How the Exchange Rate Regime Has Been Switched in Korea: A Public Choice Inquiry *

Iljoong Kim and Inbae Kim****

Abstract

Public choice submits that legal changes can be endogenous in such a way that they are manipulated by bureaucrats who want to maximize rents from transactions with various interest groups. This paper takes the change in exchange rate regimes to empirically examine the premise. It offers a two-stage method, in which we first show that the exchange rate is influenced by interest group pressures, and subsequently that the 1990 market average regime (MAR), as a phase-in policy in Korea, was introduced mainly to serve bureaucratic incentives. This method is expected to be useful to a host of countries for various studies attempting to test a possible existence of bureaucratic or other hidden motivations behind any "isolated" event of policy change.

JEL Classification: K42, D78

Key Words: *bureaucratic incentive, endogeneity, exchange rate regime, interest group, phase-in policy*

* This draft is prepared to present at the 2004 Korea Development Institute – Korea-America Economic Association Conference in Seoul, Korea.

** Professors of Economics, Soong Sil University, Sangdo5-Dong, Dongjak-Gu, Seoul, 156-743, Korea

E-mail ijk@ssu.ac.kr / ibkim@ssu.ac.kr

I. Introduction

Public choice recognizes laws as the outcomes of a political market dominated by narrowly focused interest groups seeking rents, resulting occasionally in inefficient laws which injure the losers more than they benefit the gainers. It thus suggests an endogeneity of legal changes in that they occasionally serve the political purpose of accomplishing wealth redistribution and diverting opposition. In particular, public choice has already established that legal changes are often endogenous such that they are manipulated by bureaucrats. They act as agents to the legislature, but, with significant rule-making influence, capture some of the wealth, or raise transaction costs for the principal and other competitors *à la* Breton and Wintrobe (1982). In fact, the central bank's self-interest in monetary policy has been noted for long time (Havrilesky, 1995).

This paper addresses the exchange rate regime from the forementioned endogeneity perspective, following the proposition that most changes in government policy involve special interests hiding beneath the veneer. It theoretically and empirically demonstrates that an exchange rate regime switch hinges, to a nontrivial extent, specifically on a bureaucratic incentive -- the incentive to maximize the discretionary budget through transactions with various interest groups. Not surprisingly, the previous literature, generally treating the exchange rate regime exogenously, focuses mainly on the goals,

implementation, and effects of certain exchange rate policy under the given regime.[1]

Nonetheless, it is encouraging that researchers, at least in determining the exchange rate, have recognized the various influences of interest groups.[2] Although most of the discussions lack solid empirical evidence from systematic estimation, they shed significant insights on our study. In this paper, we go one step further and claim that the regime itself is an outcome of interest group politics orchestrated by bureaucrats in charge as middlemen. They respond to incentives and constraints just like us after all.

The 1990s witnessed a burgeoning of perspectives along this line.[3] These share a common ground, though in somewhat varying tones, that interest groups

---

[1] The studies usually assess which regime performs better in terms of output (or employment) stabilization and price stability with the choice of the regime as given. See, among the numerous studies, Stockman (2000), Kenen (2000), Nilsson and Nilsson (2000), Fischer (2001). While the endogeneity of observed regime switches was recognized to a certain degree (e.g., Savvides, 1990; Bordo and Kydland, 1995; Collins, 1996; Edwards, 1996; Freeman et al., 2000; Fischer, 2001), along with the optimum currency area literature (see de Grauwe (1994) for surveys), they generally can be viewed as, phrased in de Kock and Grilli (1993, 347), a certain "result of incompatible monetary and exchange rate policies," thus virtually within the public interest model framework.

[2] Of course, they have implicitly assumed that the government can manipulate its currency value at least in the short run. Such manipulation would be easier especially if a country had capital control more in place as it was obviously the case of Korea up to the 1997 financial crisis. See Section III for the literature.

[3] These include among others Vaubel (1991), Epstein (1991), Fratianni and von Hagen (1992), Ruland and Viaene (1993), Colambatto and Macey (1996), Hefeker (1997, 2000), Leblang (1999).

favoring one regime over another[4] play a decisive role in sculpting the exchange rate regime, thereby endogenizing regime switches. This paper emphasizes the role of bureaucrats as self-interested middlemen who compromise among various conflicting forces, rather than dealing narrowly with the preferred regime choices of an exemplary pair of two sectors.

Moreover, to the authors' knowledge, there is no empirical work, concerning a country's regime switches, which explicitly tests this endogeneity hypothesis. This indicates that its empirical validation within an individual economy has yet to be established. Even the scarce empirical work among the endogeneity literature, although in line with the traditional public interest perspective, had to rely on cross-country analyses, such as a probit estimation of major characteristics of the countries adopting a fixed regime.[5] This is obviously due to the inherent difficulty in within-country testing, that is, "*disentangling economic (i.e., public interest) and political (i.e., public choice) influences*" (Crone and Tschirhart, 1998, 106) usually concerning an "unprecedented or only sporadic" policy (i.e., exchange rate regime) change. This paper attempts to overcome this inherent difficulty using a two-stage estimation technique.

---

[4] Among such competing forces are capital vs. labor (Epstein, 1991), tradables vs. nontradables (Hefeker, 1997), importers vs. exporters (Ruland and Viaene, 1993), and some financial firms' preference of the fixed system (Hefeker, 2000).

[5] Furthermore, problems with this kind of dichotomous classification introduce important caveats to all of the cross-country empirical analyses (Collins, 1996, 118).

The order of the paper is as follows. Section II starts with discussions on the political economy of the exchange rate regime choice, and provides, by way of a case illustration of the 1990 regime change in Korea, a simple theoretic account of the regime choice optimal to bureaucrats. Section III, as the first stage of our empirical work, estimates the exchange rate equation with variables reflecting interest group pressures. Based on this equation, Section IV tests our main hypothesis that the forementioned 1990 regime change was caused by bureaucrats' own incentive in facilitating interest group politics, which will complete the second stage of our empirical testing. Section V concludes the discussion.

II. Public Choice Perspective on Changes in the Exchange Rate Regime

1. Outline

Political-economic reasons for the observed cyclical movements of exchange rate regimes were rarely tackled in the literature, except for some attempts to explain observed regime switches in terms of certain types of incompatibility in monetary and exchange rate policies (e.g., de Kock and Grilli, 1993; Bordo and Kydland, 1995; Rose, 1996). Even the very scarce empirical studies following the endogenous choice views (Savvides, 1990; Edwards, 1996; Leblang, 1999) assume overall that a welfare-maximizing government chooses the exchange rate regime.

We relax this assumption and adopt a view of policy making in which politicians act to benefit interest groups. The essence of this public choice critique of the optimal policy approach is that domestic political and bureaucratic pressure almost always leads to some interests being counted more than others (Willett, 1999, 221-253). Particularly, we emphasize, especially in developing economies with a strong bureaucracy like Korea, the role of bureaucrats as self-interested middlemen compromising between various conflicting forces.[6]

We adopt a reasonable presumption that, while an interest group prefers a certain "level" of the exchange rate, bureaucrats in charge as accommodators might prefer its determining "regime" of a certain kind. In other words, on the one hand, the welfare of interest groups is much more affected by rates (i.e., final products of bureaucrats) than by regimes (i.e., production facilities of bureaucrats). On the other hand, differing regimes impose differential levels of costs to bureaucrats themselves when maneuvering the exchange rate, in all levels and directions, to accommodate the demands from interest groups.[7] To be

---

[6] In this regard, the limited literature concerning bureaucratic self-interest in European monetary integration is significantly illuminating for our study. Fratianni and von Hagen (1992) view the monetary union partly as the outcome of central bankers' collusive efforts to reduce competition in their race to provide monetary stability. Vaubel (1991) also interprets the creation of a common central bank as a device to increase comfort, and to decrease accountability of central bankers.

