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There have not been many empirical studies of the determination of the protection structures in developing countries. Korea is no exception. Alikhani and Havrylyshyn (1982) (as quoted in Amelung [1989]) and Jwa (1988) are examples of the few studies of Korea's protection. The empirical part of Jwa investigates the determinants of the import liberalization that took place in the mid-1980s. This paper attempts to explain the political economy of the determination of protection levels.

Section 13.1 presents three different measures of nominal protection in Korea for 1978, 1982, and 1988, the years for which data are available. The section also presents estimates of the effective rates of protection for 1978 and 1982. It should be noted that nominal and effective protective rates are estimated only for domestic sales, not for total sales, as export sales cannot be protected. The section also discusses the salient features of the protective structure and changes over time.

Section 13.2 considers whether the political economy discussion of the protection structure can be profitably applied to a developing country, in particular, to Korea, where the influence of elected representatives on trade policy matters has not been as strong as in the industrial democracies. Section 13.3 estimates simple regression models of the determination of the nominal and effective protection structures and reports the results. Section 13.4 provides a brief summary and conclusion.

13.1 The Protection Structure in Korea

13.1.1 The Structure of Nominal Protection

In tables 13.1–13.3, tariffs, actual tariffs, and nominal rates of protection (NRPs) are presented by primary sector and manufacturing three-digit KSIC

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Table 13.1 The Structure of Nominal Protection in 1978 (%)

	Tariffs	Actual Tariffs	NRP
Agriculture	25.8	20.6	50.0
Forestry	13.8	13.1	3.9
Fishing	34.7	22.2	1.4
Mining	17.7	1.8	1.3
Manufacturing	40.8	25.1	19.7
Food	39.4	30.0	18.5
Beverage	125.0	18.1	12.9
Tobacco	150.0	127.1	19.3
Textiles	49.2	29.8	10.9
Clothing	60.0	39.3	32.9
Footwear, leather	47.9	44.0	29.1
Wood	30.0	19.8	2.4
Furniture	60.0	3.6	22.8
Pulp, paper	36.4	26.3	18.1
Printing	8.1	3.5	8.5
Industrial chemicals	23.6	16.4	17.5
Other chemicals	35.9	34.6	27.9
Oil refining	20.4	7.4	5.8
Petrol., coal products	20.4	.5	15.1
Rubber products	50.0	27.3	5.2
Plastic products	60.0	29.8	6.1
Pottery, china	60.0	20.8	14.3
Glass	45.5	32.4	13.2
Other nonmetal min. prods.	30.6	21.9	8.2
Iron & steel	20.8	13.6	15.5
Nonferrous metal	21.0	17.5	24.8
Fabricated metal	39.8	23.5	14.5
Nonelectrical mach.	23.6	13.3	30.8
Electrical mach.	36.5	27.3	36.7
Transport. equip.	45.6	25.7	34.5
Prof., scien. equip.	34.5	28.1	40.5
Miscellaneous mfg.	63.2	25.9	8.6
All industries	36.3	22.6	22.3
	(38.1)	(22.9)	(17.4)
Standard deviation	21.4	17.9	20.9
	(22.1)	(17.7)	(18.5)

Note: Tariffs are the rates applied to trade from July 1978 to June 1979. Actual tariffs were computed for 1978. NRPs are based on the price survey conducted in 1982. The figures in parentheses refer to "all industries" excluding the agricultural sector.

(Korea Standard Industrial Classification) industry. These sectors and industries are aggregates of the more detailed industries in the *Input-Output Tables* that the Bank of Korea estimated.¹ The three different rates of nominal protec-

1. The bank publishes the tables at different levels of aggregation. The ones used in this paper have about 160 industries, of which about 120 are producing tradable goods (the number differs for different years).

Table 13.2 The Structure of Nominal Protection in 1982 (%)

	Tariffs	Actual Tariffs	NRP
Agriculture	18.7	14.8	72.3
Forestry	17.2	12.0	.5
Fishing	29.7	28.4	5.6
Mining	4.2	3.2	.3
Manufacturing	32.9	21.2	17.2
Food	21.4	19.0	11.7
Beverage	126.7	24.1	8.4
Tobacco	150.0	143.9	16.3
Textiles	40.3	29.3	8.5
Clothing	60.8	14.0	29.0
Footwear, leather	51.4	38.8	28.3
Wood	25.8	22.3	8.6
Furniture	58.9	3.8	.2
Pulp, paper	37.8	22.9	18.3
Printing	11.0	1.5	1.2
Industrial chemicals	18.7	11.9	24.3
Other chemicals	31.9	30.7	33.0
Oil refining	6.2	4.0	22.7
Petrol, coal products	4.2	.3	3.0
Rubber products	47.0	26.7	13.6
Plastic products	60.0	33.2	16.3
Pottery, china	60.0	20.1	12.7
Glass	42.4	32.6	13.0
Other nonmetal min. prods.	23.5	23.2	22.7
Iron & steel	14.7	10.5	12.9
Nonferrous metal	22.4	16.0	13.0
Fabricated metal	35.5	22.6	9.8
Nonelectrical mach.	18.1	9.6	22.2
Electrical mach.	38.6	22.5	26.2
Transport. equip.	53.8	25.3	31.9
Prof., scien. equip.	29.5	21.6	26.4
Miscellaneous mfg.	58.5	30.2	6.4
All industries	30.8	20.2	22.0
	(32.1)	(20.8)	(16.4)
Standard deviation	23.4	18.3	24.6
	(23.8)	(18.2)	(14.7)

Note: Tariffs are the rates applied to trade from July 1981 to June 1982. Actual tariffs were computed for 1981. NRPs are based on the price survey conducted in 1982. The figures in parentheses refer to "all industries" excluding the agricultural sector.

tion for a sector or KSIC industry shown in the tables are weighted averages of the respective rates for the input-output industries belonging to the sector or industry, the weights being the domestic sales evaluated at border prices.

