The Political Economy of Market-Opening Pressure and Response: Theory and Evidence for the Case of Korea and the U.S.

Sung-Hee Jwa*
Korea Development Institute

This paper develops a model of market-opening pressure and response based on the positive theory of political economy and applies it to the case of Korea and the U.S. The model formulates a demand function for market-opening based on foreign pressures for the opening and a supply function based on the interaction of domestic forces for and against the opening. An empirical analysis is performed by estimating logit functions separately for demand, supply and reduced form equations. The behavioral patterns of Korea's supply of as well as U.S. demand for market-opening turn out to be broadly consistent with the theory of common interest groups. It is also found that both patterns exhibit an aspect of an enlightened government to some extent. Finally, it is shown that supplier tends to respond to opening pressures in a negative manner, deviating from the independent enlightened supply behavior.

I. Introduction

In recent years, the world trading environment has been overshadowed by trade frictions stemming from the issue of market accessibility. The U.S. has been pressing, especially hard in the name of fair trade or reciprocity, for her trading partners to open their markets and to allow U.S. exporters access equal to that offered by

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the U.S. to foreign exporters. This aggressive U.S. posture on trade policy reflects a switch in policy emphasis from traditional multilateralism to bilateralism. Korea, now an important trading partner of the U.S., has been involved in such trade frictions with the U.S. since around 1983.

In 1983, Korea put forward a comprehensive plan for trade liberalization including tariff cuts, and the removal of non-trade barriers. This followed intensive and long domestic debates on the desirability of such liberalization. The underlying rationale behind the plan was, broadly speaking, to improve the efficiency and competitiveness of domestic industries by introducing competitive forces into highly protected industries.

However, Korea's gradual market-opening, though moving in the right direction, has been seen too slow for the U.S. On the other hand, U.S. pressure for Korea to speed up its market-opening has generated intense domestic resistance to the liberalization policy. In this way, Korea's liberalization policy can be seen as reflecting many factors, including U.S. pressures, domestic resistance, and underlying economic principles.

The purpose of this paper is to analyze Korea's market-opening policy in the context of a positive economic theory of political economy. As is well known, this theory has been widely applied to analyze import policies or protection policies both empirically and theoretically. The political-economic nature of protection policy has been analyzed, broadly speaking, within a public choice framework (Buchanan and Tollison 1972; Mueller 1976). Theories of rent seeking (Baldwin 1984; Buchanan and Tollison 1972; Buchanan et al 1980; Tollison 1982) or directly unproductive activities (Colander 1984; Bhagwati 1980, 1982a, 1983; Bhagwati and Srinivasan 1980), theories of regulation (Stigler 1971; Peltzman 1976) and theories of pressure groups (Olson 1971; Brock and Magee 1978; Stigler 1974; Becker 1983), all have provided underlying frameworks for the theory of protection, the emphasis of each respective theory being different depending on the author. These theories invoke, in one way or another, the basic premise of public choice theory that government policy makers are rational self-interested utility (or wealth) maximizers.

Market-opening is, to a large extent, an inverse process of import restriction, to which, therefore, the theory of protection can be directly applicable. However, the market-opening which has been

observed in Korea reflects the political-economic factors of both pressure from abroad and momentum from within. This new aspect, along with the theory of protection, should be incorporated as an integral part of a theory of market-opening.

In the following section, an heuristic theory of market-opening is presented by utilizing a demand and supply framework. The theory tries to integrate the international political-economic nature of market-opening into the existing theory of protection. Some intuitive discussions on comparative statics are also presented. In Section III, a detailed account is made of the explanatory variables along with the analytical implications and the empirical results are presented. In the empirical analysis, the demand, supply and equilibrium functions for the probability of market-opening are separately identified by estimating their logit functions. Section IV concludes the paper.

II. A Theory of Market-Opening

Market-opening could be defined as an international public good. Notice that the infeasibility of excluding other consumers, the most important characteristic of the public good, does prevail for the case of market-opening. In this sense, market-opening can be analyzed within a public choice framework, more specifically a positive economic theory of interest-group politics.

A demand and supply framework will be adopted in organizing the forces behind the political process of market-opening. An equilibrium approach based on the demand and supply framework is widely adopted explicitly or implicitly in the literature of protection theory (Baldwin 1984, 1985; Bhagwati 1982b; Caves 1976; Cline 1984), though not without critical views on the approach (Lavergne 1983).[1] This paper will adopt such an approach, especially that taken by Cline (1984).

As a first step towards modeling the market-opening process, it is postulated that there is an international market for market-opening. The demand and supply system may be written down as follows for the convenience of exposition:

[1]Lavergne (1983) suggests several factors impeding rapid adjustment of protection level to an equilibrium such as a tendency of the government to have a conservative respect for the status quo, which is developed into the status quo model. This aspect will be taken into account by allowing the different reference periods for the dependent and independent variables as will be seen later.

$$Y_i^d = D(X_i^d) \quad (1)$$
$$Y_i^s = S(X_i^s) \quad (2)$$

where equations (1) and (2) are demand and supply functions, the subscript i denotes the i-th product, and the superscripts, d and s denote demand and supply variables, respectively. Y_i^d measures the demand for the probability of market-opening for the i-th product, and Y_i^s, the supply of the probability of market-opening for the i-th product. X_i^d is a vector of variables affecting Y_i^d, and X_i^s, a vector of variables affecting Y_i^s. Here, the demand function (1) is assumed to reflect the foreign demand forces, and the supply function (2), the domestic supply forces. It is postulated that the demand forces of market-opening reflect mainly foreign pressures while the supply forces reflect an inverse process of import protection.[2] For simplicity, it is assumed that foreign demanders buy market-opening for potential export promotion and that suppliers offer market-opening to avoid foreign restrictions on exports.

To be consistent with the typical demand and supply system and to emphasize the implications of common interest or pressure group theory (Olson 1971; Stigler 1974; Caves 1976; Brock and Magee 1978; Becker 1983; Baldwin 1985), it is assumed that foreign firms and/or foreign governments must pay the costs of lobbying for (influencing the probability of) market-opening. Foreign firms must organize the political forces to press indirectly their governments to exert pressure on the opponent government and/or directly press the opponent government to open markets. The government, whether pressured or not, may want to see export markets opened to the country's own goods,[3] but must negotiate with the opponent government to achieve market-opening. In this process, the government

[2]This is not to say that there exists no domestic demand pressure. Rather, it is assumed that such pressures can appropriately be taken into account as a part of the inverse process of protection. Furthermore, this dichotomy will help to clearly explain, independently of the domestic political mechanism, the true underlying political-economic nature of market-opening pressures which are often put forward in the name of "fairness" of market accessibility.