[7] While Frieden (1994, 81) and Hefeker (1997, 22) assume that the regime choice is the major concern of interest groups, they also acknowledge our presumption that they surely have preferred levels of exchange rates. Refer to Stephan (1994) for a similar perspective.

sure, such policy makers would face a certain efficiency constraint in switching the regime. Within the limit of the efficiency constraint, nevertheless, they adjust the regime, unless the related marginal cost exceeds its marginal benefit. Below we offer a simple theoretic illustration of how the optimal regime choice is made by bureaucrats to serve their own interest-group related benefits, and subsequently apply it to the 1990 regime change in Korea for illustrative purposes.

2. A Bureaucratic Incentive Model of Exchange Rate Regimes

Suppose first that the bureaucratic utility function consists of two arguments: public interest, and private benefits derived from lobbying efforts by interest groups to obtain a certain exchange rate.[8] For analytical simplicity, assume that the lobbying efforts, and thus the benefit flows to bureaucrats, are constant across exchange rate regimes. After all, it is the demand for changes in the exchange rate *per se*, largely determined by their intervention and other economic factors, that matters to the lobbying parties. For the bureaucrats, on the other hand, the cost associated with exchange rate manipulation varies significantly, depending on which regime they adopt. Therefore, the

---

[8] See Shughart and Tollison (1983), Poole (1990), and Havrilesky (1995). The Korean bureaucracy has been well known for its extraordinary level and scope of discretionary power and organizational cohesiveness. It appears that the Bank of Korea bureaucrats and ex-bureaucrats receive various benefits from the private sector. See, for instance, Kim and Kim (2001) and Cho and Kim (2001).

bureaucrats' utility-maximizing incentive, subject to the relevant constraints of accommodating the rate manipulation requests, comes downs to how easily they can manipulate the exchange rate -- finding the least-cost exchange rate regime.[9]

History has left open a wide range of regimes, ranging from hard pegs sustained by the abandonment of a national currency or currency boards, to a variety of crawling bands with wide ranges, and to free floating. Following Fischer's (2001) conceptual spectrum to reflect the reality better, and to make a continuous analysis available, we define the set of exchange rate regimes according to the size of their permitted bands in which the currency may move as in Cukierman et al. (2003). <Figure 1> displays on the X-axis the perfectly fixed (or hard pegs) regime (FIX) with a zero permitted band, and the perfectly flexible (or floating) regime (FLX) under which the rate may change without bound.

We define the "total manipulation cost (C)" as the sum of the "non-financial cost (NF)" and the "financial cost (F)."[10] The former refers to the various political cost, domestically or internationally, stemming from adjusting the exchange rate by, say, a unit change. In fact, the definition of NF is very

[9] We adopt a simplifying assumption that the public interest utility is not sensitive to the type of regimes.

[10] To keep our argument simple, we take as fixed not only the usual performance criteria appearing in the loss function of optimal policy literature (e.g., the credibility of monetary policy, or the stability of prices and financial system), but the bureaucratic incentives of international agencies such as the IMF.

similar to the "political cost" in Collins (1996).[11] Other things being constant such as capital mobility, this cost will increase as the regime approaches *FIX*, since all information regarding government intervention should be revealed to the market under *FIX*.[12] *F* is the monetary cost, necessary to warrant a successful per unit adjustment of the exchange rate to interest group pressures through intervening the market, which increases as the regime gets close to *FLX*. With gradually larger bound upward and downward, the government encounters an increased risk of losses from the foreign exchange intervention against market speculators, effectively reducing its "room to maneuver" (Freeman et al., 2000, 449).[13] To be concrete, the *F* cost might take the form not only of the change in foreign reserves, but of the losses from a variety of off-balance sheet instruments by the central bank, such as forward market, swaps, and non-deliverable forwards. The very steep slope of the upper part of the *F* curve is

---

[11] In the fixed system, any nominal exchange rate change is visible and clearly identifiable, while, in a more flexible regime, it can be difficult to distinguish between market outcomes and government decisions (Collins, 1996, 120).

[12] Failure of "international coordination" to keep the exchange rate within a preengaged zone under pegging or fixed regimes imposes enormous burdens on bureaucrats (Willett, 1999). This is consistent with Gärtner's (1991) observation that bureaucrats are very reluctant to the stigma overseas of pushing beggar-thy-neighbor policies. Under a fixed system, the uncovered manipulation of the exchange rate for a special interest group will surely provoke domestically stronger resistance by the losers.

[13] We preclude situations such as currency crisis whether it is anticipatory or self-fulfilling. However, this argument is reinforced by the finding that the amount of foreign currency intervention used each time was greater under the floating system than under the Bretton Wood system (de Grauwe, 1996, 207).

perfectly consistent with the widely shared belief among current experts that any manipulation of the exchange rate has recently become extremely difficult.

Note here that the nature of our *F* cost is defined as mainly "private" to the bureaucrats. Therefore, the macroeconomic cost of defending the disequilibrium exchange rate that might often occur in the permanently fixed regime, probably from the public interest concern, is not included in the *F* cost.[14] We submit that this kind of cost, or part of that cost, rather belongs to the *NF* (political) cost, if at all, because they may be blamed for incurring such a problem. <Figure 1> reflects the above relationships with the downward sloping NF, and the upward sloping F curves.

<Figure 1> displays the U-type total cost (= $NF + F$) curve, C, and shows that its minimum will usually be placed at some point between the two extremes on the X-axis. Interestingly enough, this is consistent with Frankel's (1999, 30) observation that "*[I]ntermediate solutions are more likely to be appropriate*

[14] In fact, our classification of regimes can not differentiate the regimes with different degrees of government commitment to the band. For example, the permanently fixed (maybe with band) and the adjustably pegged (with band) regimes are not differential in our classification, where in the former regime such a macroeconomic cost mentioned here will be larger. Nevertheless, this limitation does not seem to be a serious defect, at least in our bureaucratic model of the exchange rate regime, where only the bureaucrats' private costs are counted, as stated. A similar logic can be applied to the comparison of adjustable pegs with narrow bands versus wider band crawls. As long as the degrees of the government commitment to the bands are assumed to be constant across the regimes, the monetary cost that counts only the bureaucrats' private costs will increase as the band widens.

for many countries than are corner solutions."[15] Moreover, at least from this paper's perspective, the exact minimum position of a country in <Figure 1> will be determined by its own politico-economic characteristics. For example, as the *NF* curve shifts in a south-western direction, the optimal regime will become more fixed. This implies that bureaucrats tend to be more reluctant to let its currency fluctuate, the more closed the economy, the smaller its trade capacity, or the less matured its free-market system (or equally, the more authoritarian the bureaucracy), etc.[16]

<Figure 1> HERE.

3. The Case of Korea

Since 1945 for forty five years, Korea had adopted three exchange rate regimes which, despite their different names of "Fixed", "Single Floating", or "Multicurrency Basket Pegging" exchange rate system, have been demonstrated to be practically rather close to hard pegs (The Bank of Korea, 1997). The

---

15 For empirical evidences, See Masson (2001) or Calvo and Reinhart (2002). However, all their results come from the public-interest approach such as those mentioned in footnote 1), not from a bureaucratic incentive as in this paper.