The tariff for an industry in the *Input-Output Tables* is an unweighted, simple average of the tariffs on imported products classified as belonging to the industry. The actual tariff for an input-output industry, in contrast, is the ratio of the tariff revenue to the imports of the products belonging to the in-

Table 13.3 The Structure of Nominal Protection in 1988 (%)

	Tariffs	Actual Tariffs	NRP
Agriculture	23.1	14.4	103.9
Forestry	15.3	10.9	15.3
Fishing	19.8	11.9	11.9
Mining	5.7	4.5	2.3
Manufacturing	18.3	12.4	12.7
Food	15.2	9.9	10.8
Beverage	80.0	56.1	25.5
Tobacco	70.0	49.2	70.0
Textiles	19.0	11.7	8.1
Clothing	28.7	17.4	15.9
Footwear, leather	19.9	9.8	9.8
Wood	17.1	13.7	8.2
Furniture	19.5	9.2	4.2
Pulp, paper	18.2	14.4	8.4
Printing	3.1	4.2	3.1
Industrial chemicals	15.9	10.1	11.5
Other chemicals	19.4	14.6	25.8
Oil refining	9.8	8.5	9.9
Petrol, coal products	.7	.8	3.0
Rubber products	18.6	12.2	10.5
Plastic products	18.6	13.4	20.1
Pottery, china	25.5	18.9	7.7
Glass	19.3	12.2	11.1
Other nonmetal min. prods.	17.9	13.5	8.9
Iron & steel	11.6	7.0	2.3
Nonferrous metal	18.1	12.3	7.0
Fabricated metal	20.1	12.6	7.6
Nonelectrical mach.	18.5	10.1	20.5
Electrical mach.	19.9	20.4	20.6
Transport equip.	18.8	7.8	13.5
Prof., scien. equip.	21.0	10.7	22.0
Miscellaneous mfg.	21.5	10.5	13.0
All industries	18.4	12.4	20.1
	(18.0)	(12.2)	(12.5)
Standard deviation	12.0	11.2	54.8
	(11.6)	(10.4)	(14.9)

Note: Both tariffs and actual tariffs are for 1988. NRPs are based on the survey conducted in 1990. The figures in parentheses refer to "all industries" excluding the agricultural sector.

dustry less the imports of the products for export production. The latter imports were subtracted from the denominator because they were exempted from tariffs by the Tariff Act and their inclusion will understate the extent to which an industry's domestic sales are protected by tariffs.

An NRP is estimated, first, for an industry in the *Input-Output Tables*, by selecting one among the following three candidates: tariff, actual tariff, and the tariff equivalent of the price differential between the domestic and the in-

ternational price, which is also called the implicit tariff. In the selection, such things were taken into account as whether the products of an industry were being exported or were import competing, how large imports were compared to domestic demand, and whether there were nontariff barriers.² It should be noted that the three candidates for the 1988 NRPs were tariffs and actual tariffs in 1988 and the tariff equivalents obtained from a price survey conducted in 1990.

In obtaining the averages presented in tables 13.1–13.3, the industries' domestic sales evaluated in border prices (which were in turn obtained by deflating the domestic sales by the NRPs) were used as weights. Thus weighted, the average rates indicate the extent by which the price of a basket of goods that are domestically produced and sold by an aggregate industry would increase as the result of import restrictions of one form or another.

The Differences among the Three Nominal Rates of Protection

An interesting feature of the protection structure for 1978 and 1982 is that tariffs were generally much higher than actual tariffs and that the latter in turn tended to be higher than the NRPs. In table 13.1 for 1978, mining products provide an extreme example, where the actual tariff was less than 2 percent, while the tariff was nearly 18 percent, and the NRP was still smaller than the actual tariff. The average tariff for manufactured goods was 41 percent, the average actual tariff was 25 percent, and the average NRP was 20 percent. An important exception to this feature was the agricultural sector, for which the NRP was much higher than the actual tariff.

Korea's Tariff Act allowed tariff exemptions and rebates on imported inputs for export production. However, this was not the reason why actual tariffs were substantially lower than tariffs. Tariff-exempted imports for export production were not counted in calculating the reported actual tariffs, as mentioned earlier. The Tariff Act also allowed tariff exemptions for the intermediate inputs used by defense industries and others that "lead the technological development" in the rest of the economy. Use of tariff quotas could also be one of the reasons why actual tariffs were lower than tariffs.

The obvious reason why NRPs tended to be lower than actual tariffs is that, for some products, the tariff equivalent implicit in the domestic to border price ratio was lower than the actual tariffs. Such a thing cannot happen if the domestic and foreign products were identical. A domestic price lower than the border price plus tariff will prevent the product from being imported. Hence, no tariffs would be collected, and no actual tariff would be available. However, since most products can only be defined to include a spectrum of differ-

2. The tariff equivalents were estimated on the basis of a detailed survey of domestic and international prices in 1982. The domestic to international price ratios were extrapolated backward to obtain the tariff equivalents for 1978. In the extrapolation, domestic and foreign price indices were used. Korea Development Institute (1982) reports the actual tariffs and NRPs for 1978 and 1982. The tariffs, actual tariffs, and nominal rates of protection in table 13.3 are newly estimated.

entiated products, it can happen that imported goods at one end of the spectrum have after-tariff prices that are higher than the average price of the products in the domestic market.

An interesting question raised by the observed difference between tariffs and NRPs is why tariffs are maintained at levels "higher than necessary." One possible explanation, related to external trade relations, would be that tariffs are the outer wall protecting the ability to protect domestic industries, with the difference between the tariffs or actual tariffs and NRPs constituting a buffer. Another likely explanation would be the internal one that the government maintains a considerable degree of discretionary power to intervene in the market and to allocate favors between groups in the private sector. These hypotheses cannot be fully explored in this paper, but its investigation will be directed to the related issue of how interindustry differences in protection came into being.

The tendency for tariffs to exaggerate the level of actual protection did not hold in the late 1980s, and the tendency had important exceptions in 1978 and 1982. In the agricultural sector, the average NRP was higher than the average tariff, and the same was true for a number of individual industries in the manufacturing sector, most notably for the machinery industries. An NRP of a product will exceed the tariff or actual tariff if there are nontariff barriers (NTBs) in addition to tariffs.

This suggests that NTBs have been important policy instruments in protecting industries of low comparative advantage. Korea's comparative advantage is very low in the agricultural sector even though that sector still accounts for a large proportion of the labor force, 38 percent in 1978 and 20 percent in 1989. The comparative advantage is also low in the production of machines. Imports of all kinds of machinery have been the major reason for trade deficits, which the country longs very much to get rid of. If NTBs were indeed important in protecting the sectors and industries with low comparative advantage, this suggests that, in Korea, the policymakers and bureaucrats in the administrative branch of the government were playing a very influential role in determining the structure of protection, for the administration of NTBs generally involves a greater degree of discretion than the administration of tariff barriers.

