measures the market power of the dominant firms. The public choice theory predicts that the firms in an oligopolistic industry have a lower cost in exercising their political influence and hence are more effective in obtaining protection.

DPAR: Dummy variable for KMT party–affiliated industries. DPAR takes the value of 1 for the industry where one or more KMT party–affiliated firms exist and they are also among the top 500 firms in the China Credit Information Service (CCIS) annual survey. It takes the value of 0 otherwise.

DPE: Dummy variable for public enterprises. DPE takes the value of 1 for the industry where one or more public enterprises exist and they are also among the top 500 firms in the CCIS annual survey. It takes the value of 0 otherwise.

DFDI: Dummy variable for foreign direct investment. DFDI takes the value of 1 for the industry where one or more foreign-owned firms exist and they are also among the top 500 firms in the CCIS annual survey. It takes the value of 0 otherwise.

The four variables are designed to capture the influences of party-affiliated enterprises (by DPAR), public enterprises (by DPE), and local private enterprises (by CR4, which includes the effects of others). Labor unions are conspicuously missing as an explanatory variable, for, until 15 July 1987, the

right to strike was suspended, and labor unions were little more than organizers of employees' pastime activities.

The national interest model comprises the following variables:

LAB: Labor intensity, measured by the ratio of labor input to capital input in each sector. Both include the direct inputs as well as the indirect inputs embodied in intermediate goods. The variable is designed to see whether the protection favors labor or capital.

RMK: Producer-goods ratio, measured by the proportion of imports used by producers as raw materials, intermediate goods, or capital goods. In other words, it is the proportion of the sector's imports designated for industrial usage, as opposed to consumption. It is typical in a developing country that producer goods are given preference over consumer goods to be imported.

IP: Import-penetration ratio, measured by the ratio of imports to total demand in each sector. It indicates the market share taken by imports. A higher import-penetration ratio alerts the government to award more protection to the endangered industry if the government is protectionist oriented. In this case, there exists a positive correlation between the import-penetration ratio and the degree of protection. If the government is apathetic to the industry threatened by imports, a higher import-penetration ratio may simply reflect the result of slack protection. In this case, the correlation is negative.

EXSH: Export share, measured by the ratio of exports to the value of production. The export share normally indicates its international competitiveness. We expect a higher EXSH to be correlated with a lower level of protection.

CRIM: Import-concentration ratio, measured by the ratio of imports in each sector to total imports. It indicates the extent to which the sectoral imports drain foreign exchange. This variable matters particularly when the government is concerned with its foreign exchange position.

DKEY: Dummy variable for key sector. This variable takes the value of 1 for the industry that is designated as a strategic mining or manufacturing industry under the Statute for the Encouragement of Investment, the law that regulates investment promotion. If the government resorts to tariff or nontariff barriers to protect the strategic industry, we should expect a positive correlation between DKEY and the degree of protection.

PESH: Public enterprises' share in output, measured by the ratio of the output of public enterprises to the output of the whole industry. It attempts to capture the possible trade preferences given to public enterprises.

DAGR: Dummy variable for the agricultural sector. This variable takes the value of 1 for the forestry, fishing, and farming sectors. It takes the value of 0 otherwise.

12.3 Empirical Results

The distribution of nontariff barriers (NTB) is estimated first. Since the percentage associated with each NTB category is interrelated, the disturbance term associated with each regression equation may also be intercorrelated, and we adopt the seemingly unrelated regression method to conduct the estimation. Furthermore, since the six variables (NTB1–NTB6) always sum to unity, their disturbance terms are indeed perfectly correlated. Hence, we drop one of the variables (NTB2) to form a five-equation model. The estimation results for the interest group model are reported in tables 12.2–12.3 and those for the national interest model in tables 12.4–12.5.