[3]In the public choice framework, the government is assumed to play an agent role for pressure groups. However, the concept of the strategic trade policy (Grossman and Richardson 1985; Krugman 1986a, 1986b) suggests that the government is likely to pursue market opening even without being lobbied by pressure groups. See the later discussion for the relationship between the strategic trade policy and the market opening pressure.

seeking market-opening would have to mobilize international political forces behined it and threaten the opponent government with import restrictions. In the extreme case, it may have to risk the bilateral political relationship itself due to the opponent's retaliation. The lobbying costs include all the explicit or implicit costs of mobilizing international as well as domestic political forces and of risking the foreign political relationship. This total cost of lobbying divided by the total probability of market-opening, i.e. the average lobbying cost per probability unit of market-opening could be defined as the unit price (Cline 1984). It is assumed that the vector, X^d, includes this unit price. On the other hand, since the decision of market-opening is regarded here as a discrete choice to either open (to lift nontariff barrier) or not open, it is probably the case that the perceived marginal gain in potential export promotion of a unit increase in the probability of market-opening decreases as the total probability rises. For example, the marginal value of a one-percent increase would be larger at 50 percent than at 90 percent of the total probability. Therefore, the demander is willing to pay less average lobbying cost per unit of probability as the total probability increases, suggesting a downward sloping demand curve.

Similarly, the government offering the market-opening is assumed to perceive the cost of market-opening. The major components of this cost include the loss of political support from the general public as well as from existing protected groups, and the adjustment costs in the import-competing sectors. Political difficulty may stem from the fact that the long history of protection tends to generate a kind of mercantilistic nationalism and the public, even consumers, tends to be protectionist. In this case, government market-opening policy can be viewed as evidence of surrendering to the foreign pressure. This perceived cost, including adjustment costs, probably rises at an increasing rate as the total probability of market-opening rises. Against this must be weighed the potential benefits of improved efficiency in resource allocation and welfare gains to consumers. However, perceived costs probably dominate potential benefits in general and so the government perceives a net cost to market-opening. In addition, the net cost would be rising at an increasing rate or at least not at a decreasing rate.

On the other hand, the major gains accruing to a government offering to open its markets would in theory stem from foreign sources. This benefit lies in the potential gain of avoiding restrictions on exports, and would rise with the intensity of the pressing

government's lobbying efforts. In other words, the threat of retaliatory import restrictions[4] may get stronger and the probability of forthcoming restrictions may rise when lobbying becomes more intense. Therefore, it may be the case that the gain from market-opening in terms of the potential cost saving of avoiding forthcoming restrictions will be perceived to be larger the higher the average lobbying cost. In this way, the average lobbying cost incurred by the pressing government can be conceptualized as an implicit measure of the potential compensation to the offering government, and this, together with the rising marginal perceived cost, implies that the supply curve is upwardly sloping in relation to the unit price. The vector, X_i^s includes this unit price.

An equilibrium probability of market-opening may be obtained when the demand and supply curves intersect. The reduced form of the equilibrium probability may be derived as follows, eliminating the price variable from the demand and supply functions, (1) and (2):

$$Y_i^e = H(\tilde{X}_i^d, \tilde{X}_i^s) \tag{3}$$

where the superscript e denotes the equilibrium value and H, a functional form. Here, $\tilde{X}_i^d$ and $\tilde{X}_i^s$ denote vectors of variables which are the vectors X_i^d and X_i^s absent the price variable, respectively.

A deeper underlying mechanism of this system may be understood by invoking the approaches taken in studies by Peltzman (1976) and Becker (1983). A discussion on comparative statics based on these approaches will follow, and general specifications for the vectors $\tilde{X}_i^d$ and $\tilde{X}_i^s$ will be offered.

A. Demand Forces

The recent literature on strategic trade policy (Grossman and Richardson 1985; Krugman 1986a, b) suggests that a profit-shifting policy is an optimal trade policy under a monopolistic market structure. Since the market-opening pressure by the government can be viewed as an instrument of profit-shifting policy similar to export subsidies, the demand force in this framework should reflect the underlying rationale for the strategic trade policy, i.e. the existence of supranormal profit opportunity. The larger the supranormal pro-

[4]The restrictions could be levied not only on the exports of the concerned industry but also on the exports of the other industries. However, as long as the source of the threat of restrictions is identified with the inaccessibility to the concerned industry, the restrictions on the other industries' export would give the similar implication.

fit opportunity, the higher marginal value for any given total probability of the market-opening. This, in turn, implies an upward shift of the demand curve. Notice that this case is perfectly consistent with rent-seeking behavior (Buchanan et al 1980; Tollison 1982; Colander 1984; Bhagwati 1980, 1982a, 1983; Bhagwati and Srinivasan 1980) in an international context.

As such, the existence and the level of the expected gain (profit) from the market-opening could be the most important rationale for its positive demand. The factors affecting the marginal value may include the following: the height of the existing protection[5] to, and the market structure (concentration ratio) of, the relevant sectors in the pressed economy, and the relative international competitiveness of the exporters seeking the opening. As the protection rate gets higher and the market becomes more monopolistic (concentrated), expected gains from market-opening will increase because the existing monopoly rents in the pressed economy will be larger. The relative international competitiveness will depend on the relative factor endowment vis-a-vis the third country as well as the pressed economy according to the traditional trade theory.[6]

In addition, the increase in lobbying resources can be viewed as an increase of income, and the demand curve will shift outwardly. The main factor affecting the resources for, and efficiency of, lobbying may be, other things being equal, the controllability of the free-riding of exporters seeking the opening. The controllability of the free-riding, in general, depends on the inherent characteristics of the common-interest group and the enforcement methods adopted by that group. As the number of the members in a group gets smaller, and the per capita gain from the market-opening and the size disparity among the members get larger for the given number (The small group solution [Olson 1971]), the incentive to free ride will be

[5]Notice that the existence of the nontariff barrier does not mean an outright prohibition of import. Usually the goods under the *NTB*s can be imported with permission for the specific uses but with specified (generally very high) tariff schedules applied. Therefore, this protection rate may be an important signal for the potential rent.

[6]According to the Heckscher-Ohlin theorem and the Stolper-Samuelson theorem, the sector intensively using the relatively abundant factor will have a comparative advantage and the expansion of this sector will generate welfare gain to the intensively used factor. Therefore, the relatively abundant factor, as well as the industry using it intensively, would perceive the relatively larger marginal gain. If one assumes the factor specificity, then the industry may play a larger role than the factor as a group in pressing for the market opening. See Magee (1978), Mussa (1974), and Baldwin (1984, 1985) for the related discussions.

smaller. Similarly, as the asymmetry among the members interests, such as the diversity of the product varieties among the group members, gets larger (The asymmetry solution [Stigler 1974]), the incentive to free ride will be smaller. Also, if the group could devise an efficient mechanism to discourage free-riding such as supplying by-products to the members (The by-product theory [Olson 1971]), the probability of group action would also increase. In all these cases, one may expect similar comparative static results as in the case of an increase in lobbying resources.

The issue of free-riding is relevant in not only the domestic, but also the international context as already suggested. Given the free-riding possibility of the third country exporters, group action is likely to be stronger, the larger the relative size (the global market share) of the exporters seeking the opening.