Changes Over Time

The three tables presented above cover a period of about ten years from the late 1970s to the late 1980s. During that period, there was a sharp decline in tariffs. As a comparison of tables 13.1 and 13.3 reveals, the average tariff for all industries was halved from 36 percent to about 18 percent. This largely reflected the decline in the average tariff for the manufacturing sector from 41 percent in 1978 to 18 percent in 1988 since the sector has much larger domestic sales than the other sectors.

The average of actual tariffs for all industries was also halved from 23 percent to 12 percent during the same period. Here again, the decline largely

reflects what happened to the actual tariffs in the manufacturing sector, which declined from 25 percent to 12 percent. A major part of the decline took place since 1982.

In contrast to this trend in tariffs and actual tariffs, there was little change in the average NRP for all industries for the ten-year period. This was due mostly to the trends in the NRPs for the agricultural and manufacturing sectors offsetting each other. On the one hand, the average NRP doubled from 50 percent to more than 100 percent in the agricultural sector. On the other hand, it declined from 20 percent to 13 percent in the manufacturing sector, roughly in line with what happened to tariffs and actual tariffs.³

The variations in tariffs and actual tariffs tended to decline. At the bottoms of tables 13.1–13.3 are shown the standard deviations of the three protective rates for about 120 industries in the *Input-Output Tables*. The standard deviation of the tariffs was roughly halved between 1978 and 1988, and that of the actual tariffs also declined sharply, although not as rapidly. In contrast, the standard deviation of the NRPs rose steeply during the same period. Here again, the reason was the rise in the standard deviation of the NRPs for the agricultural sector. With that sector excluded, the standard deviation of the NRPs declined, although the pace was the slowest among the three rates of protection.

13.1.2 The Structure of Effective Protection

Table 13.4 presents estimates of the effective rates of protection (ERPs) for 1978 and 1982 at the same level of industry aggregation as the ones used for nominal protection. To obtain these estimates, the NRPs were applied to the *Input-Output Tables*, after indirect taxes were subtracted from interindustry transactions and all inputs were reevaluated in domestic prices, and the “Corden method” (suggested in Corden [1966]) was followed. At the time of estimation, the latest *Input-Output Table* available was that for 1978, and this was used in estimating the 1982 ERPs as well as the 1978 ERPs.⁴

The main features of the effective rates presented in table 13.4 are that the ERPs were high for the agricultural and manufacturing sectors and that, within the manufacturing sector, the chemical and machinery industries enjoyed high ERPs.

The relation between the structure of effective protection and the compara-

3. The NRPs for a number of manufacturing industries show somewhat erratic fluctuations, especially for furniture, oil refinery, petroleum and coal products, rubber products, and plastic products, between 1978 and 1982. The sharp decline in the NRP for furniture seems to reflect import liberalization. Kim (1988) notes that, in 1980, all items in the industry were under some kind of quantitative import restriction, although restrictions were lifted for over 60 percent of the items in 1983. The sharp increase in NRP for oil refining seems to reflect the rapid rise in the energy price from 1978 to 1982, which was faster inside Korea than in the international market. For other industries, no ready explanation seems available. In the cases of rubber products and plastic products, the big increases in NRPs are likely to be the results of changes in product composition in the industries.

4. The method of estimating the effective rates of protection is discussed and reported in Yoo (1982), and the estimates are reported in Korea Development Institute (1982).

Table 13.4 The Structure of Effective Protection (%)

	1978	1982
Agriculture	64.6	85.7
Forestry	.4	-.1
Fishing	-.5	-.5
Mining	-1.5	-1.5
Manufacturing	24.4	31.5
Food	-28.8	-27.6
Beverage	4.8	-4.1
Tobacco	73.7	50.0
Textiles	5.5	5.3
Clothing	75.2	93.8
Footwear, leather	-6.1	-2.4
Wood	-9.3	6.5
Furniture	46.6	-2.1
Pulp, paper	36.2	22.9
Printing	-3.6	-11.7
Industrial chemicals	42.2	65.8
Other chemicals	45.4	35.9
Oil refining	26.1	681.9
Petrol., coal products	121.6	-.2
Rubber products	-9.6	2.0
Plastic products	-3.9	-6.5
Pottery, china	23.1	15.4
Glass	15.4	8.8
Other nonmetal min. prods.	10.9	40.1
Iron & steel	24.7	31.5
Nonferrous metal	31.6	23.6
Fabricated metal	12.8	.0
Nonelectrical mach.	44.2	22.0
Electrical mach.	105.4	44.8
Transport equip.	30.4	12.4
Prof., scien. equip.	102.6	42.8
Miscellaneous mfg.	5.9	-7.1
All industries	31.6	37.2
	(20.5)	(27.8)
Standard deviation	76.7	312.8
	(79.3)	(323.6)

Note: The figures in parentheses refer to "all industries" excluding the agricultural sector.

tive advantage ranking seems worth mentioning. Since Korea is a resource-poor country and therefore depends heavily on imports for its supply of raw materials, it does not appear surprising that the effective protection is near zero for forestry, fishing, and mining. However, if comparative disadvantage were the reason for little or no protection for the primary sectors, the agricultural sector should also receive low effective protection. Instead, its protection was very high.

In the manufacturing sector, the effective protection was higher for the

heavy and chemical industries, in which Korea had relatively low comparative advantage. In contrast, most of the so-called light industries producing consumer goods had low or negative effective protection. The major exceptions were tobacco, which was under government monopoly, and clothing. Other light industries such as furniture and paper also had greater-than-average ERPs, but theirs were not exceptionally high. In the light industries with low or negative protection, Korea's comparative advantage was high until the early 1980s. These industries used to account for more than half of all exports—and they still do if electrical machinery, which mainly produces consumer electronics products, is regarded as a light industry.

These features of the interindustry structure of effective protection were common in 1978 and 1982. The change between the years was that ERPs became larger on average, but at the same time there was some noticeable decline in the effective protection rate for the machinery industries. The entries in table 13.4 for 1982 appear to suggest that the variation of ERPs among the industries diminished over the years. However, at the level of aggregation at which the regression analysis was conducted in this paper—namely, where there are 120 or so tradable-goods-producing input-output industries—there was a tremendous rise in the standard deviation from 1978 to 1982.

