Interest Group Pressure Explanations for the US Dollar Movements*

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Abstract

Interest group pressures are always in force. Exchange rate policy, like any other government policy, might not be an exception to interest group politics, but its actual influence has hardly been tested. We use the US *Input-Output Accounts* to experimentally overcome the two main empirical obstacles for its verification - the "proxy problem" and the "Olson problem," as identified by Broz and Frieden (2001). Focusing especially on the yen-dollar real exchange rate in the 1980s, we discover that it was influenced by commodity-based exporters/importers groups within the US. Their pressures turn out to have worked with a quarter-lag, and in an asymmetric way, i.e., during downturns of exports or imports. Given the deeper empirical verification that the pressures intensified especially during the first half of the 1980s, we claim that the interest group pressure provides an additionally critical explanation for portraying the particularly "puzzling movement of the US dollar" over the period, surely enabling us to reconfirm the "competing nature in pressures" à la Becker (1983).

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I. Introduction

Interest group pressures operate toward virtually every government policy. Policy decisions regarding the exchange rate, for instance, involve choices that fall along a continuum that runs from a depreciated to a more appreciated currency. The established literature has examined the costs and benefits of alternative choices, traditionally from the perspective of a benevolent social planner. However, compared to the high level of ambiguity in calculating the overall welfare consequences (Stephan 1992), it is clear that the level of the exchange rate always has domestically distributive consequences, clearly implying a decisive role for interest group pressures.[1] Different interest groups would *competitively* embark upon pressuring the monetary authority to attain favorable rates (Becker 1983).[2]

Despite the attractiveness of this political economic approach, its empirical verification, for instance, on the foreign exchange market is scarce, making the interest group pressure hypothesis difficult to test. There exist two major

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1) This implies a political economic aspect in the exchange rate movement. See Broz and Frieden (2001) for an extensive survey. Refer to Almekinders and Eijffinger (1991) and Calvo and Reinhart (2002) for exchanges market intervention and its effectiveness. Also, for the most recent literature regarding the public choice perspective on the central bank's monetary policy in general, see Kim and Kim (2007).

2) The most representative example of the competitive pressure among sectors is that between exporters and importers (Corden 1982; Huizinga 1997). Frieden (1991), and Jeanneney and Hua (2001) highlighted a conflict between tradables and non-tradables, and Fabella (1996) discussed the competing stances of foreign net creditors vis-à-vis foreign net debtors. Moreover, financial industries (Destler and Henning 1989) and consumers (Marris 1987; Frieden 1991) have been indicated to prefer the appreciation of the domestic currency. Such pressure does not appear to be circumscribed only within private sectors. Dornbusch (1987) and Stephan (1992) studied the election factor or preferences of political parties. Of course, research was undertaken concerning the incentives of bureaucracy, including the Central Bank (Gärtner 1991; Gioacchino et al. 2004).

problems to overcome, as clearly identified by Broz and Frieden (2001, pp. 327-328). Firstly, data limitations leave analysts with mere crude proxies of political influence, such as a sector's share of GDP, as a measure of its influence (*hereafter,* the "proxy problem"). Secondly, the authors emphasize that exchange rates have a non-exclusiveness feature, which is the classic constraint of collective action à la Olson (1965) (*hereafter,* the "Olson problem"). Thus they conclude that more attention should be directed to collective action considerations.

The purpose of this paper is two-fold. The first is to attempt to substantiate the existence of interest group pressures toward exchange rate policy. Specifically, we overcome the two empirical obstacles above in order to more rigorously measure such pressures of American interest groups and their effectiveness in the short-term movement of the yen-dollar exchange rate, in the similar manner as an attempt by Kim and Kim (2005) to explain the Korean government's intervention in the won-dollar exchange rate. Through this paper, we intend to highlight the applicability of our suggested methodology by which various measures of *market forces* and *interest group pressures* can be supplementarily applied as tools for deductive analysis of various policy-implementing processes.

The second purpose lies in providing an additional interpretation of the pinnacle of the "long swings of the dollar in the 1980s," as phrased by Feldstein (1988, p. 21). A number of researchers tried to explain the rather erratic movement of the strong US dollar value against the Japanese yen during the first half of the 1980s. However, a complete consensus on its cause has never reached. As is well known, the strong appreciation of the dollar between 1980 and 1985 resulted various subsequent impacts, including trade protections and the Plaza Agreement. Very intriguing, the recent US economic situation seems

to have much in common with those days.[3] We thus might be able to take a lesson from revisiting the "puzzling" movement of the yen-dollar value of the 1980s, with the effect of interest group pressures substantiated.