The demand factors discussed so far may be summarized as follows:

$$\tilde{X}_i^d = \{\underset{(+)}{\text{Market concentration ratio}} \text{ and } \underset{(+)}{\text{Protection rate}} \text{ of the } i\text{-th industry of the pressed economy, } \underset{(+)}{\text{Comparative advantage}}, \underset{(+)}{\text{Global market share}}, \underset{(-,+)}{\text{Size}}, \underset{(+)}{\text{Domestic concentration ratio}}, \underset{(+)}{\text{Product variety}}, \underset{(+)}{\text{Per capita gain from opening}}, \text{others}\} \quad (4)$$

where the sings in the parentheses denote the expected signs of the effects on demand and all except for the first two variables measure the characteristics of the i-th industry of the pressing economy. The effect of the size may be twofold. If the effect is confined to the group size's effect on the incentive to free ride, it will be negative. However, if one postulates the adding-machine model of government behavior (Caves 1976; Baldwin 1985), rather than the common interest group model, the sign will be positive since the government, maximizing voters, is more likely to exert the opening pressure for the benefit of the larger group. Domestic concentration ratio is a typical proxy for the likelihood of a group action.[7] The

[7]It will be the case that as industrial concentration ratio becomes higher, the size in terms of the number of members gets smaller but the size disparity and the per capita return from a group action gets larger, implying a higher probability of a group action.

homogeneity index could be a proxy for the diversity of the product variety and the coverage ratio, a proxy for the size of the stake for the individual members as a result of a group action.[8]

B. Supply Forces

Turning to the discussion on the supply forces, notice that the market-opening is the inverse process of the protection if the foreign demand forces are controlled. Therefore, the supply of the opening would reflect the interactive forces of the domestic demand for and supply of the protection. In the situation where the demand for and/or the supply of the protection get stronger, the supply of the opening will tend to be weaker, other things being equal, and vice versa. Thus, the identification of the possible supply forces of the opening becomes a simple application of the protection theory.

The supply price is determined by the net cost perceived by the government. If the resistance of the existing protected groups of the import-competing industries gets stronger, the government would perceive larger political cost and, therefore, the marginal cost of the opening for any given total probability would be higher. The strength of the anti-opening lobby would depend on the expected loss due to the opening and the characteristics of the pressure groups as already discussed. In short, as the expected loss is perceived larger, and the characteristics of the protected industries become more favorable to the group action, then, the supply price would rise for the given total probability of the opening. The expected loss would depend positively on the amount of the existing monopoly rent which, in turn, depends on the extent of the existing protection and the additional regulations leading to the monopolistic market structure. The probability of group action for the given expected loss will be determined by the same factors already discussed in relation to the lobbying for the opening. The implications of the various factors affecting the opening lobbying will, mutatis mutandis, be applicable to the anti-opening lobbying.

On the other hand, the perceived efficiency gain from the opening would rise as the deadweight loss due to the existing protection is felt larger, which, in turn, leads to the outward shift of the supply curve (Becker 1983). However, the extent to which the perceived

[8]The detailed discussion on homogeneity index and coverage ratio will appear in the empirical section.

gain plays an important role in affecting the government's decision to open or not, would depend on the behavior of the government. If the government is an enlightened or principled one (Lavergne 1983), the effect of the higher efficiency gain will be larger. Otherwise, it will be smaller.[9] For example, a higher level of existing protection may imply a larger deadweight loss to the economy and, accordingly a larger efficiency gain from the opening. If the government is enlightened and adheres to the principle of optimal economy policy, the effect of the higher protection rate will be positive, other things being equal. The final effect of the higher protection rate on the supply of the opening, therefore, depends on the relative strength of two opposite forces, the anti-opening lobbying by the protected group and the government's pursuance of efficiency.

In a similar spirit, if the adjustment cost of the industry is perceived larger with the opening and if the government wants to minimize this cost, the probability of the opening may become lower, regardless of the lobbying strength of the industry. Furthermore, it is probable that the anti-opening pressure will get stronger as the industry perceives larger adjustment costs. Therefore, the effect of the adjustment cost on the supply would be unambiguously negative. Similarly, the level of comparative advantage enjoyed by the protected industry would affect positively the supply since the higher the level of the comparative advantage, the lower the adjustment cost.

The suply forces discussed so far may be summarized as follows:

$$\tilde{X}_i^s = \{ \underset{(-,+)}{\text{Protection rate}}, \underset{(+)}{\text{Comparative advantage}}, \underset{(-)}{\text{Adjustment cost}}, \underset{(-,+)}{\text{Size}}, \underset{(-)}{\text{Concentration ratio}}, \underset{(-)}{\text{Product variety}}, \underset{(-)}{\text{Per capita loss due to opening}}, \text{others} \} \quad (5)$$

where the sign in the parentheses denote the direction of the expected effect on the supply and all variables measure the characteristics of the i-th industry of the pressed economy. Notice that, in general, the sign pattern of the variables affecting lobbying activities is opposite to the pattern in the equation (4).

[9]In the Korea-U. S. context, Korea is argued to pursue also an independent policy of market opening. This implies the Korean government would exhibit the behavior of an enlightened government. However, this is an empirical issue which will be addressed in the empircal analysis in the later section.

III. An Empirical Analysis

A. Description of Variables

This study uses a cross-section data but the different reference periods for the dependent and independent variables are chosen with the consideration of the following analytical aspect. Since the U.S. market-opening pressure as well as Korea's opening policy began to gain momentum around late 1983, most of the explanatory variables are measured as of the end of 1982 while the reference period for dependent variables is the time period from 1983 to the end of 1987. Thus, the sample products under the nontariff barriers are selected out of the population as of the end of 1982 and the set of the explanatory variables measure the industry characteristics of those sample products as of 1982. The dependent variables are measured as a qualitative choice variable: its value for the demand equation is equal to 1 if the product has been subject to U.S. opening pressure for the period from 1983 to the end of 1987 but to zero, otherwise. On the other hand, its value for the supply and the reduced form equations is equal to 1 if the import restriction has been lifted during the same period, but to zero, otherwise.[10] This arrangement of time references is intended to take into account the dynamic aspect of the market-opening process, thereby, dealing, to some extent, with the criticism of the equilibrium approach (Lavergne 1983).

The size and the accuracy of the data set are severely constrained by the availability of the explanatory variables and information on the products subject to U.S. opening pressure. However, in any case, every effort is made to have the data from various sources mutually consistent as far as information is available. The level of aggregation matches the level of the 4-digit CCCN code. The definition and the source of the variables are summarized in Table 1.

The detailed content of the explanatory variables used here will be discussed with the expected sign of their effect on the demand, supply and reduced form equation. In so doing, some implications of

[10]The Korean government regularly announces the list of import-restricted products. When a product is dropped out from the list, the market for it is defined as opened. The list is usually published in *Export and Import Notice* by the Korea Trade Association.