13.2 The Political Economy of Protection and the Demand and Supply Conditions in Korea

The political economy discussion of the protection structure refers mostly to industrial countries with parliamentary democracy. As Baldwin (1982) notes, the discussion usually postulates a political marketplace where elected representatives are regarded as the suppliers of protection and producers as the demanders. In the market, the effective demand for protection is expressed in ballot box votes rather than dollar votes. Thus, the question arises whether the political economy of protection is relevant to a developing country where a democratic tradition is not firmly established.

What makes the political economy discussion useful is that the demand for protection exists and is transmitted in some form to the people who can provide it. The institutional feature that the suppliers are the elected representatives seems to be of incidental importance. In a developing country, the suppliers could be authoritarian rulers or government bureaucrats. In the following sections, the demand and supply conditions of protection in Korea will be discussed.

13.2.1 The Demand Conditions of Protection

An Industry's Demand for Protection

The basic logic underlying the collective action expounded by Mancur Olson (1965) would differ little across countries. In particular, the ease or dif-

faculty of organizing a group and having it take collective action does not depend mainly on whether a country has a long-established tradition of parliamentary democracy. Insofar as the objective that collective action attempts to achieve has the nature of a public good, the free-rider problem exists in any country.

As there are no professional lobbyists in Korea, industry associations tend to play that role to a certain extent, and the industrialists themselves attempt to influence trade and other policies. In any case, the contribution of one's own time and money to a collective cause would be more easily forthcoming if the beneficiaries were few in number. Hence, the higher an industry's concentration ratio, the more likely that there will be collective action for protection.

In addition to the likelihood of collective action, how great an effort will actually be made will depend on the expected reward. What may be safely disregarded in a large economy, but not in a smaller one, are exports. In Korea, exports are about one-third as large as the country's GNP. Since protection of an industry obviously cannot increase its export sales, an industry would not be much interested in lobbying for protection if its output is mostly exported.

Demand for Protection by Politicians and the Government

Elected representatives are usually portrayed as the suppliers of protection. But it seems appropriate to view them as the demanders. Compared to the benefits they get in the form of ballot box votes, the costs they incur seem small. What works as the constraint on the provision of protection is the opposition to it. The stronger the opposition, the harder it is to obtain protection. Thus, one may say that society as a whole is the supplier of protection and that the supply cost is expressed in the form of opposition.

Similarly, the government (mainly the executive branch) can also be regarded as the demander. According to the adding machine model as referred to in Caves (1976), the government tries to gain as many votes as possible in setting tariffs or other barriers to maximize the probability of reelection. Although the model assumes a democratically elected government, it is not difficult to see that the model can also be applied to less democratic countries, once we recognize that no government can be effective, however authoritarian it may be, if it turns the majority of the population against it. People's confidence in a government would depend a great deal on whether it appears to be protecting their interests. Thus, the number of workers in an industry is a variable that would be duly considered in decisions on trade policy.

An important related factor that would be most relevant in this regard is the sympathy given by the general public to a particular group of workers, namely, the farmers. It seems universal that the plight of rural people gets sympathy from the rest of the country. That sympathy seems to be exceptionally strong in Korea. Because of the rapid urbanization that accompanied

Korea's rapid economic growth, more than three-quarters of urbanites are first-generation migrants from rural areas, where their parents, brothers, and sisters are still working. They seem no less offended by the suggestion of opening the agricultural market than rural workers are. Hence, the government cannot afford to appear to be turning its back on the farmers.

The Government's Own Agenda

The governments of many developing countries assume the role of development state, and Korea is an exemplary case. Since the late President Park took power in a military coup and the next president, Chun, similarly lacked constitutional legitimacy, the governments of these two presidents attempted to obtain legitimacy on the basis of economic performance. The political elite maintained a strong economic bureaucracy and protected it from interest-group politics. This meant that the ideas and initiatives of the bureaucrats in various economic ministries mattered a great deal. In this regard, the political economy of protection in Korea seems substantially different from that in industrial democracies in that the economic ministries are not mere implementers of the decisions made by somebody else but should be viewed rather as the important decision makers themselves. They have their own agenda for the economy, independent of ballot box politics.

Korean bureaucrats seem to be heavily influenced by the Japanese model. Geographic proximity and cultural affinity, coupled with the fact that Japan was once a latecomer to economic development, tend to make the Japanese experience appear highly relevant to Korea. Since Japan's economic success is often attributed, rightly or wrongly, to its protectionist trade policy and industrial targeting policy, the adoption of similar policies is often believed to be a shortcut to rapid growth.

On the other hand, Korea's own experience with the so-called heavy and chemical industry policy of the 1970s convinced many policymakers of the need to liberalize the trade regime. The policy, a typical industrial targeting policy, attempted to promote the development of selected industries through heavy protection, a strongly biased credit and interest rate policy, and tax incentives. It gave rise to excess investments in the policy-favored industries, rapid inflation, and a deterioration of economic performance. The policy is understood to have been one of the main causes of the real decline in exports in the late 1970s and the negative economic growth in 1980. The fact that the policy was discontinued in the spring of 1979 by the same government that launched it is evidence that there were many in the government who believed the policy to be a mistake.⁵

5. Some support to the views expressed in this paragraph may be found in Yoo (1990), which discusses the background of the heavy and chemical industry policy and attempts to evaluate the effects on resource allocation among the manufacturing industries and on the industries' export performance.

Out of these two conflicting lessons, Japanese and Korean, arose the order of import liberalization that has been followed in the 1980s. The government liberalized those industries first that were either strongly competitive in international markets or not competitive at all. The industries in the middle of this competitiveness ranking (although it is not clear how the ranking was determined) were given a few more years of protection in the hope that they would become more competitive in the meantime. The policy was a sort of infant industry protection. Thus, the relation between competitiveness and the order of liberalization was not "linear."

13.2.2 The Supply Condition of Protection: The Opposition

Protection necessarily implies higher prices, lower quality, or a combination of both to users of the imports and their domestic substitutes. The adversely affected users have the incentive to oppose the protection. Just as successful lobbying by producers provides a collective good, protection, so does successful opposition by users, no protection. Whether and how much the opposition succeeds will depend on the ability of users to take collective action. Thus, there seems to be the same issue of collective action on the user side.

Opposition would be least likely if the protection is for a consumer good. In general, it would be difficult to organize a group and take collective action when the benefit from doing so is thinly and widely spread. This is typical of most consumer goods. Thus, an industry's lobby for protection is less likely to be opposed and more likely to succeed if its output is a consumer good.