16 The implications of these hypotheses are all similar: lower political costs to bureaucrats. It is interesting in this regard to note Leblang's (1999, 609) finding that more democratic countries are likely to adopt a floating regime. Furthermore, Collins (1996, 128-129) found that smaller countries were most likely to choose a fixed regime. Collins also found less open countries to be associated with the fixed regime, although Bernhard and Leblang (1999, 86) obtained the opposite result.

monetary authority changed the regime to the "market average regime (MAR)" in 1990 as a "phase-in" policy, *à la* Kaplow (1986), allowing the exchange rate to move daily within a permitted band (initially ±0.4% to ±2.25%) around the weighted average of rates calculated from dollar transactions among domestic financial institutions on the previous day.[17] Thus, the 1990 regime change was basically a switch from the "fixed" system to a narrow band regime, meaning it was "getting closer to *FLX* " in <Figure 1>. The monetary authority claimed that MAR was intended to let the exchange rate be determined by the market supply and demand. But it also announced that the introduction of the narrow band was to "*alleviate the turbulences in the foreign exchange market and the harmful effects on the economy*,"[18] which is similar to the underdevelopment of financial markets argument in Nilsson and Nilsson (2000, 331). This paper does not intend to refute the authority's claim outright, but to highlight the embedded bureaucrats' incentive to defend their own interests, including discretionary power.

As mentioned, all the previous exchange rate regimes had been close to fixed ones before MAR. A backward conjecture, based on our bureaucratic framework, thus suggests that, around 1990, the total cost curve must have moved to the right (i.e., from C to C' as in <Figure 1>). We argue that the

[17] The Korean MAR can be regarded as a variant of the crawling band. Taiwan, for example, also used this market average regime from 1982 to 1989.

[18] *Dictionary of Key Terminologies in Economic Policy*, The Economics Education Section, The Bank of Korea Homepage (www.bok.or.kr).

major cause of the movement lies in the shift of the non-financial cost curve in the north-eastern direction, from *NF* to *NF'*. A three-fold explanation is plausible: the sudden increase in the worldwide attention to the Korean economy, the rapid growth of the Korean trade volume and, politically, a launching of actual democratization.[19] We believe that all these factors in the late 1980s raised *NF* encountered by bureaucrats in manipulating the exchange rates. We claim that the transition to a slightly more flexible system, but not completely to *FLX* in <Figure 1>, can be explained by the bureaucrats' calculated move to better serve their interests.

As indicated in the Introduction, however, testing this compound hypothesis of the bureaucratic incentive in facilitating interest group politics has been very hard to undertake, mainly because only a single event (i.e., the switching to MAR) is involved. We offer a two-stage method to overcome this empirical barrier. In Section III, we estimate the exchange rate equation to verify the existence of interest group influences on its level determination along the entire time horizon. This equation of interest group politics will subsequently be utilized in Section IV, to confirm that the bureaucratic incentive played an active role in the 1990 switch to MAR. This will complete our endogeneity hypothesis.

III. Estimating the Interest Group Model of the Exchange Rate Determination

[19] Please refer to <Referee's Appendix> for a little more elaboration on this.

I. Main Hypotheses and Data

We empirically show in this section that the exchange rate is, at the margin, subject to interest group pressures as well as to traditional macro-variables. It is well taken that interest groups play a vital role in the formation of public policy (Potters and Sloof, 1996, 403). As to exchange rate determination, one can find some theoretical work in this line, as Stephan (1994) described.[20] However, few empirical works explicitly examining such influences exist except those which included political variables like election or partisan identity in Dornbusch (1987), van der Ploeg (1989), Blomberg and Hess (1997), to name a few. Although varying kinds of interest group pressure might exist, we identify below the three major ones playing important roles in Korea.

■ Identification of Pressures and Their Proxies

(1) Importers vs. Exporters

The literature strongly conveys that the exchange rate can become an effective device to protect importing and/or exporting industries. The government, by

---

[20] In particular, Corden (1982, 281), by calling it "exchange rate protection" for a certain industry, emphasizes the so called special interest group feature in exchange rate intervention *à la* Olson (1965) and Tullock (1989). Also, Huizinga (1997) and Lohmann (1998) highlight its inherent inefficiency. To be sure, there have been discussions regarding the central bank's bureaucratic incentive. Gärtner (1991) and Stephan (1994), for instance, cope directly with bureaucratic incentives, arguing that central banks are also political entities which, to varying degrees, respond to political demands, and strive for support from those groups or actors. Their empirical jobs, however, do not include parametric estimation of the interest group pressures.

depreciating its own currency, can benefit exporting or import-competing industries (Corden, 1982; Bliss and Joshi, 1988). Gärtner (1991) claims that the central bank always seeks political support domestically and overseas, and that the domestic support is reflected mainly by the interests of importers and exporters.[21] In a similar context, Huizinga (1997) theoretically shows that the real exchange rate tends to be overvalued in countries with a high proportion of import consumption to income.

We particularly note a body of research claiming that such arguments hold quite extensively throughout the "entire line of production."[22] It is thus imperative to use industry-based data, for which we will utilize the *Input-Output Table* (See <Appendix> for details), because it provides relevant import / export statistics for 77 disaggregated industries.

It is by nature difficult to develop an ideal proxy of lobbying forces by importers and exporters, as clearly identified by Broz and Frieden (2001, 327-328): the "proxy problem" and the "Olson problem." In most of the studies on general interest group pressures, when such direct measures as campaign contribution or lobbying expenditure are not available, the average size of the producers or the percentage of proprietorial income is a typical variable used to

---

[21] Importers' and exporters' ultimate concern will be the real exchange rate changes. Primarily, however, they are concerned with changes in the nominal exchange rate, which are in the short-term expected to change the real exchange rate (Stephan, 1994, 98).

[22] For example, the pressures from producers using imported inputs lead to currency overvaluation (e.g., Hirschman, 1971; Rodrick, 1986).

measure the stake of an industry in influencing government policies (Potters and Sloof, 1996). In this paper, as an experimental attempt, we calculate for each industry the proportion of exports to their total output (i.e., the export proportion), from the *Input-Output Tables*, in order to proxy the pressure of the industry.[23] The higher the export proportion, the greater incentive to lobby for depreciating their currency value.

We utilize this export proportion in two ways to include into the empirical equation as the "exporters' pressure variable in the economy (*EXP_PRESS*)." Firstly, in attempting to overcome the "proxy problem" of Broz and Frieden (2001), we calculate the weighted average of these proportions across industries for each period. Note that the denominator of this average is equal to the "total demand" in the *Input-Output Table*, which we believe reflects our purpose appropriately, since it counts the intermediate as well as the final goods and services, thus extensively capturing the level of pressure. Secondly and more interestingly, in hoping to reflect the free-riding problem in collective action of Mancur Olson as identified by Broz and Frieden, we calculate the same weighted average only of industries whose export proportion exceeds some value. Lobbying has a public good characteristic. The export proportion (as well as the import proportion to be discussed later) should exceed a threshold value so that the benefit from lobbying is large enough to overcome the free-riding

[23] It would be more complete if we could include import-competing industries as well. Due to the technical difficulty, however, we leave this task for future research.

problem. We take, as a rather experimental threshold value, 0.05, which is approximately the median both in the import and export proportions.

As to the "importers' pressure variable in the economy (*IMP_PRESS*)," we go through the similar process of calculating for each industry the proportion of imports to their total output (i.e., the import proportion) from the *Input-Output Tables.* Again, we try both the weighted average of these proportions and that consisting of industries whose import proportion exceeds a threshold value in order to ameliorate the Olson problem.

(2) Foreign Debts vs. Foreign Credits

Foreign debt is already known to affect the exchange rate either by the traditional portfolio model or by the fundamental exchange rate approach (Williamson, 1985). Fabella (1996) argues that the current account deficits backed up by foreign debt tend to overvalue the currency. Chow (1997) submits that a weak currency can be sustainable owing either to low foreign debt or to higher pressures from exporters. All these suggest that the higher the net foreign debt, the greater likelihood of pressure to appreciate the exchange rate. In this section, we take the proportion of the net foreign debt of Korean firms to their total assets as the pressure variable (*FOREIGN_DEBT*), whose data source is the *Financial Assets and Liability Balances,* published quarterly by the Bank of Korea.