TABLE 1
DEFINITION AND SOURCE OF VARIABLES

	Definition	Source
Dependent Variable		
Y	If the product has been dropped out from the list of import-restricted products during 1983-87 according to Export and Import Notice of the government, $Y = 1$. Otherwise, $Y = 0$.	Korea Trade Association (1987) for products subject to market-opening request, and various issues of *Export and Import Notice* by Korea Trade Associaton for other products.
REQ	If the product has been subject to the U.S. market-opening request, $REQ = 1$. Otherwise, $REQ = 0$.	Korea Trade Association (1987).
Independent Variable		
TA	Korea's actual tariff rate of import-restricted product in 1981.	Korea Development Institute (1982)
NPR	Korea's nominal protection rate of import-restricted product in 1982.	"
EPR	Korea's effective protection rate of import-restricted product in 1982.	"
KCR_3	Korea's concentration ratio of 3 largest companies in 1982.	Korea Development Institute · Economic Planning Board (1986)
ACR_8	The U.S. concentration ratio of 8 largest companies in 1982.	U.S. Department of Commerce (1986)
KHI	Korea's homogeneity index in 1982.	Korea Development Institute · Economic Planning Borard (1986)
KCR	Korea's coverage ratio in 1982.	"
KL	The U.S. value added per worker in 1982.	U.S. Department of Commerce (1986)
SR	Ratio of the U.S. wage to Korea's wage in 1982 in the US$	U.S. Department of Commerce (1986) and Economic Planning Board (1984).
K	If capital-intensive, $K = 1$. Otherwise, $K = 0$.	
T	If technology-intensive, $T = 1$. Otherwise, $T = 0$.	
L	If labor-intensive, $L = 1$. Otherwise, $L = 0$.	
A	In case of agricultural or marine product, $A = 1$. Otherwise, $A = 0$.	
NO	Number of the U.S. market-opening requests during 1983-87.	Korea Trade Association (1987)

the hypothesis of an enlightened government will also be presented. While the basic framework in Section II depends heavily on the theory of common interest-group, the alternative hypotheses which have been given only passing remarks could be summed up under the hypothesis of an enlightened government. This hypothesis is meant to comprise the national policy model (Caves 1976), the principled government (Lavergne 1983) and also the strategic trade policy model (Grossman and Richardson 1985; Krugman 1986a, b) but the adding machine model (Caves 1976) is deemphasized since voting has not been an important instrument of the political process in Korea.[11]

A) Korea's Protection Rate

Three different measurements of the protection rate are used. The first one is the actual tariff rate (*TA*) which is calculated from the tariff revenue collected on the actual import under import restrictions.[12] The second is the nominal protection rate (*NPR*) which measures the percentage difference between the domestic and international price. The third is the effective protection rate (*EPR*) measuring the percentage difference of the value-added evaluated at the domestic vs. international price according to the Balassa method.[13]

The interrelationship between these three variables is as follows. Once the effect of the *TA* is controlled, *NPR* will reflect the effect on the domestic price of any additional protective measures to the actual tariff (*TA*), such as the *NTB*s and/or other domestic favoritism effecting the domestic market structure. *EPR* will reflect the effect on the value-added of the relative difference in the domestic vs. international input price once the effect of the final product price difference is controlled by *TA* and *NPR*. In this case, the effect of the higher *EPR* would catch the effect of the lower domestic input price relative to the international input price.

Theoretically speaking, these three variables are expected to ex-

[11]The detailed discussions on the alternative hypotheses would be found in the references cited in the text. These could be the competing hypotheses in describing a government's behavior but, realistically speaking, it is also possible that a government's behavior could reflect all these hypotheses simultaneously. This explains why the basic framework in Section II utilizes also these hypotheses, to some extent.

[12]A product, while it is import-restricted, can be imported with the government permission.

[13]*EPR* measured according to the Corden method was also tried but the result was similar.

hibit a strong positive correlation and, therefore, cause a multicollinearity. However, the actual data does not correlate with each other[14] and the three variables are used simultaneously to see the separate effects of *TA*, the product price difference, and the input price difference. In this case, the total effect of *TA* will be equal to the sum of the three coefficients and the total effect of additional factors generating product price difference will be equal to the sum of the coefficients of *NPR* and *EPR*. The coefficient of *EPR* alone will measure the effect of the relative input price differential.[15]

Concerning the expected signs, *EPR* will have a negative effect on the demand but a positive effect on the supply since if the domestic input price is lower than the international price, the domestic industry will have a comparative advantage relative to the U.S. industry. On the other hand, the effect of the product price differential can be divided into the effect of the tariff (the sum of the coefficients of *TA*, *NPR* and *EPR*) and the effect of additional protective measures (the sum of the coefficients of *NPR* and *EPR*). These two effect will be separately or in sum, positive on the demand but negative on the supply.

However, if the Korean government behaves like an enlightened government, the effect of the product price differential on the supply could be positive since the higher differential would imply a higher deadweight loss. The effect of *EPR* on the supply, in this case, will still be positive but the underlying rationale will be different. The Korean government, when it launched the market-opening policy, announced a policy that the products which already gained competitiveness vis-a-vis imports would be opened first. Therefore, the positive effect of *EPR* on the supply could also be interpreted as reflection of a principle adopted by the government (an enlightened government) rather than interest-group politics.

The effect of *TA*, *NPR* and *EPR* on the market-opening in the

[14]The correlation coefficients between *TA* and *NPR*, between *TA* and *EPR*, and between *NPR* and *EPR* are −0.141 (0.297), 0.039(0.775) and 0.110(0.416) for the sample of 57 products subject to the U.S. pressure, and −0.058(0.483), 0.067(0.415) and 0.073(0.376) for the total sample of 151 products, respectively, where the number in parenthesis is the probability of the correlation coefficient being zero. These low correlations among *TA*, *NPR* and *EPR* might imply that, among actual tariff rates, additional protective measures and input price differentials, the former two move in the opposite direction, but the effect of the former two (product price differential) and the last one move in the same direction, thereby the expected positive correlations not being visible.

[15]Notice that the interrelationship among these three coefficients is not an exact one but an approximation.

reduced form would reflect the relative dominance of the demand and supply forces.

B) Korea's Concentration Ratio (KCR_3)

KCR_3 is Korea's industrial concentration ratio for the three-largest firms.[16] The effect of KCR_3 on demand is expected to be positive but its effect on supply will be negative. If Korean government has pursued an opening policy with the goal of bringing competitive forces into the protected industry which tends to be highly concentrated, its effect on the supply will be positive.

However, it is interesting to note that the policy guideline initially adopted by Korea was to cautiously approach market-opening for concentrated industries. Underlying this guideline seems to be the presumption that strategic industries, which have been promoted through high protection, tend to be more concentrated. While such an industrial policy orientation for opening markets could also be interpreted as an enlightened approach, the protection of concentrated industries is not entirely consistent with the underlying economic rationale for market-opening policy. Therefore, the policy guideline itself can be seen as a reflection of common interest-group pressures. In this interpretation, the negative effect of KCR_3 on the supply, even if influenced by the government policy guideline, should not be taken as evidence for enlightened or principled government.

C) The U.S. Concentration Ratio (ACR_8)

ACR_8 is the U.S. industrial concentration ratio for the eight-largest firms.[17] Its effect on demand and on the equilibrium level of market-opening should be positive. There is no reason to expect any effect on supply.

Concerning the effect on demand, one may formulate an alternative hypothesis. Notice that the U.S. market-opening requests have been presented through official channels by the USTR. Also notice that U.S. firms have historically given emphasis to the domestic market even up until recent years and the Korean market was generally perceived as unattractive to foreign exporters in terms of profit potential even as late as the early 1980s. Therefore, it is

[16]Korea's Herfindahl index was also used but the result was similar.