The opposition to protection can come from the industries that use as inputs the protected goods. Amelung (1989) proposes to measure it by the index of forward linkage opposition. The index incorporates the importance of a protected industry's output as an input to the user industries and the latter's concentration ratios. He also develops a measure for an industry, say, industry A, that indicates how strong those industries' demand for protection will be that produce the inputs that the industry uses, the index of backward linkage opposition.

In the previous subsection, the Korean government was seen as a demander of protection. It assumes the role of opponent, too. For decades, one of the primary concerns of the economic ministries has been export expansion. The late President Park and the whole government gave the highest policy priority to ensuring that export performance was the best it could be, and the general public also used to be highly concerned with export performance. This attitude has changed little. Given the national concern, it would not be surprising if the economic ministries paid attention to the negative effects of raising protective barriers on export performance. Under the circumstances, exporters would be more effective than otherwise in persuading the economic ministries of the need to reduce or eliminate protection on the intermediate inputs they use.

13.3 Estimation of a Regression Model

This section investigates the determination of the interindustry difference in protection by estimating simple regression models on the basis of the discussion in the last section. It first describes the independent variables to be used and discusses the estimation results.

An "observation" in the regression analysis is an industry in the *Input-Output Tables* of the Korean economy for the nearest year estimated by the Bank of Korea. The unit of observation was convenient because the *Input-Output Tables* can supply data on industry characteristics that may be used as independent variables.

13.3.1 Independent Variables

While the nominal rates of protection (NRPs) and the effective rates (ERPs) discussed above were used as the dependent variables, the independent variables to be included in the regression analysis were chosen on the basis of the discussion in the previous section.

The concentration ratio (CR) is included as a determinant of the likelihood for an industry to take collective action for protection and the intensity of that action. Unpublished estimates of CRs by KDI researchers were available for five-digit KSIC manufacturing industries. The estimated CR for an industry represents the proportion of shipments accounted for by the three largest firms. As the five-digit KSIC industries are more disaggregated than the input-output industries of this study, the value of shipments was used as a weight to obtain an average CR for an input-output industry. The CRs for industries in the agricultural, forestry, fishing, and mining sectors were assumed to be zero.

Other determinants of collective action that were used as independent variables were the proportion of value added (VA) and the proportion of exports in the industry's output (EO). The smaller the VA, the greater the effective protection to an industry, given a protective measure on the output. Also, how much an industry would be interested in securing protection for itself is likely to be negatively correlated to EO. The VAs and EOs were obtained from the *Input-Output Tables*. The benefit to a protected industry will also depend on the elasticity of the domestic supply. However, the elasticity estimates were not available and could not be included.

The variables chosen to represent the politicians' and the government's interests in ballot box votes were the number of workers in an industry (L) and a dummy variable for the agricultural sector (AG). Representing the government's own agenda for the Korean economy, a dummy variable (HCI) was included to distinguish from others the favored industries: iron and steel, non-ferrous metal, fabricated metal, all kinds of machinery industries, industrial chemicals, and oil refining.

As mentioned in the last section, in the trade liberalization of the 1980s the government lifted protection first from the most and least competitive indus-

tries. To represent this policy of infant industry protection, it was hypothesized that the level of protection first rises and then falls as the import dependency ratio (MD) increases from zero to one, MD being the proportion of domestic demand met by imports. To capture the nonlinear relation, MD and its square (MD^2) were included in the regression model. MD was obtained from the *Input-Output Tables* by taking the ratio of imports to domestic absorption of the relevant products.

As a variable representing the opposition to protection, or the lack of it, the directly consumed proportion of an industry's output (C) was included as an independent variable in the regression with the expectation that it would be positively correlated with the level of protection.

The ability of other industries to oppose the protection of a given industry is represented by the index of forward linkage opposition (FL). Hence, the higher FL is for an industry, the lower the industry's protection level. The index was computed using the input-output coefficients and the CRs mentioned above, as suggested by Amelung (1989). The index of backward linkage opposition (BL) is also computed. BL for an industry represents the combined abilities to obtain nominal protection for themselves of the producers of the inputs that the industry uses, and it is supposed to adversely affect the industry's effective protection. The formulas for FL and BL are the following:

$$FL_i = \sum_j a_{ij} CR_j, \quad \text{for } i \neq j,$$

$$BL_j = \sum_i a_{ij} CR_i, \quad \text{for } j \neq i,$$

where a_{ij} stands for the input from the i th industry for a unit output of the j th industry and CR_j for the concentration ratio of the j th industry.

The opposition to protection can come from within the government itself. In view of the fact that the export performance has been the national concern in Korea, the effects of protection on the export industries could have been given due consideration in the decision-making process on tariff and nontariff measures. Thus, it may be hypothesized that the inputs into export production would have low protection, other things being equal. Thus, the following measure of indirect exports (IE) was obtained from the *Input-Output Tables* and included in the regression:

$$IE_i = \sum_j r_{ij} E_j, \quad \text{for } i \neq j,$$

where r_{ij} is the ij th element in the inverse matrix of $[I - A]$, A being the input-output coefficient matrix, and E_j is exports by the j th industry.

Finally, the intensities in physical capital (PK) and human capital (HK) are included. They are the measures of industrial characteristics in the tradition of the factor proportions theory of international trade. An empirical study of Korea's protection structure by Alikhani and Havrylyshyn (1982) found the human capital intensity to have a significant positive correlation with the level of protection. Following Balassa and Bawens (1988), the "flow" measures of the two intensities were obtained as follows:

$$PK_i = v_i - w_i,$$

$$HK_i = w_i - uw_i,$$

where v_i , w_i , and uw_i stand for the value added per worker, the average wage rate, and the wage rate of unskilled workers in industry i . As uw_i 's were not available, the minimum of the average wage rates among all industries was used in its place. Thus, HK is statistically little different from the average wage rate, w_i , in the regression analysis that follows.

13.3.2 The Estimation Results

The Determination of Nominal Rates of Protection

The regression models, estimated by the ordinary least squares method of determination of NRPs for 1978, 1982, and 1988, are presented in table 13.5.

According to the results for 1978, the regressors whose estimated coefficients turned out to be statistically significant and have the expected signs were the proportion of exports in an industry's output (EO) in the group of the determinants representing the industry's demand for protection, the number of workers (L) representing the politician's demand, the dummy (HCI) for the government-favored heavy and chemical industries and import dependency (MD) representing the government's agenda, and the proportion of output purchased by the consumers (C) representing the lack of opposition to protection.