Then a *K*-class model is employed to jointly estimate the tariff and an aggregated index of nontariff barriers (NTB). The NTB index is formulated by a weighted average of nontariff protection measures, with controlled and prohibited items given a weight of 1, public-enterprise-only and special-agency-licensing restrictions given a weight of 0.75, sources-of-imports restrictions given a weight of 0.5, producer-only restrictions given a weight of 0.25, and, finally, freely importable items given a weight of 0. The weighting scheme, albeit arbitrary, is assigned in accordance with the order of the degree of restriction imposed by each type of regulation. The estimation results from the

Table 12.2 **Interest Group Model of Nontariff Barriers, 1981**

	NTB1	NTB3	NTB4	NTB5	NTB6
Constant	.0139	−.0702**	.0272*	−.0120	1.0158**
	(.84)	(2.93)	(1.51)	(.95)	(25.78)
CR4	.0004	.0018**	.0002	.0003	−.0027**
	(1.45)	(4.63)	(.73)	(1.45)	(4.29)
DPAR	−.0109	−.0546	−.0490*	.0873**	.0589
	(.45)	(1.55)	(1.85)	(4.70)	(1.02)
DPE	−.0403*	.2016**	−.0392*	−.0058	−.0963*
	(1.72)	(5.97)	(1.55)	(.33)	(1.74)
DFDI	−.0152	.0146	.0836**	.0226	−.0953
	(.60)	(.40)	(3.05)	(1.18)	(1.59)
	N = 280, weighted R^2 = .0846				

Note: NTB1 = controlled or prohibited; NTB3 = facing a public-enterprise-only restriction; NTB4 = facing a sources-of-import restriction; NTB5 = facing a special-agency-licensing restriction; NTB6 = free of restrictions. Numbers in parentheses are *t*-statistics.

*Significant at the 10 percent level.

**Significant at the 5 percent level.

Table 12.3 **Interest Group Model of Non-tariff Barriers, 1986**

	NTB1	NTB3	NTB4	NTB5	NTB6
Constant	.0317	−.0362**	−.0037	.0340	.9736**
	(1.57)	(2.43)	(.73)	(1.05)	(24.4)
CR4	−.0002	.0007**	.0001*	.0009*	−.0017**
	(.55)	(3.05)	(1.68)	(1.79)	(2.61)
DPAR	−.0031	−.0223	−.0020	−.0297	.0582
	(.14)	(1.33)	(.48)	(.81)	(1.29)
DPE	.0431**	.1304**	.0055	.0154	−.1771**
	(2.05)	(8.40)	(1.42)	(.46)	(4.26)
DFD1	−.0201	.0043	.0017	.0644**	−.0468
	(1.71)	(.34)	(.55)	(2.34)	(1.38)
		N = 297, weighted R^2 = .1033			

Note: See table 12.2.

*Significant at the 10 percent level.

**Significant at the 5 percent level.

Table 12.4 **National Interest Model of Nontariff Trade Barriers, 1981**

	NTB1	NTB3	NTB4	NTB5	NTB6
Constant	.0626**	.1390**	.0848**	.0418**	.7850**
	(2.51)	(3.48)	(2.57)	(2.08)	(14.15)
LAB	−.0001	−.0018	.0008	.0016	.0035
	(.07)	(.58)	(.32)	(1.02)	(.80)
RMK	−.0214	−.1162**	−.0361	.0475**	.1451**
	(.88)	(2.97)	(1.12)	(2.41)	(2.67)
IP	−.0119	−.0556	−.0471	.0534**	−.0088
	(.38)	(1.11)	(1.14)	(2.12)	(.13)
EXSH	−.0444	−.1719**	−.0066	−.0588**	.1809**
	(1.58)	(3.82)	(.18)	(2.60)	(2.89)
CRIM	−.1469	3.3498**	.1954	−.1378	−2.9494**
	(.30)	(4.30)	(.30)	(.44)	(2.73)
DKEY	−.0239	−.0740**	−.0415**	−.0099	.0928**
	(1.28)	(2.46)	(1.67)	(.65)	(2.22)
PESH	−.0411	.4999**	−.0582	−.0191	−.4101**
	(1.36)	(10.33)	(1.46)	(.78)	(6.10)
DAGR	−.0365*	−.0134	−.0386	−.0320*	.0414
	(1.69)	(.39)	(1.35)	(1.84)	(.86)
		N = 336, weighted R^2 = .1123			

Note: See table 12.2.

*Significant at the 10 percent level.