[17]The U.S. industrial concentration ratio for the four-largest firms was also used but produced a very similar result.

possible that the U.S. government (USTR), rather than exporting firms who have less concern about and/or are ignorant of the profit opportunity in the Korean market, has taken the initiative in exerting market-opening pressure. This interpretation is entirely consistent with the concept of strategic trade policy. In this case, ACR_8 may not have a significant positive effect on the probability of products being subject to U.S. opening requests, which is the dependent variable for the demand function in the current context. However, once a product is chosen and publicized as a market-opening target, U.S. firms learn about the profit opportunity in the relevant Korean market. The U.S. government initiative in pressing for market-opening has a signalling effect on private firms. Thereafter, private firms mobilize to lobby both the U.S. and Korean governments for the opening. Therefore, in this case, the equilibrium probability of the opening will be positively affected by ACR_8.

D) Korea's Homogeneity Index (KHI)

The homogeneity index is defined as the share of the most-shipped product among total shipments of industry products. Therefore, the higher the homogeneity index, the lower the industry product variety. According to Stigler's asymmetry solution for group action (Stigler 1974), the higher the industry product variety, the higher the probability of group action and the stronger the anti-opening lobby. *KHI*, then, is expected to have a positive effect on the supply and on the equilibrium level of opening. Unfortunately, indexes for U.S. industries are not available.

E) Korea's Coverage Ratio (KCR)

The industry coverage ratio is defined as the share of shipments of the industry's major product by the firms within the industry in the total shipments of the same product by all firms in the economy. This index measures the importance of the representative industry-product to the individual firms. The higher the coverage ratio, the higher the percentage of firms producing the representative industry-product as their major product. *KCR*, therefore, can be a proxy for the size of the per capita loss to the individual firms producing the import competing product given the market-opening. The higher the coverage ratio, the stronger the anti-opening lobby. Hence, *KCR* is expected to have a negative effect on both the supply and the equilibrium level of market-opening. Data for U.S. industries is not available.

F) Variables for Comparative Advantages

We have two sets of comparative advantage variables. The first set is based on the author's common sense classification of the products into capital(K)-, labor(L)-, technology(T)- and land(A)- intensive products. Classification as A includes marine products. These variables take the form of dummy variables (0 or 1) but are not mutually exclusive since a product can be both capital-(or labor-) and technology-intensive simultaneously. The second set consists of the capital-labor ratio as measured by the U.S. value-added per worker (KL)[18] and the relative skill (technology) ratio, measured by the ratio of the U.S. and Korea wage per worker (SR).[19]

Arbitrary as the classification of the first set may be, it turns out that the sign of the correlation coefficients among K, L, and KL, and between SR and T are broadly consistent with a priori expectations.[20]

Assuming the U.S. is relatively abundant in capital, technology and land, but relatively scarce in labor; K, T and A in the first set and KL and SR in the second set would have positive effects on demand but negative effects on supply, while L would be just the opposite. The sign of the final effect on equilibrium level of opening would not be clear. It would depend on the relative forces of demand and supply. However, if one assumes Korea is abundant with capital in comparison to the U.S. since Korea has rapidly promoted capital-intensive import competing industries, then, the effect of KL and K would also not be predictable.

G) Number of Market-Opening Requests (NO)

The lists of the products for which the U.S. wants to see markets opened has been presented to the Korean government not only through official channels (mainly by the USTR) but also through

[18]Notice that the identical production function is assumed for Korea and the U.S. as usual in the trade theory. Therefore, KL which is measured by the U.S. data could be applicable to the Korean industry, too.

[19]The limited availability of data on KL and SR reduced the total size of the sample to 140 sectors consisting of 48 sectors subject to U.S. pressures and 92 sectors free from such pressure.

[20]The respective correlation coefficients for the sample of 140 sectors are as follows: 0.184(0.029) between K and KL, −0.102(0.233) between L and KL, and 0.283(0.0007) between T and SR where the number in parenthesis is the significance level for the null hypothesis.

many unofficial channels on various occasions. The latter includes communication with influential members of the U.S. Congress and Senate and also with U.S. businessmen both in and out of Korea.

Roughly speaking, the number of market-opening requests may reflect the strength of the lobbying efforts for the market-opening. However, the information is so limited and so unsystematic that the data is not without measurement problems. There is also a conceptual problem. It may be the case that those who presented the lists and on what occasions the lists were presented are much more important than the simple number of requests in determining true lobbying strength in a genuine sense. While these problems may make it unwise to emphasize the importance of this variable, roughly speaking, its effect on the equilibrium level of market-opening will be positive if the Korean government has yielded to the U.S. requests, but negligible or negative, otherwise.[21]

B. Estimation of the Logit Function

Empirical estimation of logit functions has been performed for the demand, supply and equilibrium functions, respectively, and for two sets of comparative advantage variables. The RATS program was used for this estimation and the results are summarized in Table 2.[22]

The demand function is identified by estimating the probability of U.S. market-opening requests over the total sample of products. The supply function is identified by probability of market-opening for the sub-sample not subject to U.S. pressure, since such a sample is not contaminated by U.S. pressure, and so will reflect only supply forces. The equilibrium reduced form function is estimated from another sub-sample which is subject to U.S. pressure, since this sample will reflect both demand and supply forces. In addition, the equilibrium function is estimated using the total sample, but in this case an appropriate test for pooling the two sub-samples is

[21]The number of requests would tend to be larger for the products unopen until the latest because the opening request would be kept presented as long as the product already on the list had not been open. If this effect dominates, therefore, the probability of the opening and the number of requests may be negatively correlated.

[22]A detailed description of the estimation method can be found in Chapter 10, Pindyck and Rubinfeld (1981). The significance level for the estimated coefficients in Table 2 is classified according to the two-tailed test but the simple sign test for alternative hypotheses may need only the one-tailed test. In the latter case, the t-value for 10% significance level is 1.282 and the results look much better.