Thus, the government appears to have been an active force behind protection. Because of political considerations, a higher level of protection was given to the industries where the number of workers was large, and the government protected those industries that it was promoting under the so-called heavy and chemical industry policy during the 1970s.

The private sector appears to have been an inactive bystander. Of the determinants representing the industry's demand for protection, the concentration ratio (CR) and the proportion of value added in output (VA) had expected signs but were not statistically significant. And the protection was higher if the protected was more of a consumer good, a high C, or if the industry was less interested in securing protection, a high EO.

The reason why the industry was inactive may have been that lobbying for protection was not rewarding enough during the 1970s, when the government was strongly pushing the heavy and chemical industry policy. As the estimation result indicates, what mattered most in determining the protection level one can enjoy was whether one belonged to the industries favored by the policy.

The estimation for 1982 portrays a somewhat different picture. Of the group of regressors representing the government's agenda for the economy, the coefficients of the variables for infant industry protection (MD and MD²) became significant with the expected signs, replacing the dummy for HCI, and the coefficient of the flow measure of human capital (HK) showed a positive sign of high significance. Thus, the estimation results seem to reflect the fact that,

Table 13.5 Determinants of Nominal Rates of Protection

Regressors	1978	1982	1988
Constant	8.90 (8.18)	- 13.02 (8.63)†	- 20.11 (18.40)
CR (+)	5.61 (8.36)	21.83 (9.23)*	38.40 (20.20)*
EO (-)	-.14 (.08)*	-.06 (.10)	-.01 (.20)
VA (-)	-.11 (.14)	-.05 (.16)	.67 (.33)*
AG (+)	5.88 (7.97)	18.48 (9.42)*	114.12 (24.86)**
L (+)	.037 (.012)**	.11 (.016)**	.031 (.043)
HCI (+)	12.57 (4.15)**	.31 (4.85)	4.36 (10.58)
MD (+)	.36 (.22)†	.36 (1.44)**	.11 (.58)
MD ² (-)	-.0029 (.0026)	-.0019 (.001)*	.002 (.007)
C (+)	.29 (.07)**	.16 (.07)**	.14 (.18)
FL (-)	- 4.35 (10.10)	6.85 (11.23)	54.03 (24.42)*
IE (-)	-.76 (29.3)	- 8.28 (11.87)	- 26.86 (11.89)*
HK (+)	- 2.55 (3.85)	4.48 (2.20)**	- 6.17 (5.14)
PK (?)	.12 (.76)	(.44) (.35)	.42 (.58)
\bar{R}^2	.32	.42	.48
df	115	105	105

Note: In the parentheses following the names of the regressors are shown the expected signs of the estimated coefficients. Each column of the table represents one regression. Each entry gives the estimated regression coefficient (and its standard error in parentheses). The level of statistical significance is indicated by † (10 percent), * (5 percent), and ** (1 percent).

by 1982, the government had discontinued the heavy and chemical industry policy. However, the government still appears to have been the active force behind protection, promoting the development of infant industry and protecting the human capital-intensive industries.

To be noted parenthetically is the implication of the magnitudes of the estimated coefficients for MD and MD². Import dependency (MD) was expected to have such a diminishing influence on protection that, as MD rises, the protection level goes up, reaches a peak, and declines. This expectation was not met. The coefficient of MD² was negative, but its magnitude was not large enough for the protection level to decline. That is, as MD increases, the rise

in the protection level indeed decelerated, but not rapidly enough. The estimated magnitudes indicate that MD's influence peaked when it was slightly bigger than 100 percent, the theoretical maximum for MD.

Compared to 1978, the influence of politics on protection seems to have become stronger in 1982. Not only the number of workers (L) but also the dummy for agriculture (AG) became significant with the expected signs.

The private business sector appears to have become more active in 1982. The concentration ratio (CR), which became significant, indicates that, the more concentrated an industry, the higher the protection level for that industry.

Thus, in determining the 1982 protection structure, the influence of the government's agenda does not appear to be as dominant as it was in 1978 but had to compete with ballot box politics and with more assertive private business interests.

The estimated results for 1988 were very different from those for 1978 or 1982 and difficult to interpret. First, the proportion of value added in output (VA) and the index of forward linkage opposition (FL) had coefficients of unexpected signs with high statistical significance. Three independent variables had coefficients of expected signs with statistical significance. They were the concentration ratio (CR), the dummy for agriculture (AG), and indirect exports (IE).

In the estimation result for 1988, the government does not appear to have been active. Although IE was estimated to be a statistically significant variable, the influence of the government represented by it is a passive one, as it represents its resistance to the private sector's demand for protection. This is no match to the influence it had in earlier years, when it was implementing the heavy and chemical industry policy (represented by the HCI dummy), or to the promotion of infant industries and human capital-intensive industries (represented by MD and MD²). Thus, insofar as the estimated results reflect reality, the influence of the government having its own agenda for the economy was not apparent in the late 1980s.

However, it cannot be said that the finding is beyond any reasonable doubt. As noted at the outset, tariffs were from 1988, and the tariff equivalents from which the NRPs were chosen came from 1990. Thus, a new estimation with a more accurate set of data may produce a different finding.

Determination of the Effective Rates of Protection

The regression model for the determination of effective rates of protection included all the independent variables used for nominal rates of protection and an additional one representing the backward linkage opposition (BL), which affects the ERPs but not the NRPs. The estimation results for 1978 and 1982 are presented in table 13.6. Interpretation of the estimation results needs to refer to the estimation of the determination of NRPs since an industry's ERP is determined by the relative sizes of the NRPs given to the output of and the inputs into the industry.

Table 13.6 Determinants of Effective Rates of Protection

Regressors	1978	1982
Constant	-63.90 (36.05)*	-123.4 (38.67)**
CR (+)	37.74 (35.22)	106.4 (42.2)**
EO (-)	-.09 (.32)	.30 (.42)
VA (-)	.93 (.58)†	1.60 (.68)**
AG (+)	-3.87 (33.23)	7.19 (41.08)
L (+)	.033 (.050)	.13 (.07)*
HCI (+)	52.3 (17.7)**	22.4 (21.1)
MD (+)	.53 (.93)	.18 (.63)
MD ² (-)	-.004 (.011)	-.004 (.004)
C (+)	.81 (.31)**	.23 (.32)
FL (-)	-24.0 (43.1)	50.4 (49.6)
BL (-)	88.38 (56.72)†	32.6 (63.2)
IE (-)	62.41 (123.7)	40.4 (54.3)
HK (+)	-23.95 (16.12)†	3.64 (9.64)
PK (?)	4.79 (3.24)†	.14 (1.61)
\bar{R}^2	.31	.09
df	114	104

Note: See the note to table 13.5.