**Significant at the 5 percent level.

Table 12.5 National Interest Model of Nontariff Trade Barriers, 1986

	NTB1	NTB3	NTB4	NTB5	NTB6
Constant	.0331	.0697**	.0592**	.223**	.9452**
	(1.33)	(3.73)	(5.65)	(4.79)	(31.24)
LAB	.0002	−.0012	−.0020**	.0053	−.0009
	(.13)	(.79)	(2.43)	(1.44)	(.38)
RMK	−.0125	−.0688**	−.0453**	−.1533**	.0167**
	(.52)	(3.80)	(4.46)	(3.40)	(.57)
IP	−.0477	−.0287	−.0028	.0993*	−.0868**
	(1.58)	(1.26)	(.22)	(1.75)	(2.36)
EXSH	−.0297	−.0702**	−.0207*	−.1831**	.0636*
	(1.09)	(3.43)	(1.80)	(3.59)	(1.92)
CRIM	.2003	3.0376**	.1638	1.4048	−1.2422
	(.20)	(4.11)	(.40)	(.76)	(1.04)
DKEY	−.0084	−.0193	−.0065	−.0249	.0127
	(.38)	(1.17)	(.71)	(.61)	(.48)
PESH	.0098**	.2472**	−.0128	−.0559	−.1507**
	(3.35)	(11.23)	(1.04)	(1.02)	(4.23)
DAGR	.0130	−.0004	−.0213**	.2988**	−.1050**
	(.63)	(.02)	(2.45)	(7.70)	(4.17)
	N = 372, weighted R^2 = .1743				

Note: See table 12.2.

*Significant at the 10 percent level.

**Significant at the 5 percent level.

interest group model are reported in tables 12.6–12.7 and those from the national interest model in tables 12.8–12.9.

It appears that the national interest model explains the structure of protection better than the interest group model, especially when tariff and nontariff measures are jointly considered. In the determination of nontariff barriers, the effect of explanatory variables pertaining to the interest group model is sporadic. Only the four-firm concentration ratio (CR4) and public enterprise dummy (DPE) show a consistent effect on distribution. A higher concentration ratio is shown to reduce the sector's likelihood of being categorized as freely importable (shown by a smaller percentage for NTB6) and to increase its likelihood of being subject to the public-enterprise-only import constraint. Presumably, the more oligopolistic sectors are also dominated by public enterprises. In 1986, a high concentration ratio also leads to sources-of-import and special-agency-licensing constraints.

However, it is the public enterprises that indicate the strongest effect on NTB protection, judged by its highest significant coefficient estimates. The existence of major public enterprises reduces the sector's chance to conduct free trade and increases its chance of being classified as controlled or prohibited or of being subject to public-enterprise-only and sources-of-import con-

Table 12.6 **Interest Group Model of Protection, 1981 (*K*-class Estimates, $K = .7$)**

	NTB	TF
Constant	−.0277	27.627**
	(.55)	(13.8)
TF/NTB	.0003	1.842
	(.00)	(.22)
CR4	.0019**	.0621*
	(4.07)	(1.71)
DPAR	−.0130	−9.525**
	(.30)	(3.24)
DPE	.0574	−15.153**
	(1.25)	(5.17)
DFDI	.0285	−.488
	(.69)	(.16)
Adjusted R^2	.0624	.0981

Note: NTB = nontariff barrier index; TF = tariff rate.

*Significant at the 10 percent level.

**Significant at the 5 percent level.

Table 12.7 **Interest Group Model of Protection, 1986 (*K*-class estimates, $K = .7$)**

	NTB	TF
Constant	.0229	38.718**
	(.38)	(14.17)
TF/NTB	.0003	1.022
	(.15)	(.15)
CR4	.0011**	−.057*
	(2.11)	(1.72)
DPAR	−.0414	.437
	(1.11)	(.19)
DPE	.1415**	−.742
	(4.12)	(.32)
DFDI	.0305	−.363
	(1.09)	(.21)
Adjusted R^2	.0972	−.0017

Note: See table 12.6.

*Significant at the 10 percent level.

**Significant at the 5 percent level.

straints (the latter for 1981 only). In addition, the presence of multinational enterprises is shown to invite the sources-of-import constraint in 1981 and the special-agency-licensing constraint in 1986. The presence of major party–affiliated enterprises is shown to increase the likelihood of special-agency-licensing and sources-of-import restriction in 1981, but this influence disappeared in 1986. It suggests that KMT enterprises' ability to manipulate the

Table 12.8 **National Interest Model of Protection, 1981 (*K*-class estimates, $K = .7$)**

	NTB	TF
Constant	.3208**	51.049**
	(3.75)	(11.59)
TF/NTB	−.0012	−7.191
	(.89)	(.89)
LAB	−.0015	−.515
	(.36)	(1.64)
RMK	−.2108**	−25.331**
	(3.63)	(6.53)
IP	−.0116	5.104
	(.20)	(1.16)
EXSH	−.2128**	−4.123
	(3.85)	(.91)
CRIM	2.0595**	−139.694**
	(2.30)	(2.04)
DKEY	−.1070**	−7.569**
	(3.03)	(2.80)
PESH	.2589**	−7.574
	(4.02)	(1.44)
DGR	−.0821*	−2.506
	(1.89)	(.75)
Adjusted R^2	.1462	.2190

Note: See table 12.6.