TABLE 2

ESTMATION RESULTS OF LOGIT FUNCTIONS FOR KOREAS MARKET-OPENING

	Demand Function			Supply Function			Equilibrium Opening Function						Test for pooling[3]	
Equation Number	*D*-1	*D*-2	*D*-3	*S*-1	*S*-2[2]	*S*-3	*E*-1	*E*-2	*E*-3	*PE*-1	*PE*-2	*PE*-3	*TPE*-1	*TPE*-3
Dependent Variable	*REQ*	*REQ*	*REQ*	*Y*	*Y*	*Y*	*Y*	*Y*	*Y*	*Y*	*Y*	*Y*	*Y*	*Y*
(Sample[1] Size)	(151)	(151)	(140)	(94)	(94)	(92)	(57)	(57)	(48)	(151)	(151)	(140)	(151)	(140)
Constant	-1.054	0.001	-3.269***	3.882*	24.198	3.429	1.220	7.313	4.637	3.714**	5.309**	3.291	-2.662	1.208
	(1.438)	(0.001)	(2.870)	(1.914)	(0.002)	(1.405)	(0.502)	(1.423)	(0.879)	(2.526)	(2.340)	(1.626)	(0.841)	(0.208)
TA	-0.002	-0.005	-0.009	0.012	0.020	0.005	-0.016	0.014	-0.060	-0.001	0.020	0.023	-0.027	-0.065
	(0.216)	(0.537)	(0.900)	(0.719)	(1.266)	(0.282)	(0.976)	(0.612)	(1.399)	(0.059)	(1.598)	(1.213)	(1.199)	(1.404)
NPR	0.013	0.002	0.005	0.027	0.021	0.025	-0.022	-0.029	0.005	0.043**	0.034*	0.177	-0.049**	-0.020
	(1.238)	(0.144)	(0.395)	(1.509)	(1.180)	(1.349)	(1.430)	(1.407)	(0.147)	(2.356)	(1.838)	(1.208)	(2.076)	(0.475)
EPR	-0.003	-0.002	-0.002	0.0002	0.0003	0.0002	0.001	0.002*	0.002	0.001*	0.005	0.001**	0.001	0.002
	(1.607)	(1.192)	(1.425)	(0.272)	(0.429)	(0.208)	(1.378)	(1.686)	(1.552)	(1.678)	(0.775)	(2.052)	(0.845)	(1.260)
KCR_3	0.023***	0.014	0.024***	-0.028**	-0.040**	-0.031**	-0.043**	-0.083**	-0.086**	-0.036***	-0.041***	-0.041***	-0.015	-0.055
	(2.901)	(1.626)	(2.759)	(2.040)	(2.501)	(2.193)	(2.049)	(2.269)	(2.163)	(3.301)	(3.239)	(3.323)	(0.609)	(1.304)
ACR_8	-0.020***	-0.019*	-0.024***	–	–	–	0.076***	0.097***	0.137***	–	–	–	0.076***	0.137***
	(2.249)	(1.877)	(2.389)				(3.140)	(2.808)	(2.718)				(3.140)	(2.718)
KHI	–	–	–	-0.308	0.508	-0.388	1.171	3.341	1.648	0.484	1.147	0.589	1.478	2.036
				(0.269)	(0.410)	(0.304)	(0.584)	(1.246)	(0.593)	(0.515)	(1.096)	(0.548)	(0.640)	(0.666)
KCR	–	–	–	-1.932	-3.918*	-1.683	-1.423	-1.246	-2.257	-1.764	-3.113***	-1.514	0.509	-0.574
				(1.165)	(1.940)	(0.999)	(0.703)	(0.422)	(0.741)	(1.498)	(2.130)	(1.151)	(0.194)	(0.165)
K	–	-0.360	–	–	-18.921	–	–	-4.230	–	–	-1.089	–	–	–
		(0.476)		–	(0.002)			(1.526)			(1.012)			
T	–	0.595	–		1.688	–	–	-1.342	–	–	1.221	–	–	–
		(1.187)		–	(1.425)			(0.698)			(1.608)			
L	–	-1.072	–		-19.012	–	–	-4.692*	–	–	-0.968	–	–	–
		(1.436)			(0.002)			(1.926)			(1.023)			
A		1.499***	–	–	-2.001*	–	–	-6.109**	–	-2.519***	–	–	–	–
		(2.347)			(1.942)			(2.343)		(3.019)				
KL	–	–	-0.094	–	–	18.042	–	–	15.359	–	–	16.119	–	-2.685
			(0.254)			(1.355)			(0.808)			(1.641)		(0.116)
SR	–	–	0.412***	–	–	-0.035	–	–	-0.466	–	–	-0.068	–	-0.431
			(3.199)			(0.192)			(0.915)			(0.429)		(0.793)
NO	–	–	–	–	–	–	–	0.007	-0.137	–	-0.386	-0.364	–	–
								(0.017)	(0.316)		(1.461)	(1.318)		

TABLE 2
(CONTINUED)

	Demand Function			Supply Function			Equilibrium Opening Function						Test for pooling[3]	
Equation Number	*D*-1	*D*-2	*D*-3	*S*-1	*S*-2[2]	*S*-3	*E*-1	*E*-2	*E*-3	*PE*-1	*PE*-2	*PE*-3	*TPE*-1	*TPE*-3
Dependent Variable (Sample[1] Size)	*REQ* (151)	*REQ* (151)	*REQ* (140)	*Y* (94)	*Y* (94)	*Y* (92)	*Y* (57)	*Y* (57)	*Y* (48)	*Y* (151)	*Y* (151)	*Y* (140)	*Y* (151)	*Y* (140)
DTA[4]	–	–	–	–	–	–	–	–	–	–	–	-0.055** (2.111)	–	–
DNPR[4]	–	–	–	–	–	–	–	–	–	-0.060*** (2.648)	-0.040* (1.745)	–	–	–
DACR[4]	–	–	–	–	–	–	–	–	–	0.023** (2.237)	0.034*** (2.400)	0.041*** (2.632)	–	–
Average Likelihood	0.533	0.581	0.581	0.630	0.672	0.643	0.661	0.711	0.759	0.617	0.661	0.648	–	–
χ^2[5]	21.48*** (5)	36.11*** (9)	28.16*** (7)	7.89[6] (6)	19.92*** (10)	9.93[6] (8)	38.90*** (7)	33.70*** (12)	31.56*** (10)	24.74*** (8)	45.21*** (13)	29.08*** (11)	–	–
$(1-\frac{LR}{LUR})$[7]	1.0	1.0	1.0	0.98	1.0	0.98	1.0	1.0	1.0	1.0	1.0	1.0	–	–

Notes: 1. 57 (or 48) products have been subject to U.S. market-opening requests during 1983-87. 94 (or 92) products have not been subject to market opening requests during the same period. 151 (or 140) products were import-restricted in 1982.
2. Result did not converge; the reported result was obtained after 20 steps of iterations.
3. Tests the significance of the difference between the coefficients of *S*-1 (*S*-3) and *E*-1 (*E*-3) using the dummy variable approach.
4. *DTA*, *DNPR*, and *DACR* are the same as *TA*, *NPR* and ACR_8 in the case of products subject to U.S. market opening requests; otherwise, they equal zero.
5. Formula is $-2(\log LR - \log LUR)$, where *LR* is the likelihood value of the restricted function with constant only, and *LUR* is the likelihood value of the unrestricted function. The number in ( ) is the degrees of freedom for the χ^2 test.
6. Significant approximately at 25% level.
7. Concept similar to R^2; see note 5 for *LR* and *LUR*.
8. The figure in ( ) under the estimated coefficient is *t*-value.
9. Classification of significance level.
   *: significant at 10% level (but at 5% level for one tailed *t*-test)
   **: significant at 5% level
   ***: significant at 1% level

also performed. Notice that the results of the test for pooling are summarized in the last two columns in Table 2, and the sample size is different for the results with and without the variable sets *KL* and *SR*. Following is discussion of the results for demand, supply, and the equilibrium equation.