For these two goals, the order of discussion is as follows. In Section II, after a brief recap of the popular explanations of the exchange rate determination focusing on the 1980s, we explore complementary hypotheses based on interest group pressure. Section III elaborates how to construct appropriate variables with our specific intention to overcome the two empirical obstacles in measuring the pressure. Section IV shows that there existed influences from interest groups on the US dollar exchange rate during the sample period. It also confirms that the unsolved puzzle regarding the erratic movement of the yen-dollar exchange rate in the first half of the 1980s can additionally be explained by the particularly intensified pressures of competing interest groups over that time period. Section V concludes the discussion.

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3) For instance, a column of 『*New York Times*』(*Whoops! It's 1985 All Over Again,* Dec. 19, 2004) keenly observes: *"President Bush starts his second term facing a financial bugbear that shares many of the same qualities of the crisis two decades ago: The United States' budget deficit is bloated. Its trade deficit is hitting records every month. The mushroom growth of its foreign debt is scaring financial markets. .... While the nation's economic tribulations today are not identical to those faced by Mr. Reagan, some economists suggest that the process of policy coordination formalized at the Plaza provides a map that Mr. Bush may want to follow."*

More recently, Martin Feldstein in a column of 『*Wall Street Journal*』 (*The Dollar at Home and Abroad,* Apr. 28, 2006) also contends: *"Skeptics argue that a more competitive dollar would not reduce our large trade deficit. .... These skeptics are wrong. .... The 1985 Plaza Accord suggests a possible approach: Then, G-5 finance ministers acknowledged that the dollar was overvalued and needed to decline further. .... For more than a decade, under Democrats and Republicans, Washington has emphasized that 'a strong dollar is good for America.' It's time to change the message. .... The overall international value of the dollar must be more competitive if we want to shrink our enormous trade imbalance and limit the rise in our debt to the rest of the world."*

II. Interest Group Pressure on the Exchange Rate: An Experiment

The failure of structural models of the exchange rate in empirical tests has been confirmed often, as surveyed in MacDonald and Taylor (1992). Although dollar behavior in the 1980s has been widely investigated, the unprecedented upswing that ended in February 1985 has been puzzling from a macro fundamentals viewpoint (Taylor 1995, p. 29). Our brief discussions here are consistent with the premise (MacDonald and Taylor 1992, p. 27) that the fundamentals combined with non-fundamentals approach is promising.

1. The Dollar Upswing in the Early 1980s: Traditional Approaches

The following three reasons for the dollar's upswing during the 1980s have been suggested frequently. Firstly, many pinpointed the strategic government deficit as a dominant reason, as in Feldstein (1986). The huge US current and expected government deficit pulled up the interest rate. In contrast, over the same period, several other major OECD countries employed tight fiscal policies, and their domestic savings exceeded domestic investments. Naturally, the relatively high interest rate attracted a massive amount of foreign capital into the US, causing the dollar value to soar (Marris 1987, pp. 32-35).

Tight monetary policy has been identified as the second reason (Feldstein 1986; Frankel 1988). The US Federal Reserve Banks, following a major switch in emphasis to monetary aggregates in October 1979, undertook an unexpectedly restrictive monetary policy. The resulting high interest rate in the loanable funds market is suggested to be another driving vehicle for the strong dollar.

Thirdly, there exists a safe haven hypothesis, claiming that the US, with relatively low political risk, was a preferred investing place for foreign capital. The increasing demand for the dollar allegedly resulted in its strength (Dooley

and Isard 1985).

Although each of these explanations appears to have legitimacy to a certain degree, opposite exertions exist, so the controversy goes on. As to the first scenario, for instance, Evans (1986) empirically rejected the forementioned association between the budget deficit and the interest rate. The significant US dollar depreciation experienced after 1985 also renders this hypothesis questionable because the US budget deficits continued to rise over the period (Marris 1987, p. xlv). Similarly, the last two hypotheses also contain loopholes, and no other hybrids of explanation have gained a solid ground among experts in the field.[4)]

2. The Interest Group Pressure Hypotheses

1) The Competing Pressures in the Early 1980s

The groundswell of private activism on the exchange rate and trade policy during the early 1980s, and the response of Congress is portrayed as "exceptional" in the history of the US international monetary policy (Henning 1994, p. 280). By early 1985, the lobbying pressure by various groups peaked in order to bring the dollar down. They had no formal mechanisms or procedures

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4) The second hypothesis is not without criticism, either. It is doubtful that there always exists a stable relationship between the interest rate and the exchange rate (Meese and Rogoff 1988). Feldstein (1983) goes yet further to submit a statement obviously implying the inverse causality: *"[T]he rise in the dollar is a safety valve that reduces pressure on domestic interest rates."* According to the actual data, the strong dollar was sustained in spite of the contracted interest rates spread between the US and other major investing countries. In fact, the dollar was very weak during 1978-1979 when the interest rate was high. Kim and Kim (2006) have recently shown, on this matter, that the causal relationship between the interest and the exchange rates during the 1980s was time-varying, mainly triggered by changes in the investor's exchange rate expectations. See Marris (1987, p. 19) for this point, and for the criticisms linked to the third safety haven hypothesis. Also, refer generally to Krugman (1985) for explanations based on irrationality or bubbles.

by which to weigh it on the exchange rate policy. Nonetheless, many of them sought to influence policy through direct lobbying of the administration and Congress, and through presidential campaign (Destler and Henning 1989, pp. 37-41, p. 117).