(3) Election Effects

Exchange rate policy has been discussed by many commentators, as cited earlier, in the context of the political business cycle. The major tenet of their arguments is that the incumbent administration, right before the election, tends to appreciate the currency to temporarily increase exports by the J-curve effect, and, through declining import prices, to lower the domestic price level to temporarily increase real income. In this paper, we use presidential and parliamentary election dummies (*ELECTION*) to examine such tendencies.

2. The Empirical Model

We start from the traditional monetary exchange rate model,[24] following the spirit of continuity among different exchange rate regimes as illustrated in <Figure 1>, and add our interest group variables as in equation (1). The sample period includes 1980:Q1 to 1997:Q4.

$$\begin{aligned}\Delta s_t = {} & \beta_0 + \beta_1 \Delta(m_t - m_t^*) + \beta_2 \Delta(y_t - y_t^*) + \beta_3 \Delta(i_t - i_t^*) + \beta_4 \Delta(\pi^e{}_t - \pi^e{}_t^*) \\ & + \beta_5 D_{X,t-1} \bullet \Delta EXP\_PRESS_{t-1} + \beta_6 D_{M,t-1} \bullet \Delta IMP\_PRESS_{t-1} \\ & + \beta_7 D_{D,t-1} \bullet \Delta FOREIGN\_DEBT_{t-1} + \beta_8 ELECTION_t \\ & + \beta_9 D_{X,t-1} + \beta_{10} D_{M,t-1} + \beta_{11} D_{D,t-1} + \varepsilon_t . \qquad (1)\end{aligned}$$

---

[24] Among various versions of the monetary models, we adopt the flexible price model of Frenkel and Bilson *(F-B)*, and the fixed price model of Dornbusch and Frankel *(D-F)*. See Meese and Rogoff (1983) for details. In terms of equation (1) the *F-B* model imposes a restriction $\beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9 = \beta_{10} = \beta_{11} = 0$ while the *D-F* model does $\beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9 = \beta_{10} = \beta_{11} = 0$.

- s_t is the log of the won-dollar quarterly average and Δ indicates differenced values.
- m_t, y_t, i_t, and $\pi^e{}_t$ are log M2, log real income, short-term interest rate (call rate for Korea and the federal fund rate for the US), and expected inflation rate (inflation rate of CPI for the previous 4 quarters), respectively. * indicates the US. (Data sources: The Bank of Korea database.)
- For *EXP_PRESS* and *IMP_PRESS*, two versions of the weighted averages explained earlier are used.
- *ELECTION* dummies take one during two quarters before the all direct elections for the president and the parliamentary members.

We posit that the interest group pressures are asymmetric in their influences. For example, we suspect that the exporters' pressure actually comes into play only when the export is in a down turn, and that, when the export is going smoothly, the pressure would not be as strong or, considering nontrivial lobbying costs, even fade away. In order to capture this asymmetry in lobbying pressure, three dummies have been included in equation (1). First, $D_{X,t}$ takes one for the quarter in which the seasonal growth rate of exports is lower than the previous quarter's. Second, as a dummy associated with the importers' pressure, $D_{M,t}$ takes one for the quarter in which the seasonal growth rate of imports becomes lower than the previous quarter's. Finally, we design $D_{D,t}$ as taking the value of one when the growth rate of the net foreign debt exceeds

that of the previous quarter. The specification in equation (1) reflects our *prior* belief that these dummies might affect the dependent variable either through the intercept or the slope, although the latter is our major interest in estimating an interest group pressure model of the exchange rate. We also assume that the interest group pressures become effective with one-period lag.[25]

According to our expectation, $\beta_1 > 0$[26] and $\beta_2 < 0$ both under the *F-B* and *D-F* models. However, the former model expects that $\beta_3 > 0$, while under the latter, it is predicted that $\beta_3 < 0$ and $\beta_4 > 0$. (See Frankel (1979) for restrictions on coefficients.) To be sure, our prediction about the interest group pressures is that $\beta_5 > 0$, $\beta_6 < 0$, and $\beta_7 < 0$. The coefficient of $ELECTION$, $\beta_8 < 0$ is expected.

3. Estimation Results

Estimation results of equation (1) are presented in <Table 1>.[27] Looking first at the traditional variables of the *F-B* and the *D-F* models, $\hat{\beta}_1$ and $\hat{\beta}_4$ are significant with expected signs. However, since the *D-F* model gives a much higher adjusted R^2, we use it as the baseline to which we add our pressure

---

[25] We tried various lags, and the interest group pressures were most evident with one-period lag.

[26] $\beta_1 = 1$ should be predicted when the exchange rate is assumed to be the first-degree homogeneous function of the relative money supplies in two countries. We posit that $\beta_1 > 0$ suffices with the relaxation of this assumption.

[27] The stationarity of all variables has been confirmed by the augmented Dickey-Fuller test. The possible existence of endogeneity of contemporaneous explanatory variables has been rejected by the Hausman test.

variables. *Case 1a* uses the weighted averages for *EXP_PRESS* and *IMP_PRESS*, while *Case 2a* uses those made of industries selected by the threshold values explained earlier. To verify the robustness of our estimates, all pressure variables used in *Cases 1a* and *2a*, respectively, are log-transformed in *Cases 1b* and *2b*. There is no significant change in signs and statistical significance of the estimates for traditional variables throughout these models. Of particular interest is the finding that the coefficients of *EXP_PRESS* and *IMP_PRESS* have expected and statistically significant signs, which validates our hypothesis of interest group pressures on the exchange rate. Note particularly *Case 2a*; *EXP_PRESS*, which takes account of the Olson effect, is statistically more significant. The significant coefficient of *ELECTION* indicates that the exchange rate was politically utilized. Finally, higher adjusted R^2s in all four cases reinforce the explanatory power of our hypothesis. Upon verifying the existence of interest group influences at this first stage, we now turn to the second stage of testing our endogeneity hypothesis along the exchange rate regime change.

<Table 1> HERE.

4. A Few Remarks on the Lobbying Power Proxies

We went through a great deal of scrutiny and statistical testing in order to convince ourselves that our proxies in equation (1) actually capture the lobbying power. Furthermore, we intended to overcome a possible criticism that it might be hard to distinguish such variables from those based instead on a welfare

maximizing government's policy. It appears that we have a rather strong case on this point: Our proxies do represent the lobbying power.

Our efforts have been three-fold. Firstly, the correlation between the exports and the weighted averages for *EXP_PRESS* across industries is -0.07, while that between the imports and the weighted averages for *IMP_PRESS* is -0.01. No Granger-causality has been found between the dependent variable and each of the lagged interest group pressure variables in equation (1). These facts effectively invalidate a potentially different interpretation of our pressure variables, such that they are just the "export" or "import."

Secondly, our *a priori* expectation and empirical confirmation that $\beta_5 > 0$ and $\beta_6 < 0$ reinforces the validity of our pressure proxies. The signs would have to be exactly the opposite if the forementioned different interpretation were correct.

Lastly and probably most important, we investigated any possible spuriousness, stemming merely from the interaction dummy ($D_{x,t-1}$), in the positive $\hat{\beta}_5$. We reestimated *Case 2a* with a constraint of $\beta_5 = \beta_6 = \beta_7 = 0$ to see if $\hat{\beta}_9$ would be positive with significance. If that were the case, since $D_{x,t-1}$ represented the quarters of declining exports, it would be interpreted such as "government simply depreciated the exchange rate," just as the forementioned welfare maximizing premise would indicate. Then, our lobbying pressure hypothesis would be hampered because $\hat{\beta}_5$ could also have been influenced by the interaction dummy, $D_{x,t-1}$, i.e., by such government interventions out of the public interest concern. But $\hat{\beta}_9$ was found not significant at all (p-

value=.84), accordingly further warranting the legitimacy of our lobbying power proxies.