A) Demand Function

The estimated equations have the following specification:

$$REQ = D(TA,NPR,EPR,KCR_3,ACR_8/K,\ T,\ L,\ A/KL,\ SR). \quad (1')$$
$$(+)\ (+)\ \ (-)\ \ (+)\ \ (+,?)(+,?)(+)(-)(+)(+,?)(+)$$

Here, $REQ = 1$ if the product is subject to market-opening pressure and $REQ = 0$ if it is not. The signs in parentheses are the expected signs and the slash(/) divides the set of explanatory variables used in estimation, according to which alternative specifications are obtained and the respective results are reported as *D*–1, *D*–2 and *D*–3 in Table 2. The second expected sign for ACR_8, which is uncertain, reflects an alternative hypothesis suggested in the earlier discussion for the variable ACR_8. The second expected sign for *K* and *KL*, which is also uncertain, assumes a similar capital intensity in both countries. Notice that Korea's domestic variables, *KHI* and *KCR*, which are postulated to affect Korea's domestic lobbying, are not included. Note also that the two sets *K,T,L* and *A*; and *KL* and *SR* are mutually exclusive and the sample size is 151 products for the former case but 140 for the latter case.

The sign patterns in the results for *D*–1, *D*–2 and *D*–3 are generally consistent with a priori expectations. Based on the coefficients with a *t*–value at least larger than unity, one may interpret the results as follows. The probability of the U.S. market-opening pressure tends to be larger as Korea's product prices (the sum of the coefficients *NPR* and *EPR*) and input prices (*EPR*) become higher and lower than the international prices, respectively. The same is true when Korea's market is more concentrated and the product tends to be more technology(or skill)- and land-intensive. The reverse holds for labor intensive products. As suggested earlier, capital intensity turns out to be an unimportant factor.

The negative sign of ACR_8, opposite to the expectation based on the political economy of common interest-groups, can be rationalized by an alternative hypothesis which is suggested in the previous section. That is to say, private (exporting) firms do not take a lead

in pressing for market-opening at the initial stages of an opening request, but in the later stages, when the firms have learned of the market opportunity, they will take the lead in pressing for opening. As will be seen later, ACR_8 turns out to have a very significant positive impact on the probability of market-opening. Therefore the negative sign of ACR_8 may be consistent with this alternative hypothesis.

B) Supply Function

The estimated equation of the supply function is specified as follows:

$$Y = S(TA,\ NPR,EPR,KCR_3,KHI,KCR/K,\ T,\ L,\ A/KL,\ SR. \qquad (2')$$
$$(-,+)(-,+)\ (+)\ (-,+)\ \ (+)\ \ (-)\,(-,?)(-)(+)(-)(-,?)(-)$$

Here, $Y = 1$ if the product market is open but $Y = 0$, otherwise, and the earlier notes on equation (1′) are also applicable. The second expected signs for *TA*, *NPR* and KCR_3, which are positive, assume an enlightened government. The second expected sign for *K* and *KL*, which is uncertain, assumes a similar capital intensity in both countries. Since this equation is estimated with the sample of products not subject to U.S. opening requests, ACR_8 is not included as an explanatory variable. The sample size is 94 products for the case of using *K,T,L* and *A* but 92 for *KL* and *SR*.

The results for *S*-1, *S*-2 and *S*-3 are not very good judging from the values for χ^2. The estimation of equation *S*-2 did not converge and the reported result was obtained after 20 iterations. Nonetheless, the sign patterns are not inconsistent with a priori expectations.

The signs of *TA*, *NPR* and *EPR* all turn out to be positive, implying that the Korean government concern about efficiency gains may dominate the anti-opening pressure of protected groups. However, Korea's concentration ratio and coverage ratio (KCR_3 and *KCR*) have a significant negative effect on supply as predicted by the theory of common interest-groups. The negative sign of *A* is consistent with expectations, but the positive sign of *T* is not. The significance of the *KHI* coefficient is too low to draw any inference. In any case, it can be said that the sign patterns, broadly speaking, support the supply hypotheses.

The most important finding from the estimation of the equations (1′) and (2′) is that demand and supply forces are, indeed, separately

identifiable. Notice, for example, that KCR_3 and A have a significant positive impact on demand but a negative impact on supply, which is perfectly consistent with expectations. The same is true for *TA*, *EPR*, *KL* and *SR*, though less significantly. This result seems very surprising, considering the usual difficulties involved in independently identifying the demand and supply functions.

C) Equilibrium Opening Function

The estimated equation for the equilibrium function (3) is as follows:

$$Y = H(TA, NPR, EPR, KCR_3, ACR_8, KHI, KCR/K, T, L, A/KL, SR/NO). \quad (3')$$
$$(?,+)(?,+) \quad (?) \quad (?,+) \quad (+) \quad (+) \quad (-) \quad (?)(?)(+)(?) \quad (?) \quad (?) \quad (+,?)$$

Here $Y = 1$ if the product market is open and $Y = 0$, otherwise. The earlier notes for equation (1′) are also applicable. The second expected signs for *TA*, *NPR*, and KCR_3, which are positive, assume enlightened government. The same is true for the second sign for *NO*, which is uncertain. Notice, however, that the expected signs in many cases are uncertain because of the opposing demand and supply forces.

Estimation of the equation (3′) was performed with two samples. One contains 57 (48 in the case of using *KL* and *SR*) products which are subject to U.S. opening requests. The results are denoted by *E*-1, *E*-2 and *E*-3 in Table 2. The other contains 151 (140 in the case of using *KL* and *SR*) products. The results are denoted by *PE*-1, *PE*-2, and *PE*-3 in Table 2. In the latter case, a test is performed for the appropriateness of pooling the two different subsamples of which one is but the other is not, subject to U.S. opening requests. The results of this test for *PE*-1 and *PE*-3 are reported in the last two columns under the heading, *TPE*-1 and *TPE*-3, respectively.[23]

[23]The test utilizes the dummy variable approach to see if there is any significant difference between the coefficients of the supply equation, *S*-1, *S*-2 and *S*-3 and the equilibrium equation, *E*-1, *E*-2 and *E*-3, respectively. The reported results for the test are the coefficients of the variables which are zeros for the sample not subject to U.S. opening request but are the same as the original variables otherwise. The test suggests that one has to control the effects of *NPR* and ACR_8 for *PE*-1 and *PE*-2 but of *TA* and ACR_8 for *PE*-3, while the difference in the coefficients of *TA* between *S*-3 and *E*-3 is relatively less significant (*t*-value is 1.404.). The necessity of controlling the effect of ACR_8 is obvious since it affects only the sample under U.S. pressure. The controlling variables of *DTR*, *DNPR* and $DACR_8$ are constructed in the same way as the above; they are zeros for the sample not subject to U.S. opening request but are the same as the

The results for *E*-1, *E*-2, and *E*-3 suggest that the effect of the product price difference (the sum of the coefficients of *TA*, *NPR* and *EPR*, and the sum of the coefficients of *NPR* and *EPR*) is negative, contrary to the results for the supply function. One may interpret this result as follows. The Korean government tended to be passive in opening the market for products under high protection when pressed by the U.S., though a policy of actively opening those product markets was pursued in the absence of U.S. pressure. Perhaps U.S. pressure actually helped intensify domestic anti-opening lobbying efforts by highly protected industries, making it difficult for the Korean government to carry out its original policy objectives (evidenced by the supply equation). Indeed, this interpretation is strongly confirmed by the results of *PE*-1, *PE*-2 and *PE*-3 for which the controlling variables *DNPR* for *PE*-1 and *PE*-2, and *DTA* for *PE*-3 exhibit significant negative signs. This, of course, implies that the impact of higher domestic prices relative to international product prices is positive in the case of no U.S. pressure but is negative in the opposite case.[24]

For *EPR*, the positive signs in all cases imply that Korea's policy of opening markets for industries having gained competitiveness dominates the demand force of avoiding those industries. This result is consistent with an enlightened government. The highly significant negative signs for KCR_3 suggest that the domestic anti-opening lobbying by concentrated industries won out over U.S. firms' lobbying for opening those industries.