The appreciation of the dollar was clearly one of the main causes for the introduction of stronger protectionism. As many researchers pointed out, the persistent rise of the dollar between 1980 and 1985 led to a drastic increase in imports of products in direct competition with those of the US domestic firms; hence, an increased clamor for protection (Stallings 1993). The US administration in particular was concerned that Congress would soon legislate excessively stiff tariff and non-tariff barriers. This concern was shared by major trading partners of the US, which provided a strong mutual incentive to do something about the excessively strong dollar (Marris 1987). It is in this atmosphere that the Plaza Agreement was formed (Funabashi 1988).

It is important to point out that all this activity by the exporting and import-competing sectors, as primarily recognized in the literature, would not necessarily mean that there was no counter-pressure from opposite parties. Following the competing nature in pressures à la Becker (1983), we suspect there was. Their relative success *ex post* is a different issue.

From this perspective, it is very intriguing to observe that the protectionism pressure was reflected into the exchange rate, given the continuing demands of industries for specific trade relief within the US. In fact, Destler and Odell (1987, p. 106), again in line with Becker, offer a plausible and reinforcing explanation: there were counter-pressures to protectionism from firms that market foreign products or use them as inputs. Members of Congress, caught with these competing demands, the authors conclude, were able to circumvent the dilemma by pressing for a depreciation of the dollar (rather than adopting

the manifest protectionism policy), since they could not be blamed for its negative impact on import-dependent groups. Presence of these competing pressures only remains to be verified by empirical work later.

2) Selected Interest Group Pressures

We select only a few representative examples of interest group pressure in this paper, although a broader summary of the preferences of varying groups was reported in the Introduction.[5] The first and most important is the pressure from exporters and importers. The US exporters would resist the strong dollar *ceteris paribus*. The same logic applies to domestic import-competing industries. Corden (1982) specifically called as "exchange rate protection" the government's depreciation in favor of these tradable sectors.

In contrast, importers would prefer appreciation. Huizinga (1997) theoretically shows that the real exchange rate tends to be over-valued as an economy has a higher proportion of import consumption to its national income. At a more disaggregated level, an industry would opt for an appreciated dollar when its production heavily depends on imported factors, i.e., having a high degree of imported-input dependence. See Campa and Goldberg (1997) for more on this economic exposure.

We cite elections as another relevant pressure. A voluminous literature on economic voting has already testified to robust support for the proposition that

5) The US legislature does not appear to have effective short-run control over the exchange rate. However, the Department of Treasury's Exchange Stabilization Fund can affect the change in the exchange rate. As for the Fed, Willet and Keen (1990, p. 14) suggests that direct rent-seeking by key decision-makers within the Fed plays relatively little role, but that rent-seeking and reelection-seeking by others place strong pressures on the Fed and thus could have an indirect influence on monetary policy. The overall focus of the discussions in the text therefore would be concerned mostly with the executive branch of the US government.

good macroeconomic conditions keep politicians in office whereas bad times cast them out (Lewis-Beck and Stegmaier 2000). Also arguments on the exchange rate electoral cycle are well documented (Dornbusch 1987; Broz and Frieden 2001; Blomberg and Hess 2003). The major tenet is that the incumbent administration, right before an election, tends to appreciate the currency to temporarily increase exports by the J-curve effect, and also, through declining import prices, to lower the domestic price level with the purpose of temporarily raising real income.

Finally, we consider the preference of the political party in power. The literature postulates that a liberal party is more concerned about unemployment than a conservative party, and in turn, fears less the possible inflationary bias from expansionary macroeconomic policy (Caporale and Grier 1998, Klause and Mendez 2005). We thus infer that a more liberal party in power has a tendency to opt for depreciation, other things being constant.

III. Measuring Exporters/Importers Pressure within the US

1. Overcoming the Two Empirical Obstacles

We begin with the first obstacle identified by Broz and Frieden, i.e., the "proxy problem." Direct measures such as campaign contribution or lobbying expenditure would obviously be ideal proxies of pressure. However, they are usually unavailable. Thus, the average size of the producers, or the simple percentage of their production over GDP has been a typical variable to represent their stakes in measuring an industry's influence (Potters and Sloof 1996).