*Significant at the 10 percent level.

**Significant at the 5 percent level.

licensing scheme and to divert the source of imports in favor of particular suppliers (e.g., the United States) had subsided by 1986. Except for the switching preference in the forms of protection by major multinational firms, for which no obvious explanation is at hand, the results are largely in conformity with a priori expectations.

As for the national interest model, virtually all explanatory variables exert some influence over NTB distributions. Producer goods are shown to be favored by free import. A higher RMK is shown to reduce the likelihood of public-enterprise-only restrictions and special-agency licensing, and it reflects the government's proindustry policy. A higher EXSH exerts exactly the same influence, indicating the government's proexport stance. The estimates for DKEY are rather counterintuitive, however. We would normally expect the government to protect the strategic sectors, which are often synonymous with infant industries. The key to this puzzle lies in the fact that Taiwan's concept of strategic industries is an unconventional one. It views the industries with good export potential as strategic, and the protection of such industries does not require import control measures for there is little domestic market for

Table 12.9 National Interest Model of Protection, 1986 (K-class estimates, $K = .7$)

	NTB	TF
Constant	.3601**	41.744**
	(4.09)	(14.90)
TF/NTB	−.0017	−4.650
	(.92)	(.92)
LAB	.0021	.305
	(.57)	(1.58)
RMK	−.2490**	−22.963**
	(4.13)	(9.05)
IP	−.00002	−8.566**
	(.00)	(2.98)
EXSH	−.2360**	−3.920
	(4.74)	(1.38)
CRIM	3.5478**	−21.020
	(2.00)	(.22)
DKEY	−.0500	−3.484*
	(1.25)	(1.68)
PESH	.2366**	5.314*
	(4.29)	(1.73)
DAGR	.2492**	2.525
	(6.44)	(1.07)
Adjusted R^2	.2194	.3856

Note: See table 12.6.

*Significant at the 10 percent level.

**Significant at the 5 percent level.

them. Instead, the government resorts to other fiscal incentives, such as tax reduction, interest subsidies, and duty-free import of machinery and equipment, to assist the industries.

Public enterprises, again, exert a consistent and powerful effect on protection. Their market share is positively correlated with the likelihood that they receive protection in the form of the exclusive right to import (NTB3). The import-concentration ratio (CRIM) also shows a consistent effect on protection. A higher ratio reduces the likelihood of free trade in favor of state-only import restriction. It suggests a government attempt to put itself in firm control of the "essential" import items. Meanwhile, a higher import-penetration ratio (IP) increases the likelihood of special-agency licensing. But licensing seems to be a substitute for other forms of protection without reducing the proportion of freely importable items. Perhaps the government believes that licensing is more effective in curtailing imports when foreign products have made deep inroads into the domestic market. IP is shown to be positively associated with the proportion of free import in 1986. This correlation seems to indicate a causation running from protection to market share; that is, a freer import arrangement leads to a higher degree of import penetration. It suggests

that the government became apathetic to import competition in 1986. The agricultural sector (DAGR) shows a conflicting effect on protection. It shows a negative effect on the likelihood of special-agency licensing (NTB5) in 1981 and a positive effect on the same variable in 1986. This reflects the fact that the import liberalization measures undertaken in 1981–86 were mainly directed toward the industrial sector, leaving the agricultural sector relatively more protected as a result. The related evidence is that DAGR exerts a negative influence on the proportion of free import in 1986 but not in 1981.

Now let us turn to the joint estimation of tariffs and nontariff barriers by the *K*-class method. It is obvious that the interest group model is outperformed by the national interest model, judging by the adjusted R^2, especially for the year 1986. In the interest group model, the four-firm concentration ratio (CR4) and state enterprise dummy variable continued to show an influence on the overall measure of nontariff barriers to trade. The other variables ceased to produce significant coefficients, probably because aggregation conceals some micro effects on individual NTB measures.