The signs of ACR_8 and $DACR_8$ for *PE*-1, *PE*-2 and *PE*-3 turn out to be significantly positive as expected, confirming the alternative hypothesis postulated earlier on the effect of ACR_8.[25] Thus, U.S. firms' lobbying for opening, once they have learned of the market opportunity in Korea, has strongly affected Korea's decision to open markets. *KHI* and *KCR* have the expected signs in all cases

original variables, *TR*, *NPR* and ACR_8, respectively, otherwise. Notice that, for example, (coefficient of *TPE*-1) = (coefficient of *E*-1) − (coefficient of *S*-1). The test result for *PE*-2 is not reported here because the estimation did not converge. However, this result suggests that the differences in the coefficients of *K,T,L* and *A* between *S*-2 and *E*-2 are generally insignificant. Therefore, the pooled result, *PE*-2 has the same set of controlling variables, *DNPR* and $DACR_8$ as the result for *PE*-1.

[24]The fact that the controlling variables are different for *PE*-1 and *PE*-2, and *PE*-3 does not affect the conclusion since both reflect the effect of the product price difference.

[25]See the earlier discussions on the explanatory variable, ACR_8 and on the result of demand function.

though they exhibit mixed results in terms of statistical significances. Broadly speaking, the results for *KHI* in *E*-2 and *PE*-2 can be taken as direct evidence supporting Stigler's asymmetry solution and the results for *KCR* in *PE*-1, *PE*-2 and *PE*-3, Olson's theory of small groups.

The variables for comparative advantages in general give the mixed results, which may be partly due to a data problem. For the set of *K,T,L* and *A*, all, except for *T*, turn out to have a negative effect with a reasonably high *t*-value. This result, especially for *E*-2, might imply that Korea's response to U.S. pressure has been negative regardless of comparative advantage.[26] The sign for *T* in *PE*-2 turns out to be positive as in the supply equation, contrary to the expectations.[27] For the set of *KL* and *SR*, the significance level is generally too low to draw a meaningful inference. While the sign for *KL* in *PE*-3 is positive and reasonably significant, this is contradictory to the result for the case of *K* and *L* in *E*-2 and *PE*-2. All in all, it is difficult to draw a consistent inference from the results for the comparative advantage variables. However, the results support, to some extent, the earlier finding of the tendency for Korea to respond negatively to U.S. pressure. Notice that the same tendency is further confirmed by the negative effect of *NO* in *PE*-2 and *PE*-3, implying that the larger the number of the requests for opening, the lower the probability of opening.[28]

IV. Concluding Remarks

This paper has tried to broaden the understanding of the positive theory of political economy by analyzing the Korean government's behavior in opening markets under U.S. pressure. An heuristic model of market-opening pressure and response was developed incorporating various political-economic hypotheses found in the existing literature and emphasizing the international aspects of market-opening pressure and response. The empirical analysis produces many interesting implications. This section concludes the paper by re-

[26]The negative sign of *L* may also be interpreted to reflect the behavior of a benevolent government since the labor-intensive industries in Korea generally pay a relatively low wage. The significant negative sign for *A* may reflect the strong anti-opening pressure in the agricultural sector.

[27]This may be due to the fact that the high-tech industry in Korea is still too young to mobilize the necessary resources for strong anti-opening lobbying.

[28]See the earlier discussion on the possible measurement problem for the variable *NO*.

viewing the main implications, focusing especially on hypothesis testing and the explanation of the political-economic behavior of both Korea and the U.S. in market-opening.

The theory of market-opening offered in Section II utilizes the demand and supply framework. Empirical results have strongly demonstrated the usefulness of this approach. The demand and supply functions of market-opening were separately identified, consistent with this theory, which may be the prime contribution of this study. The U.S. demand for market-opening turns out to have concentrated on the products (or sectors) for which both Korea's market concentration ratio and the U.S. comparative advantage are relatively high. On the other hand, Korea's supply of market-opening tends to be low for products with high market concentration ratios and low comparative advantage. These implications fall in line with the proposed market-opening theory.

The estimated results of the reduced form equation for equilibrium market-opening further strengthen the above conclusion. The probability of Korea's market-opening tends to be higher when the U.S. market concentration ratio or the Korea's degree of the product homogeneity increases but tends to be lower when Korea's concentration ratio or the per capita expected loss (proxied by coverage ratio) becomes higher. Additionally the reduced form estimation helps to identify which forces of demand and supply determinants ultimately dominate.

It is interesting to note that there is a tendency for the supplier to react to foreign market-opening pressures in a negative manner which deviates from the supply behavior absent foreign pressures. This finding may be argued to be data-specific. However, this author suggests a tentative hypothesis for this result. Resisting against a foreign enemy, after all, may serve the common interests of both government and special interest-groups. If, right or wrong, the public perceives that the government is surrendering to foreign pressure, it is not at all in the government's interest. Foreign pressure may actually become a reinforcement for domestic anti-opening pressure groups by helping them to take advantage of the weakened government position under foreign pressure. This may also be reinforced by the manipulation of public opinion by the interest-groups. Therefore, a common interest in fighting against foreign pressure tends to develop.[29]

[29]This hypothesis may suggest that the demander's strong pressures fail to gain what

Korea's market-opening policy turns out to result from many different factors. As already suggested, policy has strongly been affected by the anti-opening pressures of domestic interest-groups as well as by U.S. pressures for opening. The government's concern for efficiency has also played an equally important role. Notice that the probability of opening tends to be higher for products with higher protection rates though the opposite tends to hold when U.S. pressure exists. Also note that the policy of actively opening competitive sectors (industries) has been maintained. Therefore, it can be said that the behavior of Korean government has been not only self-interested but also enlightened.

On the other hand, it is interesting to note that U.S. market-opening pressure may be the factor that awakens the self-interests of Korea's protected industries and helps form a coalition of the Korean government and protected industries. This possibility may explain Korea's deviation, when pressed by the U.S., from an enlightened market-opening policy. In this sense, the U.S. market-opening pressure may bring difficulties to the Korean government rather than helping her act consistently with economic principles in opening markets. In addition, the pattern of U.S. market-opening pressure turns out to be consistent with the theory of common interest groups.[30] Equally important, the U.S. pressure seems to have been a signal to U.S. private firms to intensify their lobbying for Korean market-opening, to which extent, the U.S. government behavior is also consistent with the concept of strategic trade policy.

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he really wants but only risk the bilateral political relationship to the end. More importantly, the foriegn pressure may put the government in a difficult situation such that she may have to give up an optimal principle of market opening. The discussion on this aspect will follow in the context of Korea and the U.S.

[30]According to this result, the principle of fairness or reciprocity which is argued to rationalize the U.S. aggressive bilateral trade policy may be no more than a fine phrase for an interest-group politics.

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