To effectively tackle this proxy problem, we note the following two prerequisites for a reliable proxy. First, it should reflect the size of the monetary interest to the sector in question as closely as possible. In this regard, for an

exporting sector for example, the proportion of exports to its "output" is likely to be closely related to its interest. Second, we turn attention to a body of research implying our belief that the lobbying forces would hold very extensively throughout the entire line of production (Rodrick 1986). A natural example of responses to this conviction would be to probe how to capture the incentive of an industry heavily depending on a number of imported inputs.[6] Another example is the recognition that, to calculate a sector's export proportion, for instance, the denominator (the "output") should include the sector's products used as intermediate goods, not just those consumed as final goods which are the basis of GDP.

The second empirical obstacle, the "Olson problem," requires us to take into account the free-riding constraint in collective action. Again, we envision that any "selective incentive mechanism" in Olson's terminology will most likely be created and enforced at some exclusive sector-level, no matter what kind of design it actually takes. This logic of finding the appropriate sector clearly applies to our task of resolving the Olson problem as shown later.

All these considerations strongly dictate that we collect data across sufficiently disaggregated sectors. The US *Input-Output Accounts* is an ideal source, because it provides detailed export/import information as well as the "output" data across industries and commodities.[7] Intriguing enough, it naturally

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6) Campa and Goldberg (1997) point out that by the early 1980s the US manufacturing industries had become greatly exposed to external markets both through export sales and imported inputs into production.

7) We use the two-digit *make-table* and *use-table* data of the *Input-Output Accounts*, which classify industries into 85 groups. The *make-table* data shows the value of each commodity (goods and services) produced by each industry, while the *use-table* data shows the value of each commodity used by each industry or by each final user. See <Appendix> for more details on data collection and pressure proxies.

remains to be verified later whether the interest group pressure on the exchange rate is formed by industry, or alternatively by commodity.[8)]

2. Exporters'/Importers' Pressure across Industries and Commodities

Since we do not know *a priori* whether the exporters' and importers' pressures are formed across industries or commodities within the US, we construct the proxies for both cases through the following two stages.[9)]

In the first stage, in order to construct a proxy for the industry-based exporters' pressure, for example, we calculate the export proportions across industries for each period. Note that the denominator of this proportion is the "industry output" in the *Input-Output Accounts.* It appropriately reflects our purpose, since it counts the intermediate as well as the final goods and services, thus extensively capturing the level of pressure.

In the next stage, reflecting Olson's free-riding argument, we calculate the weighted average of the industries whose export proportion exceeds some value. The underlying logic is that the export proportion should exceed a threshold value such that the benefit from lobbying overcomes the free-riding problem.

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8) For example, let us assume that the milk manufacturing industry produces not only milk as its primary product, but also butter and cheese as secondary products. The butter industry produces cheese as well as butter. In case of the exporters' pressure, for example, the "butter-industry" pressure can be measured by the export proportion of butter and cheese to the industry's output. On the other hand, the "butter-commodity" pressure can be proxied by the export proportion of butter to its output, no matter which industry produces it.

9) In an earlier investigation, Kim and Kim (2005, pp. 345-347) calculated only "industry-based" exporters/importers pressures from the Korean *Input-Output Accounts*. Obtaining some expected empirical results in the next section would thus render more legitimate our extended method to overcome the "proxy problem" suggested in the current paper. Furthermore, it would allow us to cautiously propose that the interest group pressure hypothesis is valid not only in relatively government-closed economies like Korea but in much larger and more competitive economies such as the US.

We define it as the "exporters' pressure" (XP^I). We take, as rather experimental threshold values, the top 10th and the median of the proportions among industries. See <Appendix> for a detailed explanation.

As to the industry-based importers' pressure (MP^I), we go through a similar process of calculating for each industry the proportion of the imported input to output (i.e., the imported input proportion). This proportion shows each industry's dependence on imported input. Again, we try the weighted average of these proportions, but only of the industries whose imported input proportion exceeds the two different threshold values adopted above, respectively.

For the commodity-based exporters' pressure variable (XP^C), we repeat the similar process to obtaining XP^I, except that we calculate the weighted average of the export proportions across commodities, again using the two different threshold values, respectively.[10] We likewise construct the commodity-based importers' pressure (MP^C) from the import proportions of all commodities.[11]

IV. Empirical Work Focusing on the 1980s

1. Asymmetry of Pressures and Estimation of Their Influences

1) Estimation Results

The ultimate concern to exporters and importers is the real exchange rate. We use as the base model, following Meese and Rogoff (1988) and Wu (1999),

10) The denominator of the export proportion is the "commodity output" in the *Input-Output Accounts*, which also counts both the intermediate and the finals.