IV. Testing the Endogenous Change in the Exchange Rate Regime

1. Methodology: Estimation of Time-Varying Parameters

We prove now, through the single event of the 1990 switch to MAR, the embedded bureaucrats' incentive to defend their own interests. In Section II, we postulated that several events in the late 1980s increased the political cost of exchange rate manipulation encountered by bureaucrats in accommodating interest group politics. We subsequently claimed that transition to a more flexible system (i.e., MAR), if not completely refuting the Korean monetary authority's "phase-in" policy justification, was a calculated move faithful to bureaucrats' own interests.

If our hypothesis holds, one can reason that, for some period before the switch, it was getting more difficult for the Korean monetary authority to accommodate the interest group pressures. Also, if the switch was actually successful in lowering its cost of exchange rate manipulation, the interest groups must have recovered the lobbying capacity. This reasoning can be translated into the empirical equation (1): the estimated coefficients of the pressure variables become somewhat insignificant before the switch, but their significance levels recoup afterwards. We finish the second stage of testing our endogeneity hypothesis with a systematic examination of these factors.

The time-varying parameter estimation, based on Kalman Filter, allows us to investigate this matter (Kim and Nelson, 1999). We select *Case 2a* as the representative model and make time-varying the coefficients of the three pressure variables in (1) as follows:

$\beta_{j,t} = \beta_{j,t-1} + v_{j,t}$, ($j = 5,6,7$),

$$\text{where } v_{j,t} \sim i.i.d.N(0,\sigma^2_{v_j}) \text{ and } \varepsilon_t \sim i.i.d.N(0,\sigma^2_{\varepsilon}) \quad (2)$$

The time-varying estimates of $\hat{\beta}_{5,t}$, $\hat{\beta}_{6,t}$, and $\hat{\beta}_{7,t}$ under specification (2) are displayed as solid lines in <Figure 2> to <Figure 4>.[28] The dotted line in the figure indicates the critical value of the 95% confidence level under the one-tail test. Most striking is the finding that the critical values of $\hat{\beta}_{5,t}$ in <Figure 2> which are mostly positive up to 1986:Q3 (which is consistent with the fact that $\hat{\beta}_{5,t}$ was significant at the 5% significance level in <Table 1>) become mostly negative from 1986:Q4 to 1991:Q1. They become positive again in 1991:Q2. Thus, we infer that the exporters' pressure was not able to influence the exchange rate for about three years before the 1990 switch, and that it took about a year to recover the lobbying power afterwards.

As to $\hat{\beta}_{6,t}$ in <Figure 3>, the critical value of 95% confidence level is mostly negative, as expected except for the same four years around the 1990 switch. This indicates that the importers pressure did not work during the period, either. Finally, from the positive $\hat{\beta}_{7,t}$ in <Figure 4>, we figure that the net foreign debt

[28] More detailed results of estimation are available upon request.

during the whole period did not affect the exchange rate in the way predicted, which is consistent with the result in <Table 1>. As to $\hat{\beta}_{7,t}$, the alternative hypothesis was $\beta_{7,t}$ <0, so the critical value of 95% confidence level must be less than zero to reject the null hypothesis, $\beta_{7,t}$ =0. But even $\hat{\beta}_{7,t}$ itself is larger than zero and not significant throughout the whole sample period.[29] Therefore, it confirms the results of the <Table 1>.

We thus conclude that the importers' and exporters' pressures were not conveyed to affect the exchange rate for about three years before the introduction of MAR, and that, after approximately one year of adjustment, they started regaining lobbying powers. We believe this second stage completes our endogeneity hypothesis test.

<Figure 2>, <Figure 3> and <Figure 4> HERE.

2. Reinforcing the Argument

We intend to reinforce our endogeneity argument by an alternative testing method of the second stage, which consists of two simple steps. In Step 1, if our arguments hold, estimation of equation (1) would produce better results for $\hat{\beta}_{5,t}$ and $\hat{\beta}_{6,t}$, with the problematic intervals (approximately the three years before MAR, as evidenced in the above figures) excluded. Meanwhile, in Step 2, if those pressures regained their lobbying powers, exclusion of the three-year

[29] Although not shown in <Figure 4>, the lower critical values of $\hat{\beta}_{7,t}$ under the 95% two-tail test are below zero. This implies its statistical insignificance.

period afterwards would undermine their estimates. As shown below, this alternative testing reinforces the endogeneity theme in exchange rate regimes.

Step 1: *Case 3a* in <Table 1> reports the reestimation results of *Case 2a*, with three years (1987 to 1989) before MAR outsampled. The statistical significance level of $\hat{\beta}_5$ increased from 5% to 1%, and that of $\hat{\beta}_6$ also improved from 5% to 1%. In addition, we obtain an improvement in the adjusted R^2.[30]

Step 2: *Case 3b* reports the reestimation results of *Case 2a*, with the three years after MAR excluded. We observe that the statistical significance of $\hat{\beta}_6$ has been hampered as predicted.

V. Conclusions

We took the change in exchange rate regimes, i.e., MAR introduced by the Bank of Korea in 1990, to empirically examine the public choice premise: legal changes can be endogenous in such a way that they are manipulated by bureaucrats. Admittedly, our work in this paper is experimental. It is, however, believed to contribute to the existing research, almost none of which explicitly tests the endogeneity hypothesis on the exchange rate regime.

As the first stage of testing the hypothesis, we estimated the exchange rate equation which includes proxies of varying interest group pressures along with typical macro-fundamentals. We subsequently verified that this interest group

[30] To maintain the degree of freedom, instead of excluding the period, we also gave $D_{X,t}$ and $D_{M,t}$ zero values for the period in question. The results were even stronger.

equation provides a much higher explanatory power than traditional models, and more intriguingly, that importers, exporters, and elections play significant roles in influencing the exchange rate at least in the short run.

In the second stage, we utilized the time-varying estimation in order to discover what really happened behind the introduction of MAR. We found the similar pattern in the significance of the interest group pressures across time. But we discovered that the importers/exporters pressures lost their lobbying powers for about three years before MAR, and that they regained the powers about one year after MAR, which led us to a further conviction regarding our endogeneity hypothesis. We believe that the two-stage method offered in this paper can be fairly useful for various studies attempting to test, behind an isolated event of policy change such as ours, the existence of bureaucratic or any other hidden motivations.

Note that while manipulation of exchange rates has become harder because of the growth of capital mobility, countries such as Korea, China, and Japan have been engaging in massive efforts at manipulation. We conjecture such behavior implies that each government's incentive of exchange rate manipulation has grown, and/or is as substantial due to other various factors. We are aware that there should be some positive elements of the policy discretion for the manipulation, pursued from the public-interest goals such as short-term exchange rate stability or other pure macroeconomic considerations, etc. Nevertheless, our paper empirically verifies the existence of the bureaucrats' private incentive for

manipulation under interest group pressures. In this regard, it seems that such manipulation efforts might conceptually reinforce our hypothesis that bureaucrats incessantly respond to interest group pressures.

Finally, one can look at the introduction of the 1990 MAR as a "phase-in" policy along the transition from hard pegs to independent floating.[31] This paper's result might be another confirmation of the famous proposition that phase-ins as transition policy tend to undermine social efficiency rather than to play the alleged shock-absorbing role (Kaplow, 1986). The increasing number of observers suggest either that Korea could have adopted independent floating before 1990, or that the intermediate position, MAR, was one of critical causes of the 1997 currency crisis (e.g. Sachs, 1999; Grier and Grier, 2001).

---

[31] The Korean exchange rate regime switched from MAR to the floating system with the 1997 financial crisis. The crisis was clearly an immediate trigger for the regime shift because of the complete depletion of foreign reserve. One can furthermore describe that this transition was mostly due to the recognition that intermediate solutions (or soft pegs) are not viable for sustained periods, as stated by Fischer (2001). We believe, however, that the phenomenon can be at least partially explained by our own bureaucratic incentive framework. The explanation is two-fold: First, well before the crisis, the *NF* (political) cost curve had already moved to the right upon Korea's joining the OECD at the end of 1996. As an OECD member, Korea's exchange rate manipulation, if any, would be more closely scrutinized by other countries. Second, right after the crisis, as a requisite for receiving the rescuing fund, Korean bureaucrats were formally required to obtain the IMF's scrutiny for every major policy decision, including foreign exchange interventions. They thus must have perceived the *NF* cost curve to shift further to the right, consequently making the floating system a more favorable choice to themselves.