On the tariff side, the estimation results indicate the inadequacy of the interest group model. In 1981, the four-firm concentration ratio (CR4) has a positive effect on tariff rates, a result in conformity with our prior expectations. What seems surprising is that both Party-affiliated and public enterprises (DPAR and DPE) show a strong and negative effect on tariff rates. It indicates that these politically influential groups resort to specific forms of nontariff measures to protect themselves, thereby earning themselves exclusive rights to import and making their imports subject to a lower rate of tariff. Thus, the lower tariffs actually enhance the degree of protection for these enterprises, rather than lowering it. In 1986, the four-firm concentration ratio (CR4) and public-enterprise dummy variable (DPE) again show positive effects on the nontariff barriers index. But the interest group model as a whole performs poorly in explaining the tariff structure, with the adjusted R^2 taking a negative value. The only slightly significant coefficient appears in front of CR4, with the sign contradictory to the theory. It may simply indicate that the model totally falls apart in explaining tariff protection.

On the other hand, the national interest model performs well in both years. The effects of the producer-goods ratio, export share, import-concentration ratio, key-industry consideration, and public enterprises on the overall index of NTB are largely in conformity with their effects on free import proportions (NTB6) shown in tables 12.4 and 12.5. A notable difference between 1981 and 1986 can be observed for the agriculture dummy (DAGR), where DAGR is shown to have a negative effect on NTB in 1981 and a positive effect in 1986.

The structure of tariffs is also well explained by the national interest model. In both years, the producer-goods ratio (RMK) shows the strongest effect on tariffs, indicating that tariffs were designed to favor imports of raw materials, intermediate goods, and capital goods for industrial production. Note that it is

also the most powerful variable in explaining the NTB scheme. Strategic industries (DKEY) were also shown to be favored by low tariffs in addition to low NTBs. Public enterprises' market share in the industry is positively correlated with nontariff protection in addition to tariff protection in 1986. A higher import-penetration ratio is correlated with a lower tariff rate in 1986, indicating that lower tariffs are favorable for the performance of imported goods and that protectionist measures to curtail import penetration were apparently lacking. Meanwhile, high import-concentration ratios were likely to be associated with low tariffs (at least in 1981), but they were usually accompanied by nontariff barriers.

In both models, tariff and nontariff barriers show little correlation. The decisions made on them seem to be independent of each other. There is no evidence indicating that the policy tools have been viewed either as substitutes or as complements in protecting domestic industries.

12.4 Concluding Remarks

This paper has adopted an interest group model and a national interest model to explore the determinants of Taiwan's tariff and nontariff barriers. In general, the national interest model has outperformed the interest group model in its portrait of Taiwan's structure of protection, especially in the area of tariffs. The results support the thesis that Taiwan has been an autonomous state in the formulation of trade policies. Even in the second half of the 1980s, when a democratic society gradually took shape, the state's autonomous power did not appear to subside.

The structure of protection closely reflects the state's proindustry, proexport development strategy. Raw materials, intermediate goods, and capital equipment were consistently favorable imports. On the other hand, labor benefits from neither tariff protection nor nontariff barriers. Instead, labor's rapidly rising income has been mainly derived from the rapidly growing export sectors, which are relatively labor intensive. The results also show that Taiwan did not resort to trade protection as a measure to boost "strategic industries." On the contrary, the strategic industries were likely to be the low-tariff industries. The government opted for fiscal incentives to nourish these industries.

The most powerful interest group, in the determination of tariff and nontariff barriers, was that of public enterprises. They often benefited from being the sole importers of the goods that were directly substitutable for their own products or could be used to produce such substitutes. The active role played by public enterprises in production as well as trade indicates that Taiwan is not entirely a capitalist state. Before privatization takes hold, it is likely that only external pressure can force a trade liberalization that would strip the public enterprises of their vested interests.

In retrospect, it is not hard to understand why the national interest model

explains Taiwan's tariff protection better than the interest group model. Until recently, government economic policy was dictated by a small group of government officials under the leadership of the late presidents Chiang Kai-Shek and Chiang Ching-Kuo. These officials were largely engineers by training, arriving in Taiwan from the Mainland without personal wealth and without connections to local business groups. The political environment was such that they could pursue virtually whatever policy they wanted as long as such policies had the backing of the top leadership. They did not have to bow to pressure from vested interest groups.