11) Campa and Goldberg (1997) measured "economic exposure" to the exchange rate for 20 US manufacturing industries with the *Input-Output Accounts* data in four ways: (i) export revenue share, (ii) imports relative to consumption, (iii) imported input share in production, and (iv) net external orientation (=(i)-(iii)). The first three measures are quite similar to our pressure proxies. The difference, however, is that they measured the economic exposure only across "industries," and only for "20 manufacturing" industries.

the Vector Error-Correction Model (VECM) for the real exchange rate (e_t), the real interest rate difference (rd_t), and the cumulated current account difference (cad_t) between Japan and the US.[12] By adding to this base model our interest group pressure variables, we will estimate the *interest group pressures* as well as the *market forces* on the real exchange rate. Our data period is 1977:Q1-1999:Q4, in consideration of the 1980s' "long swing" by Feldstein (1988) and the availability of the US *Input-Output Accounts*.

After some preliminary investigation,[13] we have set up the real exchange rate equation of our interest as equation (1).[14]

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12) A trade-weighted measure of the US real exchange rate could be a good candidate for this kind of study. However, Japan was the largest trading partner and experienced the largest trade surplus vis-à-vis the US in the 1980s and most of the 1990s (The US Commerce, *Commerce News*, each volume). Thus, the interest group pressure is believed to be the most keenly imposed and to manifest, if any, on the bilateral yen-dollar real exchange rate, the subject of our paper. $e_t = s_t + p_t^* - p_t$, where s_t is log of the yen-dollar nominal exchange rate (the quarterly average), and p_t is log of consumer price index (CPI). $rd_t = r_t - r_t^*$, where r_t is the long-term real interest rate which is obtained by subtracting the expected inflation from the government bond yield. The expected inflation is substituted by the actual CPI inflation. $cad_t = ca_t - ca_t^*$, where ca_t is the share of the cumulated current accounts relative to GDP. We follow Wu (1999) in constructing the cumulated current accounts, assuming the current accounts of the US and Japan were in balance as of 1973:Q4. * implies the US, and all data is obtained from the *International Financial Statistics* (*IFS*) database.

13) See <Referee's Appendix>.

14) It might be obviously worthwhile to add the Japanese interest group pressures into the equation. First of all, we encountered not only the difficulty of reading the Japanese-written Input-Output data but also the heavy load of other related data work. On second thought, however, (*if our hypothesis holds*) the Japanese exporters' pressure, for example, was predicted to have an influence on the exchange rate in the similar direction to that of the US importers.' Also, since the primary thesis of this paper is empirically substantiating the existence of *some* interest group pressure effect, therefore, lacking Japanese pressure variables in the equation was thought to be tolerable to an extent. Of course, further elaboration of the various other pressure variables is left for the next study.

$$\Delta e_t = \alpha + \beta_1 \Delta e_{t-1} + \beta_2 \Delta rd_{t-1} + \beta_3 \Delta cad_{t-1} + \gamma z_{t-1} + \delta_1 D_{X,t-1} \Delta XP_{t-1}$$
$$+ \delta_2 D_{M,t-1} \Delta MP_{t-1} + \delta_3 D_{E,t} + \delta_4 D_{P,t} + \delta_5 D_{X,t-1} + \delta_6 D_{M,t-1} + \varepsilon_t \qquad (1)$$

- $z_t = e_t - 4.081 + 1.817\ rd_t + 0.001\ cad_t$, which is the cointegration equation from the Johansen's cointegraton test.
- XP_t and MP_t represent the exporters' and importers' pressure variables, respectively, obtained in section III. They were found to follow I(1) from the augmented Dickey-Fuller unit-root test. $D_{X,t}$ and $D_{M,t}$ will be explained below in detail.
- $D_{E,t}$ dummy equals one during two quarters before the US president election, and zero otherwise. $D_{P,t}$ dummy equals one during a Democratic administration, and zero during a Republican administration in the US.

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 downturn, and that, when the export is going smoothly, the pressure would not be as strong or, considering nontrivial lobbying costs, would even fade away.

In order to capture this asymmetry, $D_{X,t}$ and $D_{M,t}$ dummies are included in equation (1). $D_{X,t}$ ($D_{M,t}$) dummy is given as one only for the quarter in which the growth rate of exports (imports) is lower than the previous quarter's. Of course, other conditions of the asymmetry will be tried in estimation below. The specification in equation (1) reflects our *prior* belief that these dummies might affect Δe_t through the intercept and/or the slope, although the latter is our major interest. We also assume that the interest group pressures actually become effective with a one-period lag, which, however, should be verified through estimation. The election ($D_{E,t}$) and the partisan ($D_{P,t}$) dummies are included. To sum up, the anticipated signs of β_1, β_2, β_3, γ, δ_1, δ_2, δ_3, and δ_4 estimates are (+/−), (−), (−), (+/−), (−), (+), (+), and (−), respectively.