In the model estimated for 1978, only the dummy variable for heavy and chemical industries (HCI) and the proportion of output purchased by consumers (C) had coefficients with the expected signs with high statistical significance. These coefficients were also estimated to have statistically significant, expected signs in the 1978 regression for the NRPs. Thus, the tendency of higher effective protection for the heavy and chemical industries and for those industries producing consumer goods seems to be the "intended results."

Other regressors, such as the proportion of value added in output (VA), backward linkage opposition (BL), and human capital intensity (HK), had coefficients with "wrong" signs with high significance. The interpretation is not straightforward. On the one hand, since the coefficient of VA in the NRP

determination model had an insignificant but expected minus sign, the estimation in the ERP determination model appears to be a result, neither expected nor intended, that merely shows the net effect of protecting inputs and outputs at different rates.

On the other hand, the coefficient of HK was estimated to have the same, negative sign in both models of NRP and ERP determination. What does the statistical significance in the latter model mean? Does it mean that the estimated results reflect the intentions of lobbyists, politicians, or government officials? Or is it merely a spurious statistical correlation? Without additional independent information, the answer is not clear.

In the estimation of the 1982 ERP determination model, the same problem occurs with regard to VA. CR and L were the only two independent variables that had coefficients of expected sign that were statistically significant. Their coefficients had expected signs of statistical significance, too, in the NRP determination model. Thus, it appears that business interests and political considerations had a significant influence on the determination of ERPs in 1982. HCI was not a significant factor in the 1982 determination of ERPs, as it ceased to be one in the NRP determination.

It is interesting to note that MD and HK, which represent the government's own agenda, were estimated to be significant factors in the NRP determination but not in the ERP determination. Insofar as the data used in the estimation were correct, the results of the two estimations seem to indicate that the industry structure of ERPs that the government intended to bring about through import restraints was not achieved.

13.4 Summary and Conclusion

The tariff structure across industries hardly supplies sufficient information for the protection structure in Korea. Tariffs were much higher than actual tariffs or estimated nominal rates of protection. Also, variation across industries in tariffs is very much different from variation in NRPs. This difference suggests that NTBs are an important factor in determining the protection structure, and the importance of NTBs in turn suggests that the executive branch of the government has been influential in determining nominal protection.

Between 1978 and 1988, tariffs and actual tariffs substantially declined, but the average NRP for all industries rose owing to a steep rise in the rate for the agricultural sector. For other sectors, the NRPs declined, but more slowly than tariffs or actual tariffs. Thus, the buffer between tariffs and NRPs has diminished. The tendency for NRPs to exceed tariffs or actual tariffs for the agricultural sector and the machinery industries changed little during the ten-year period covered in this paper.

In the determination of nominal protection, the political consideration represented by either the agriculture dummy (AG) or the number of workers (L)

was found to have a significant influence. The government's own agenda for the economy had a strong influence on the protection structure in the late 1970s and in the early 1980s, but it appears to have become insignificant later. In contrast, the influence of private interests represented by CR was not apparent in the late 1970s but became stronger in later years.

The opposition to protection had an influence on the protection structure in the passive sense that consumer goods tended to be protected more heavily. The forward and backward linkage opposition (FL and BL) standing for an industry's opposition to the protection of the producers of its inputs were not found to be significant. The exporters' opposition to protecting the producers of its inputs, represented by IE, was found to be significant in the late 1980s.

The proportion of value added in output (VA) was not found to be significant, except that it was once estimated to be significant, but with a coefficient of unexpected sign. Physical capital (PK) as an industrial characteristic was not found to have any significant correlation with the nominal protection structure.

The structure of effective protection seems similar to that of nominal protection in that agriculture and the machinery industries were the major beneficiaries and the light industries producing consumer goods were the victims. Notable exceptions to this in the light industries were tobacco, which was under government monopoly, and clothing.

The estimation of the effective protection determination was less satisfactory than that of the nominal protection determination. In the late 1970s, the heavy and chemical industry policy was estimated to have had a strong influence on the effective protection structure. Effective protection also tended to be higher for those industries for which the proportion of output purchased by the consumers was high. In the early 1980s, the concentration ratio and the number of workers had a significant, positive influence on effective protection. Besides these variables, however, most of the others were found to have little influence, while the coefficients of a few regressors were estimated to have unexpected signs with high statistical significance.

The fact that the estimated results of the regression models were statistically more significant for the structure of nominal protection than for that of effective protection makes one wonder whether the effective or the nominal protection structure better reflects the political economy of protectionism, especially in the context of a developing country. The only reason why one may expect the structure of effective protection to better reflect the forces of political economy seems to be that the value added should be what ultimately matters to those who attempt to obtain protection.

However, effective rates of protection can be affected only through nominal rates of protection. Thus, efforts would first be directed toward gaining nominal protection for oneself and opposing nominal protection for the producers of the inputs that one needs. The effective rate of protection is the net results of countless such efforts by many. Thus, less information would be contained

in the effective rates than in the nominal rates of protection about the political economy of protection.

Moreover, when the government pushes its own agenda for the economy, what the final outcome of lobbying efforts will be is less predictable. If the government merely implemented what is determined by interest group politics, for example, lobbyists and interest groups would understand sooner or later what produces the most desired results and act accordingly. Government intervention in effect introduces noise in this feedback process. Hence, it seems that the structure of nominal protection is a better object to investigate than that of effective protection for the study of the political economy of protection.

Finally, an interesting question, as Korean society is becoming more democratic, is what will happen to the protection structure? The significance of democratization for the subject of this paper would be that the influence of politicians and industries rises relative to the economic ministries and their technical bureaucrats. In terms of the discussion presented above, on the one hand, it will imply that the influence of such variables as the agricultural dummy and the number of workers in an industry will become more pronounced. On the other hand, interest groups are likely to become more active, raising the influence of such variables as the concentration ratio on the determination of the protection structure.