<Appendix> Data Collection from *the Input-Output Tables*

The input-Output Tables published by the Bank of Korea classify the entire economy into 77 industries. "$Total\ Demand_i$," the code number of which is **086** in *the Tables*, is defined as the total output produced by industry i. It thus includes the i th industry's output used, as intermediate goods, into other industries' production. The Total Demand of the economy is the summation of the industry total demands across 77 industries.

The Tables are published every five years (in 1980, 1985, 1990, 1995), and additionally reported in between (in 1983, 1986, 1987, 1988, 1993, 1998). These observations of Total Demand were first interpolated to produce an annual series under the assumption of linear growth rates. We then converted these into a quarterly series, using the Chow and Lin (1971) method with GDP as a related series in which the sum of the four quarterly estimates for each year ought to equal the observed value for the year.

The same conversion method was used for the sum of the industry total demands across industries whose export (and import) proportions exceed a threshold value (0.05), designed to capture the Olson effect explained in the text. As to the imports and exports, however, we used the total imports and exports quarterly released by the Bank of Korea, independent of *the Input-Output Table*. This was done upon discovering from the observed annual data that the excluded amounts of exports (and imports) each year, in the course of calculating the weighted averages to capture the Olson effect, are very negligible, unlike the excluded amounts of the total demands.

<Referee's Appendix>
Three Causes for the Upsurge of *NF* in Korea

The first was the increased recognition of Korea by the international community. The 1986 Asian Games and the 1988 Olympic Games gave Korea an image far beyond that of a small neighboring country to Japan and China. In particular, the latter event, which was the biggest since the country's foundation, triggered the world to seriously inquire about the operations of the Korean economy. In September of 1988, the Korean government accepted the obligations of Article VIII of the IMF Articles of Agreement, and undertook the open-door policy in full force. For example, the import liberalization ratio rose to 95.4% in 1988, and the government initiated deregulation in foreign investment, including real estate transactions.

Second and more importantly, the size of the Korean economy had grown very rapidly by the late 1980s. In fact, the country was ranked 11th in world-wide trades. Accordingly, major trading partners and competitors started closely monitoring whether the Korean government's intervention in the exchange rate undermined their interests in any way. The pressure from these trading partners mounted almost immediately. For instance, "*The US is increasing its pressure on South Korea to open its market, notably by raising the prospect of invoking a tough new trade law*" (*Wall Street Journal*, February 3, 1989). In fact, the US utilized both Section "Super 301" and the Uruguay Round for its purposes of opening the financial market. See US Department of Treasury (1988, 1989). The US also expressed a strong suspicion that the Korean monetary authority had manipulated the exchange rate by the multicurrency basket pegging exchange rate system (Bank of Korea, 1997). For example, in the Treasury report of April 1989 ("*Report to the Congress on International Economic and Exchange Rate Policy*") to the Senate and House banking committees, it

formally designated Korea and Taiwan as the countries that manipulate their currencies.

Finally, the 1987 "June Civil Demonstration" against the military dictatorship is unanimously regarded by experts as the launching of meaningful democratization in Korea. The incidence resulted in civilians' stronger and more frequent expressions of dissatisfaction of government policy. This change made it possible for losing interest groups to speak out against government action regarding exchange rate manipulation. An example of titles of some competing slogans covered in the media includes "*Pain in Declining Exports behind the Ever-Strong Won*" (*The Chosun Daily*, August 23, 1989) versus "*Stop All the Exchange Rate Plays: Liberalizing the Market is the Answer*" (*The Chosun Daily*, April 7, 1988).

References

Bank of Korea. (1997). *The Foreign Exchange Rate and National Economy*. Seoul.

Bernhard, W. and Leblang, D. (1999). Democratic Institutions and Exchange-Rate Commitment. *International Organization* 53: 71-97.

Bliss, C. and Joshi V. (1988). Exchange Rate Protection and Exchange Rate Conflict. *Oxford Economic Papers* 40: 365-377.

Blomberg, S.B. and Hess, G.D. (1997). Politics and Exchange Rate Forecasts. *Journal of International Economics* 43: 189-205.

Bordo, M.D. and Kydland, F.E. (1995). The Gold Standard as a Rule. *Explorations in Economic History* 32: 423-464.

Broz, J. and Frieden, J. (2001). The Political Economy of International Monetary Relations. *Annual Review of Political Sciences* 4: 217-343.

Breton, A. and Wintrobe, R. (1982). *The Logic of Bureaucratic Conduct*. Cambridge: Cambridge University Press.

Calvo, G.A. and Reinhart, C.M. (2002). Fear of Floating. *Quarterly Journal of Economics* 117: 379-408.

Cho, J. and Kim. I. (2001). Jobs in the Bureaucratic Afterlife: Corruption-Facilitating Mechanism Associated with Law Enforcement. *Southern Economic Journal* 68: 330-348.

Chow, G. and Lin, A. (1971). Best Linear Unbiased Interpolation, Distribution and Extrapolation of Time Series by Related Series. *Review of Economics and Statistics* 57: 372-375.

Chow, L. (1997). On Real Exchange Rate Targeting and Debt Servicing. *Atlantic Economic Journal* 25: 115.

Colambatto, E. and Macey, J. (1996). Exchange-Rate Management in Eastern Europe: A Public-Choice Perspective. *International Review of Law and Economics* 16: 195-209.

Collins, S. (1996). On Becoming More Flexible: Exchange Rate Regimes in Latin America and the Caribbean. *Journal of Development Economics* 51: 117-138.

Corden, W.M. (1982). Exchange Rate Protection, In R.N. Cooper and R. Triffin (Eds.), *The International Monetary System under Flexible Exchange Rates - Global, Regional, and National.* Cambridge: Ballinger Publishing Company.

Crone, L. and Tschirhart, J. (1998). Separating Economic from Political Influences on Government Decision. *Journal of Economic Behavior and Organization* 35: 405-425.

Cukierman, A., Goldstein, I. and Spiegel, Y. (2003). *The Choice of Exchange Rate Regime and Speculative Attacks.* Unpublished manuscript.

Dornbusch, R. (1987). Exchange Rate Economics: 1986. *Economic Journal* 97: 1-18.

Edwards, S. (1996). Exchange Rates and the Political Economy of Macroeconomic Discipline. *American Economic Review* 86: 159-163.

Epstein, G. (1991). Profit Squeeze, Rentier Squeeze and Macroeconomic Policy under Fixed and Flexible Exchange Rates. *Economies et Societes* 25: 219-257.

Fabella, R.V. (1996). The Debt-adjusted Real Exchange Rate. *Journal of International Money and Finance* 15: 475-484.

Fischer, S. (2001). Exchange Rate Regime: Is the Bipolar View Correct? *Journal of Economic Perspectives* 15: 3-24.

Frankel, J. (1979). On the Mark: A Theory of Floating Exchange Rates Based on Real Interest Differentials. *American Economic Review* 69: 610-622.

Frankel, J. (1999). No Single Currency Regime is Right for All Countries or at All Times. *Essays in International Finance* 215. Princeton: Princeton University.

Fratianni, M. and Hagen, J. (1992). The European Monetary System and European Monetary Union. Boulder: Westview Press.

Freeman, J.R., Hays, J.C. and Stix, H. (2000). Democracy and Markets: the Case of Exchange Rates. *American Journal of Political Science* 44: 449-468.

Frieden, J.A. (1994). Exchange Rate Politics: Contemporary Lessons from American History. *Review of International Political Economy* 1: 81-103.