The estimation results are shown in <Table 1>. $Base$ represents the basic model that includes only the fundamentals. In particular, the cumulated current account difference (Δcad_{t-1}), together with the error-correction term (z_{t-1}), explains the yen-dollar real exchange rate. It means that there is a long-run linear relationship among the variables, e_t, rd_t and cad_t, and additionally that the current account factor is a very important explanatory variable for the case of the yen-dollar real exchange rate. $Case\ 1T$ and $Case\ 1M$ refer to specifications when the exporters' and importers' pressures are formed by an industry-base, while $Case\ 2T$ and $Case\ 2M$ are formed by a commodity-base. T and M indicate each threshold value, the Top 10th or the Median value, as mentioned in Section III.

<Table 1> Here

There is no difference in the significance of the fundamentals coefficients among the four specifications. However, as to the exporters' and importers' pressure, only $Case\ 2M$ shows highly significant coefficients. Since the political pressure variables, $D_{E,t}$ and $D_{P,t}$, turn out to be insignificant, we will focus only on the exporters' and importers' pressures hereafter. Estimating $Case\ 2M$ without $D_{E,t}$ and $D_{P,t}$ is reported in $Case\ 2Ma$. We use this model as a benchmark by which to further scrutinize the nature of pressure variables.

After attempting various combinations of the asymmetry dummies for the pressures and effect lags,[15] we conclude that $Case\ 2Ma$ best portrays the

15) $Case\ 2Mb$ and $Case\ 2Mc$ tried to probe into the asymmetry in invoking pressure. Every variable is the same as in $Case\ 2Ma$ except that: in $Case\ 2Mb$, $D_{X,t}$ ($D_{M,t}$) takes one when the export (import) growth rate is lower than the previous 2-quarter moving average. In $Case\ 2Mc$, $D_{X,t}$ ($D_{M,t}$) takes one when the export (import) growth rate has

exporters' and importers' pressure on the yen-dollar real exchange rate. In other words, we discovered that the pressure groups are formed in the commodity base, consisting only of those whose export and import proportions are above their median among all commodities. Moreover, such pressure tends to come into play right after an export/import downturn, but it takes a quarter for the pressure to have an actual effect.[16)]

2) Further Scrutiny on the Pressure Proxies

We conducted additional statistical tests and scrutinized them in order to convince ourselves that our pressure proxies indeed capture the lobbying power. We also intended to overcome a possible criticism that it is 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 count.

Our efforts on this regard have been three-fold. Firstly, our *a priori*

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been lower than the previous quarter's for two consecutive quarters. Both cases show in <Table 1> that only importers' pressure is significant with an expected sign. $Case\ 2Md$ and $Case\ 2Me$ also use the same explanatory variables as $Case\ 2Ma$, but different lags are used. $Case\ 2Md$ presumes that in the presence of a cause for the pressure (i.e., when the export or the import is in a downturn) it takes a quarter to launch pressure, but its actual effect comes out contemporaneously. That is, $D_{X,t-1}\Delta XP_t$ and $D_{M,t-1}\Delta MP_t$ are substituted for $D_{X,t-1}\Delta XP_{t-1}$ and $D_{M,t-1}\Delta MP_{t-1}$, respectively, in $Case\ 2Ma$. On the other hand, in $Case\ 2Me$, no time-lag is assumed from the cause to the effect of pressure on the exchange rate: $D_{X,t}\Delta XP_t$ and $D_{M,t}\Delta MP_t$ are used instead. However, only the importers' pressure in $Case\ 2Md$ and the exporters' pressure in $Case\ 2Me$ turn out to be significant at 10% in <Table 1>. Thus, we may submit that $Case\ 2Ma$ better reflects the timing of the pressure embarkation or its actual effect.

16) We also formally tested the asymmetry in interest group pressures. ΔXP_{t-1} and ΔMP_{t-1} (i.e., the pressures without the interaction dummies, $D_{X,t-1}$ and $D_{M,t-1}$) were added to $Case\ 2Ma$ in order to undertake the appropriate log-likelihood ratio test. We could not reject the null hypothesis that their coefficients are zero at 5% significance level. Furthermore, when we alternatively replaced $D_{X,t-1}\Delta XP_{t-1}$, $D_{M,t-1}\Delta MP_{t-1}$, $D_{X,t-1}$ and $D_{M,t-1}$ of $Case\ 2Ma$ with these pressure variables alone (ΔXP_{t-1} and ΔMP_{t-1}), they were not significant at all. All these strongly support our asymmetry hypothesis.

expectation and subsequent empirical confirmation that $\delta_1<0$ and $\delta_2>0$ assure a validity of our pressure variables. The signs would have to be exactly the opposite if a potentially different interpretation of our pressure variables were correct: for instance, they are just the "export" or "import."