To some extent, these changes seem to have already been taking place, as the regression results indicated. Despite the changes, however, the pattern of protection across industries does not appear to have substantially changed. As mentioned earlier, besides the agricultural sector, the machinery industries had consistently enjoyed higher than average NRPs during the ten-year period considered in this study. Since nontariff barriers are the important factor in determining NRPs and the barriers are administered by the executive branch of the government, the apparent consistency in the protection structure seems to indicate that the strength of government influence on the protection structure was not substantially affected.

Whether it will remain strong in the future is a question that no one can answer with certainty. Moreover, the pressure from the international community for an opening of Korean markets has been and will continue to be strong. Thus, the government has to compete with politicians, industrialists, and the international community for influence on the protection structure.

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Comment Anne O. Krueger

This is an excellent paper, one that greatly increases our understanding of the political economy of protection in developing countries. Yoo has done a thoroughly professional and careful job with the data he could obtain. As always with a newly explored area, however, a good analysis raises more questions than it answers. These comments are therefore largely devoted to raising additional considerations and, as such, to asking for further work in yet other papers.

A first question concerns the political economy of differences between tariffs, actual tariffs, nominal rates of protection, effective rates of protection, and nontariff barriers to trade. In Yoo's paper, as elsewhere in the political economy literature, it is always taken for granted that the determinants of these different rates may be different. Yet, if political economy questions are the focal point of analysis, it seems that there should be at least some indication as to *why* politicians choose the protective instruments that they do and a theory as to why there should be differences between these different rates—especially between various versions of nominal tariff rates.

A second question arises from Yoo's discussion of the importance of export performance in the Korean context. From other work, there has been considerable emphasis on the divergence between Korean rates of protection for the home market and for export. Yoo notes that account should have been taken of the negative effects of protection on exports. Yet, as is well known, protection to some is deprotection to others. And, in Yoo's data, all industries received positive protection. Surely something is missing. Could the data consist of averages of protection for the domestic market and protection for export? Does it make sense to examine only the rates of protection for one?

This is not a criticism of Yoo because these questions remain unanswered throughout the literature on political economy. It would be interesting to see if Yoo could extend his analysis to effective rates of subsidy for exports and contrast the results to those he obtains with his present estimates.

A third question pertains to the data and the inferences drawn with respect to changes over time. Yoo has three data points: 1978, 1982, and 1988. It is interesting to note how individual rates fluctuate between these points, especially if one examines effective rates (which are perhaps the most economically meaningful in the absence of a theory as to why nominal rates are of concern). Examination of table 13.4 suggests very large changes in rates in just four years. The most glaring cases that leap out are oil refineries, whose ERP is estimated at 26 percent in 1978 and 682 percent in 1982! However, the most significant change between 1978 and 1982 is in the much greater standard deviation of rates in the later year.

These observations raise several questions. First, how much "noise" is there in year-to-year changes in ERPs? This phenomenon has been observed in other studies and is not unique to Korea. If, however, noise is substantial, it may be dangerous to use point observations four, or even ten, years apart as a basis for inferences about changes in political economy. Given the evolution of Korean trade policies over the past forty years, one would conjecture that major changes occurred in the early 1960s, in the early 1970s, and then again in the late 1980s. Why one would expect much change between 1978 and 1982 is not clear. And, before analysis of changes to 1988 can be reliable, questions about the variance of ERP rates from year to year need to be addressed.

There is one final comment—and that is that 1978 and 1982 were years during which Korean economic policy was still managed almost entirely by technocrats. Considerations of economic growth and maintaining the export drive were highly important in their decision-making process. By 1988, the Korean government had become much more responsive to democratic forces. It was probably too early in 1988 for interest groups to have built up in support of or opposition to protection, but one would expect these forces to operate differently than they did under the earlier regime. An interesting question for political economy will be to examine and analyze the differences in the determinants of protection in Korea in the 1990s from those factors that influenced protection levels in the late 1970s and early 1980s.

Comment Chia Siow Yue

This is an excellent paper, providing much information on and an analysis of industrial protection in Korea.

I have four comments about Yoo's presentation of measures of nominal and effective rates of protection. First, the data show tariffs, actual tariffs, and nominal rates of protection. Yoo states that NTBs seem to have been an important factor in protecting the industries of low comparative advantage such as agriculture and machinery. It is not clear from the paper what NTBs are used in Korea. Second, subsidies appear to be missing in the computations. Yet it is well known that Korea makes liberal use of subsidies to promote its industries, in particular, preferential credit provided by the state-controlled banking system. Third, the data for nominal protection are for 1978, 1982, and 1988, and the data for effective protection are for 1978 and 1982. The analysis of the changes over time appears incomplete. The major import liberalization efforts in Korea took place only in recent years, and the effects would be felt mainly after 1988. It would have been highly informative if more recent data were available to show the extent of import liberalization that has taken place to date. Fourth, Yoo states that the effective rates of protection tended to be minimal or negative for the industries of high comparative advantage, except for clothing and electrical machinery. It would be instructive if there were measures of the effective rates of subsidies in these industries as well.

I have four comments on Yoo's examination of the political economy of protection. First, I agree with his argument that the political economy of protection in industrial democracies is different from that in developing countries like Korea, where the democratic tradition is not as firmly established and/or where the government assumes the role of the developmental state. In such countries, the suppliers of protection could be authoritarian rulers or government bureaucrats, and the demand for protection could come not only from industrialists, workers, and farmers but also from the government itself, namely, the economic ministries and bureaucrats. The regression results for 1978 did indicate that the most important determinant of the protection level was whether the industry is one favored by government industrial policy. Second, except for agriculture, the demand for protection in countries like Korea is determined by the desire to promote industrialization, protect infant industries, and hasten the emergence of dynamic comparative advantage, whereas in the industrial democracies it is usually determined by the desire to protect sunset industries losing their competitive edge. It is a well-known fact that the Korean government is active in industrial targeting and picking winners. Third, the political economy of protection may vary between the import-

substitution and the export-orientation phases. Under the former, the demand is for tariff and nontariff protection, but, under the latter, the demand is for subsidies to promote export performance. Fourth, the political economy of import liberalization may be different from that of protection. Yoo seems to indicate that, convinced of the mistake of promoting heavy and chemical industries in the 1970s, Korean policymakers moved toward import liberalization in the 1980s. My question is, Was it a unilateral decision of Korean policymakers, or was there external pressure as well? It would appear that U.S. pressure has had some effect on the import liberalization schedule in Korea.