Grauwe, P. (1994). *The Economics of Monetary Integration* (2nd Ed.). Oxford: Oxford University Press.

Grauwe, P. (1996). *International Money: Postwar Trends and Theories.* Oxford: Oxford University Press.

Grier, K.B.and Grier, R.M. (2001). Exchange Rate Regimes and the Cross-Country Distribution of the 1997 Financial Crisis. *Economic Inquiry* 39: 139-148.

Gärtner, M. (1991). Foreign-Exchange Markets and Central-Bank Intervention. In A. Hillman (Ed.), *Markets and Politicians: Politicized Economic Choice.* Boston, Dordrechat, London: Kluwer Academic Publishers.

Havrilesky, T. (1995). *The Pressures on American Monetary Policy* (2nd Ed.). Boston: Kluwer Academic Publishers.

Hefeker, C. (1997). *Interest Groups and Monetary Integration: The Political Economy of Exchange Regime Choice.* Boulder: Westview Press.

Hefeker, C. (2000). Sense and Nonsense of Fixed Exchange Rates: on Theories and Crises. *Cato Journal* 20: 159-178.

Hirschman, A.O. (1971). The Political Economy of Import-Substituting Industrialization in Latin America, In A.O. Hirschman (Ed.), *A Bias for Hope: Essays on Development and Latin America.* New Haven: Yale University Press.

Huizinga, H. (1997). Real Exchange Rate Misalignment and Redistribution. *European Economic Review* 41: 259-277.

Kaplow, L. (1986). An Economic Analysis of Legal Transitions. *Harvard Law Review* 99: 509-617.

Kenen, P.B. (2000). Fixed versus Floating Exchange Rates. *Cato Journal* 20: 109-113.

Kim, C. and Nelson, C.R. (1999). State-Space Models with Regime Switching. Cambridge: The MIT Press.

Kim, I. and Kim, I. (2001). A Bureaucratic Incentive Model of Monetary Policy in Korea: A Theoretical and Empirical Analysis. Paper Presented at the Western Economic Association Meetings in San Francisco.

Kock, G. and Grilli, V. (1993). Fiscal Policies and the Choice of Exchange Rate Regime. *Economic Journal* 103: 347-358.

Leblang, D.A. (1999). Domestic Political Institutions and Exchange Rate Commitments in the Developing World. *International Studies Quarterly* 43: 599-620.

Lohmann, S. (1998). An Information Rationale for the Power of Special Interests. *American Political Science Review* 92: 809-827.

Masson, P.R. (2001). Exchange Rate Regime Transitions. *Journal of Development Economics* 64: 571-586.

Meese, R. and Rogoff, K. (1983). Empirical Exchange Rate Models of the Seventies: Do They Fit out of Sample? *Journal of International Economics* 14: 3-24.

Nilsson, K. and Nilsson, L. (2000). Exchange Rate Regimes and Export Performance of Developing Countries. *The World Economy* 23: 331-349.

Olson, M. (1965). The Logic of Collective Action. Cambridge: Harvard University Press.

Ploeg, F. (1989). The Political Economy of Overvaluation. *The Economic Journal* 99: 850-855.

Poole, W. (1990). The Discount Window, In T. Mayer (Ed.), *The Political Economy of American Monetary Policy*. Cambridge: Cambridge University Press.

Potters, J. and Sloof, R. (1996). Interest Groups: A Survey of Empirical Models that Try to Asses Their Influence. *European Journal of Political Economy* 12: 403-442.

Rodrick, D. (1986). Disequilibrium Exchange Rates as Industrialization Policy. *Journal of Development Economics* 23: 89-106.

Rose, A.K. (1996). Explaining Exchange Rate Volatility: An Empirical Analysis of `The Holy Trinity' of Monetary Independence, Fixed Exchange Rates, and Capital Mobility. *Journal of International Money and Finance* 15: 925-945.

Ruland, L.J. and Viaene, J.M. (1993). The Political Choice of Exchange Rate Regimes. *Economics and Politics* 5: 271-284.

Sachs, J.D. (1999). Creditor Panics: Causes and Remedies. *Cato Journal* 18: 377-390.

Savvides, A. (1990). Real Exchange Rate Variability and the Choice of Exchange Rate Regime by Developing Countries. *Journal of International Money and Finance* 9: 440-454.

Shughart, W. and Tollison, R. (1983). Preliminary Evidence on the Use of Inputs by the Federal Reserve System. *American Economic Review* 73: 291-304.

Stephan, J.A. (1994). *Political-Economic Analysis of Exchange Rate Movements.* Konstanz: Hartung und Gorre.

Stockman, A.C. (2000). Exchange Rate Systems in Perspective. *Cato Journal* 20: 115-122.

Tullock, G. (1989). *The Economics of Special Privilege and Rent Seeking.* Boston: Kluwer Academic Publishing.

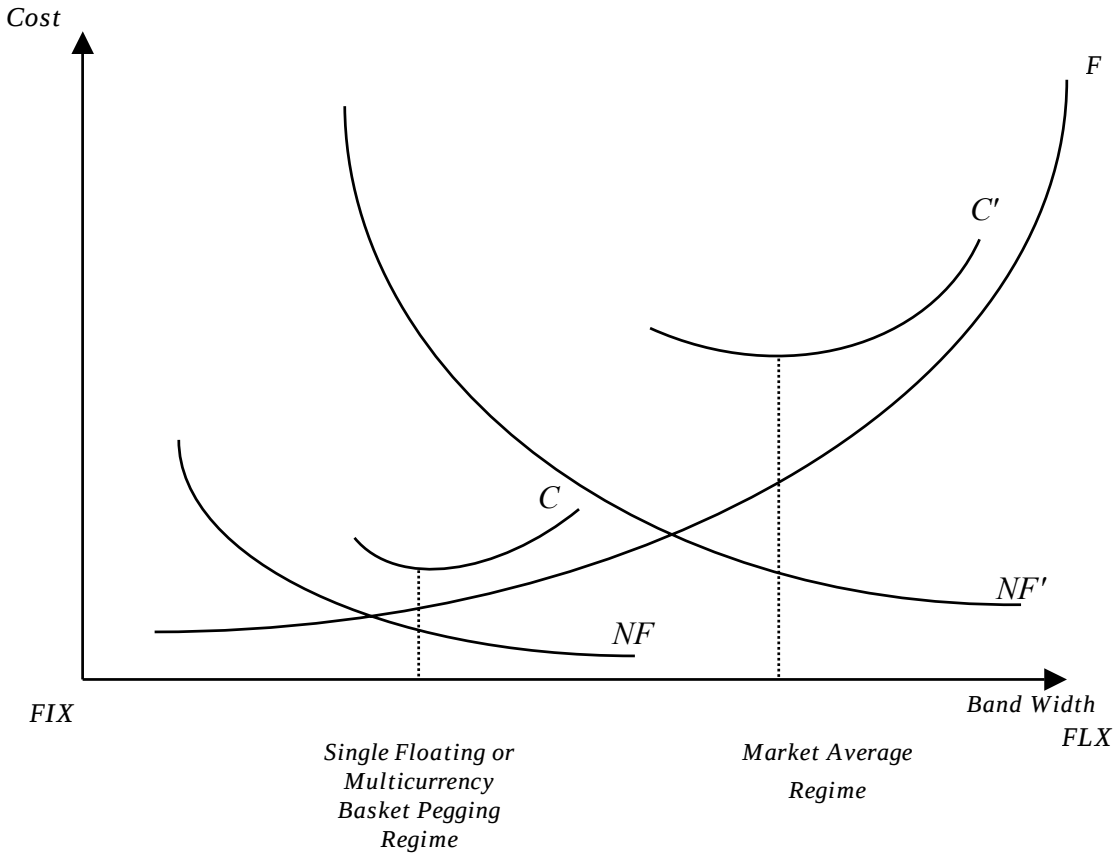
US Department of the Treasury (1988, 1989). *Report to the Congress on International Economic and Exchange Rate Policy*. Washington D.C.