Secondly, no Granger-causality has been found from the dependent variable to each of the pressure variables in equation (1): that is, the exchange rate does not Granger-cause the pressures. These facts again effectively invalidate the above different interpretation.[17)]

Lastly and probably most importantly, we also investigated any possible spuriousness, stemming merely from the interaction dummy ($D_{X,t-1}$), in the negative $\widehat{\delta_1}$. Specifically, we reestimated *Case 2Ma* with a constraint of $\delta_1=\delta_2=0$, i.e., *Case 2Mf* in <Table 1>, to see if $\widehat{\delta_5}$ would be negative with significance. If that were the case, since $D_{X,t-1}$ represented the quarters of declining exports, it would be interpreted as the US government simply depreciated the exchange rate, just as the forementioned public welfare maximizing premise would indicate. Then, our lobbying pressure hypothesis would be hampered because the estimate of δ_1 could also have been influenced by the interaction dummy, $D_{X,t-1}$, i.e., by such government interventions simply out of a public interest concern. However, $\widehat{\delta_5}$ was found to be insignificant, further warranting the legitimacy of our lobbying power proxies.

17) Granger-Causality Test

	H_0: $\Delta e_t \not\rightarrow \Delta XP_{t-1}$	H_0: $\Delta e_t \not\leftarrow \Delta XP_{t-1}$	H_0: $\Delta e_t \not\rightarrow \Delta MP_{t-1}$	H_0: $\Delta e_t \not\leftarrow \Delta MP_{t-1}$
lag=2	F=0.72	F=3.28**	F=0.92	F=0.43
lag=4	F=1.44	F=2.45**	F=0.48	F=0.48

** means that H_0 is rejected at a 5% level.

2. The 1980s Yen-Dollar Rate and Interest Group Pressures

We have found that there exist interest group pressures on the yen-dollar real exchange rate for our entire sample period. Our primary focus has been on the 1980s, in which the dollar value experienced long swing, as expressed by Feldstein (1988). Specifically, we will examine whether the interest group pressure hypothesis can help explain the forementioned "puzzle" of the erratic movement of the US dollar in the first half of the 1980s, especially from June 1984 to February 1985, as indicated by Frankel and Froot (1990). It has already been mentioned in Section II that voluminous literature indicates that there was a tremendous amount of interest group pressures on the dollar exchange rate during the 1980s. Still, the previous research is mostly limited to case studies or anecdotal surveys. However, we intend to parametrically test it.

The effectiveness and significance of the interest group pressures can be time-variant. The time-varying parameter estimation, based on Kalman Filter, allows us to investigate this matter.[18] We select *Case 2Ma* as the representative model and make time-varying the coefficients of the two pressure variables in (1) as follows:

$$\delta_{k,t} = \delta_{k,t-1} + \upsilon_{k,t}, \quad (k = 1, 2), \quad where \ \upsilon_{k,t} \sim i.i.d. \ N(0, \sigma^2_{\upsilon_k}). \qquad (2)$$

The time-varying estimates of $\widehat{\delta_{1,t}}$ and $\widehat{\delta_{2,t}}$ under specification (2) are displayed as bold lines in <Figure 1> and <Figure 2>. The fine line in the figures indicates the upper-bound (in <Figure 1>) and the lower-bound (in <Figure 2>) of the 95% confidence interval of the null hypothesis of $\delta_{1,t}$=0 and

18) See Kim and Nelson (1999) for detailed explanation on this method. Complete estimates of the model below are available upon request.

$\delta_{2,t}$=0, respectively.[19]

Most striking is the finding that the exporters' and importers' pressures within the US were unprecedentedly effective and significant during 1983:Q4-1985:Q4 and 1983:Q2-1986:Q2, respectively. This result is insightful in that both those periods surprisingly coincide with the "puzzling" period of the 1980s US dollar behavior as indicated in the literature. To put it differently, the empirical finding suggests that the interest group pressure hypothesis can be an additional but very meaningful explanation of the puzzle.

Another inspiring recognition is that the two periods of very effective pressures almost coincide with each other. This observation can be distinctively interpreted as the conflicting interest group pressures intensifying almost simultaneously. We envision that this interpretation is fairly consistent with the *competing nature* in pressures à la Becker (1983). Naturally, in contrast to the literature that mostly focuses on the exporters' pressures during the first half of the 1980s, this result rightfully raises the necessity of more rigorous (institutional) studies on the importers' pressures, too.