Nonetheless, in view of the emerging political pluralism and the visible U.S. pressure in the 1980s, we have expected, a priori, an increase in the receptiveness of the state to pressure groups during the 1980s. But the protection structure fails to reveal any significant policy shift between 1980 and 1986. Instead, national interest concerns still seemed to prevail. Perhaps we need to wait a few more years to witness the change. In a sense, the slowness of change also reflected the resistance from the vested interest groups that had been protected in the name of national interest, such as state-owned enterprises.

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Comment

Kenneth Flamm

This is a very interesting paper. It documents some extraordinary shifts in trade policy and attempts to explain them in terms of a "political economy" framework that has increasingly been used to address questions of this sort. My background in this particular framework is nil, and for this reason I am going to squeeze their exposition into the more conventional microeconomic framework of supply and demand that I am accustomed to using in analyzing markets. In this case, the market is for a rather unconventional commodity called "protection."

I will address three issues. First, what exactly are the authors estimating? My somewhat critical comments on this question probably apply to much of the work in this area, including other papers presented at this conference, so they should not be interpreted as a specific indictment of their work but rather as a more general set of questions about all work adopting this framework. There may be little that they can do to fix some of the specification problems that trouble me. Second, I will make some specific comments about their econometrics, focusing on estimation issues. Third, I want to raise some flags about testing and inference questions.

To begin, when we talk about a market, even one as ill defined as the one for "protection," my first impulse is to draw supply and demand curves. The quantity axis of my diagram should clearly specify units of "protection." After some thought, I decided that one reasonable choice for the "price" axis would be "net price" to the politicians or bureaucrats of protection, that is, votes or payoffs or whatever, net of the political costs of the inefficiency that protection created. The demand curve naturally slopes downward, and, ceteribus paribus, I would expect it to be shifted by the efficiency or competitiveness of the sector; more efficient sectors should value protection less than inefficient sectors.

I would expect the supply curve to slope upward or perhaps be vertical—if, for example, national interest places value on a sector that is insensitive to economic considerations. My diagram refers to a single sector. Multisectoral data allow one to estimate the location of some "generic" supply curve as it is shifted by industry-specific factors.

Chen and Hou identify two theories of the supply side: one, the "interest group" theory, discusses relative changes in supply in terms of factors that make it easier for interest groups to act on the state. Thus, for example, a more concentrated industry, or an industry associated with a powerful political party, might face a greater supply of protection for given price. They also identify a "national interest" theory of supply (which one might also call the "autonomous state" theory), which argues that visionary—or stubborn—bu-

Kenneth Flamm is senior fellow in the Foreign Policy Studies Program at the Brookings Institution, Washington, D.C.

reaucrats supply protection based on criteria that are independent of the blandishments, or the ability to supply blandishments, of the industry in question. To my way of thinking, this supply curve should probably rise vertically. They see it shifted by such factors as labor intensity, orientation toward production (rather than consumption) goods, and import penetration.

Now, in general, we will observe actual industry outcomes generated by shifts in both supply and demand, and we have to ask whether we can identify supply or demand. Unfortunately, it seems to me that the factors identified as shifting supply under the "national interest" hypothesis also determine competitiveness and therefore shift the demand for protection; this raises the serious question of whether we can identify this "supply curve" econometrically. One seeming way out would be to estimate a reduced-form equation giving the equilibrium quantity of protection, rather than a structural equation, and test for hypotheses concerning the supply curve by means of exogenous variables included in this reduced form. However, if the demand curve contains the same exogenous variables as arguments, this approach still will not work.

The interest group theory of supply faces other problems. Some of its determinants—notably industry concentration and the presence of foreign investment—are clearly caused by, as well as possibly causing, the level of protection. Therefore, this requires the use of statistical models that provide for their endogeneity, which the authors, unfortunately, do not use.

Next, let me turn to estimation issues. The authors use a seemingly unrelated regression model to estimate the supply of different types of nontariff barriers. Why not also include tariff levels in this system? Also, as previously mentioned, some of their explanatory variables are almost certainly endogenous.