Vaubel, R. (1991). A Public Choice View of the Delors Report, In R. Vaubel and T. Willett (Eds.), *The Political Economy of International Organization*. Boulder: Westview Press.

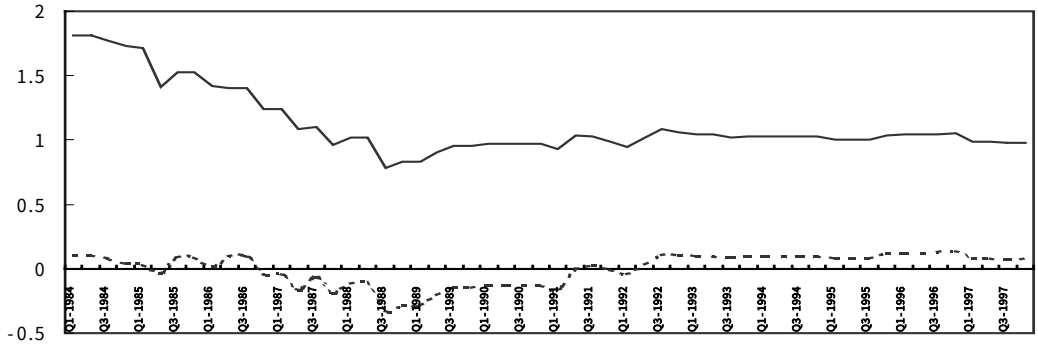
Willett, T.D. (1999). Developments in the Political Economy of Policy Coordination. *Open Economies Review* 10: 221-253.

Williamson, J.C. (1985). *The Exchange Rate System*. Washington D.C.: Institute for International Economics.

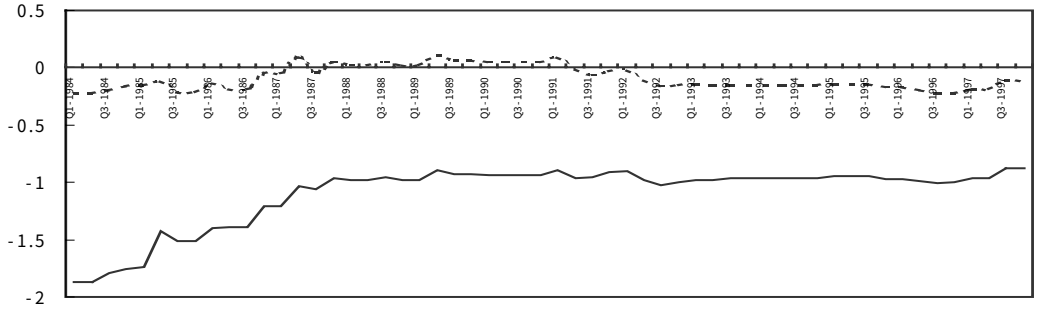
<Figure 1> Exchange Rate Regimes and Manipulation Costs



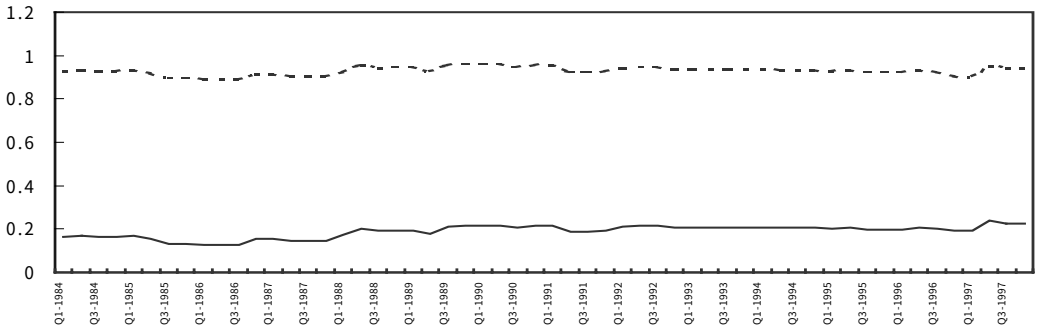
<Figure 2> Exporters' Pressure $\widehat{\beta}_{5,t}$



<Figure 3> Importers' Pressure $\widehat{\beta}_{6,t}$



<Figure 4> Foreign Debtors' Pressure $\widehat{\beta}_{7,t}$



<Table 1> Estimation of Interest Group Pressure Models of the Exchange Rate

	Constant	$\Delta(m_t - m_t^*)$	$\Delta(y_t - y_t^*)$	$\Delta(i_t - i_t^*)$	$\Delta(\pi^e_t - \pi^{e*}_t)$	$D_{X,t-1} \cdot \Delta EXP\_PRESS_{t-1}$	$D_{M,t-1} \cdot \Delta IMP\_PRESS_{t-1}$	$D_{D,t-1} \cdot \Delta FOREIGN\_DEBT_{t-1}$	$ELECTION_t$	*Adj.* R^2
F-B model	0.0025	0.3269*	-0.0286	0.0049						0.05
	(0.0059)	(0.1909)	(0.0294)	(0.0049)						
D-F model	0.0012	0.3798*	-0.0228	0.0046	0.7129*					0.12
	(0.0060)	(0.2027)	(0.0208)	(0.0041)	(0.3923)					
Case 1a	-0.0048	0.4550*	-0.0240	0.0047	1.0018***	1.2960*	-0.8668**	0.3829	-0.0254**	0.17
	(0.0073)	(0.2520)	(0.0225)	(0.0044)	(0.3858)	(0.6681)	(0.3922)	(0.3098)	(0.0129)	
Case 1b	-0.0040	0.4478*	-0.0225	0.0048	1.0097**	0.1410*	-0.1015**	0.0585	-0.0253**	0.17
	(0.0075)	(0.2566)	(0.0212)	(0.0044)	(0.4108)	(0.0761)	(0.0465)	(0.0474)	(0.0128)	
Case 2a	-0.0043	0.4672*	-0.0276	0.0047	1.0143***	0.5415**	-0.3683**	0.4178	-0.0260**	0.17
	(0.0071)	(0.2567)	(0.0216)	(0.0044)	(0.3953)	(0.2437)	(0.1624)	(0.3005)	(0.0132)	
Case 2b	-0.0040	0.4637*	-0.0253	0.0049	1.0201**	0.1206*	-0.0784**	0.0673	-0.0259**	0.16
	(0.0075)	(0.2627)	(0.0210)	(0.0044)	(0.4166)	(0.0610)	(0.0362)	(0.0446)	(0.0130)	
Case 3a[1)]	-0.0014	0.5344*	-0.0415*	0.0053	1.0471***	0.6712***	-0.3822***	0.2212	-0.0188*	0.20
	(0.0083)	(0.2866)	(0.0222)	(0.0045)	(0.3760)	(0.2173)	(0.1486)	(0.4094)	(0.0110)	
Case 3b[2)]	-0.0098	0.6544**	-0.0270	0.0047	1.1571***	0.5833**	-0.3784*	0.3847	-0.0360**	0.20
	(0.0078)	(0.3132)	(0.0248)	(0.0052)	(0.4338)	(0.2527)	(0.2002)	(0.3596)	(0.0149)	

***, **, * indicate statistical significances at the 1%, 5%, and 10% level, respectively. Numbers in parentheses are standard errors. We used Newey-West(1987) estimation method. All the coefficient estimates of the constant terms for the pressure variables ($\hat{\beta}_9$, $\hat{\beta}_{10}$, and $\hat{\beta}_{11}$) were insignificant and they are available upon request.

1) The same as Case 2a except outsampling 1987:Q1-1989:Q4.
2) The same as Case 2a except outsampling 1990:Q1-1992:Q4.