For some unspecified reason, the authors decide to use a K-class estimator for an alternative model, which includes equations explaining both tariff and aggregate nontariff barriers. For even less clear reasons, they choose a value of $K = .7$, which guarantees that their coefficient estimates are inconsistent. Why not simply use two-stage least squares (i.e., $K = 1$)? The only justification for such another choice of K (other than the root of a determinantal equation, which gives the limited information maximum likelihood estimator) that I can think of would revolve around possible small sample characteristics of the distribution of the estimator, and I see no such justification given here. Also, since the K-class estimator is a limited information estimation technique, I surmise that they are "stacking" the two equations and not attempting to estimate cross-equation covariances. Thus, the only sense in which they are using a "joint" estimation technique is that they presume identical variances for the disturbance terms in each of the two equations. Some discussion of their variables and equation structure justifying the techniques they have chosen to use would have been desirable.

The last issue I must mention is that of specification testing. With seemingly unrelated regressions (because you are transforming variables using an

estimated covariance matrix), R^2 cannot be used as a test of goodness of fit for alternative specifications. In fact, the only context in which R^2 measures something that is directly and appropriately interpretable as a transformation of a meaningful specification statistic is for ordinary least squares, which they are not using. One way in which they might construct a meaningful specification test is to include both sets of variables, then constrain subsets to equal zero and calculate a Wald statistic, which is easily done in most econometric packages.

In conclusion, I would offer the following suggestions for further work. Estimate reduced-form equations, using all the exogenous variables discussed in this paper. Then constrain those associated with the "interest group" theory of supply to equal zero and construct a Wald test for this hypothesis, which will allow you to accept or reject the interest group theory hypothesis. Unfortunately, you will not be able to use an analogous procedure with the "national interest" theory because the exogenous variables playing a potential role in supply may also be expected to affect the demand for protection.

Comment

Ching-huei Chang

This is an interesting and stimulating paper, and I enjoyed reading it very much. In this paper, Tain-Jy Chen and Chi-ming Hou attempt to determine whether Taiwan's tariff and nontariff trade policy can be better described by an interest group model or a national interest model. For that purpose, they formulate some aggregate and disaggregate indexes according to the degree of protection provided by nontariff barriers. These indexes and tariff levels are then fitted into several regression equations, using different explanatory variables under different hypotheses, for the years 1981 and 1986. From the results obtained, they conclude: "In general, the national interest model has outperformed the interest group model in its portrait of Taiwan's structure of protection, especially in the area of tariffs."

I do not have any doubts about the adequacy of their estimation, and the conclusion they reach seems to me not surprising. However, I would like to see some discussion about how the demand and supply of protection works to determine the levels and structure of tariffs and nontariff barriers. The political "market" in Taiwan is markedly different from that in the United States or other advanced nations. It is close to a monopolistic market, even after 1985, when the first opposition party was formed. Compared with the ruling KMT party, the major opposition party, the Democratic Progressive party (DPP), is quite weak in every aspect. Because administrators, including the president,

Ching-huei Chang is a research fellow of Sun Yat-sen Institute for Social Sciences and Philosophy, Academia Sinica, Taiwan.

the vice president, prime ministers, and a large proportion of parliamentary members, are not elected by citizens of the society, they do not have the intention of taking actions in line with the will or preference of the people. Here we have a divergence between the government objective function and the social welfare function (however it is defined), even though the decision makers may rationalize these actions in terms of national security, national prestige, or national interest. However, because there still exists a potential threat of competition from the opposition party, these decision makers may restrain their behaviors in order not to lose market shares to DPP or other parties. Summing up, Taiwan is not a democratic country, nor is it a dictatorship. Therefore, whether a national interest model or an interest group model can be applied to explain Taiwan's protection policy is questionable.

Another point should be made. There are interest groups existing in Taiwan that exercise their influence, not through lobbying or any other open actions found in advanced nations, but through under-the-table operations (like bribery or seeking a good connection with some power "elite"). For example, one of the automobile companies used to be protected from foreign competition by tariff and nontariff barriers because its owner had close connections with the late President Chiang Kai-shek. Finally, there exists pressure from the United States and some other countries that may have some effect on the demand for, or supply of, protection.

At any rate, we need a new theoretical model that fits into the framework of Taiwan's political situation. This suggestion may be consistent with the results of Chen and Hou's regression analyses reported in their tables 12.2–12.9. In most of these regression equations, adjusted R^2 is quite small, and the estimated value of the constant term is significantly different from zero. Obviously, some important variables are missing in these equations.