Finally, we attempt to investigate directly whether the "relative strength" between the exporters' and importers' pressures, as in Campa and Goldberg (1997), might also have a meaningful influence on the exchange rate. Again *Case 2Ma* is used as the benchmark.[20] The time-varying coefficient equation to be estimated then is as follows:

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19) To help read the figures, the bold line in <Figure 1>, for example, represents the magnitude of the effect of the exporters' pressure (we use the term "effective" if it is large in absolute values). On the other hand, when the fine line is below zero, it implies that $\delta_{1,t}<0$ (i.e., the effect is statistically "significant").

20) The asymmetry dummies are not taken into account here, since, for analytic simplicity, the competing pressures are assumed to come into play all the time.

$$\Delta e_t = \alpha + \beta_1 \Delta e_{t-1} + \beta_2 \Delta rd_{t-1} + \beta_3 \Delta cad_{t-1} + \gamma z_{t-1} + \Theta_t (\Delta XP_{t-1} - \Delta MP_{t-1}) + \varepsilon_t$$

$$\text{where } \Theta_t = \Theta_{t-1} + \upsilon_{\Theta,t} \text{ and } \upsilon_{\Theta,t} \sim i.i.d.\ N(0, \sigma^2_{\upsilon_\Theta}) .$$

$\hat{\Theta}_t$ is expected to be (-) if the relative pressures have an influence.[21] <Figure 3> depicts the time-varying $\hat{\Theta}_t$ (the bold line) and its upper-bound (the fine line) of the 95% confidence interval of the null hypothesis of Θ_t=0. It indicates that the relative pressures of the exporters *over* the importers had an impact on the exchange rate movement, at the 5% significance level, during 1984:Q4-1985:Q2. However, at a slightly more generous significance level, the pressure-effective period is extended into 1983:Q4-1986:Q2, which intriguingly turns out to be exactly the same period obtained from the estimation based on the separate pressures above. It reinforces our belief that the tow parties' pressures are competing, again rendering it an additional clue to understanding the puzzle of the 1980s' yen-dollar behavior.

<Figure 1> Here. <Figure 2> Here. <Figure 3> Here.

V. Conclusion

We started from a public-choice proposition that every government policy is likely susceptible to interest group pressures. As a representative example, although theoretic research clearly recognizes that the exchange rate movement would not be an exception, it has been very hard to undertake its empirical

21) The same Kalman filter estimation method by Kim and Nelson's (1999) was used, and the detailed results can be obtained upon request.

substantiation. Our effort has been to apply proper methods to overcome the two most fundamental obstacles identified, i.e., the "proxy problem" and the "Olson problem," particularly for the erratic movement of the yen-dollar exchange rate in the 1980s.

First of all, resolving these two obstacles made it imperative to use data across sufficiently disaggregated sectors. We have thus reconstructed the US *Input-Output Accounts* data which provide detailed export/import information across industries and commodities. We have subsequently designed the appropriate proxies of the pressures of exporters and importers, who have traditionally been regarded as most sensitive to the exchange rate. We have also included two other political factors into our empirical equation.

Estimation of the yen-dollar exchange rate equation has mainly revealed that the US exporters' and importers' pressures formed in the commodity-base tend to trigger a systematic influence on the yen-dollar real exchange rate with a one-quarter lag. We postulate that our results regarding the interest group pressures are indeed conservative in the sense that the *market forces* (vis-à-vis *interest group pressures*) would obviously play a greater role in the US dollar determination relative to other currencies of less market-oriented economies. Moreover, the coincidence in the highly effective periods of the conflicting pressures is empirically consistent with the proposition of "competition among pressures" elaborated in Becker (1983).

We have also found that the influence of exporters' and importers' pressures within the US, estimated either separately or in their relative strength manner, abruptly intensified during the first half of the 1980s. As such, we cautiously submit that the interest group pressure hypothesis can help explain the "puzzling" movements of the US dollar during this period. In fact, whether the pressure argument is true or not is beyond controversy, which can be applied

universally over any period,[22] Rather, the key is the matter of how to verify it, which has been left as a big obstacle to overcome. The current paper has been such an attempt, if of experimental nature. Hopefully, this attempt of ours will shed useful implications for the similar research associated with any other government policy as well.

We leave for future research an inclusion into the empirical equation of interest group pressures within Japan or any potentially relevant countries to enhance the robustness of the methodology suggested in this paper. Furthermore, in the longer term, various attempts to develop alternative or more refined proxies of pivotal pressures will be not only indispensible but enormously productive for the study of exchange rate determination.

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22) The examples appear to be numerous even in the early 2000s: *"There is growing pressure from exporters in the United States and finance officials abroad for a weaker dollar"* (*A Weaker Dollar Could Help the US*, 『*New York Times*』, July 29, 2001). *"The high dollar has done longer-term damage to some industries by discouraging investment in globally competitive goods. Those most hurt are lining up in Washington to demand relief"* (*Strong Dollar May Be Restraining Expansion*, 『*Journal Record*』, May 28, 2002). *"For companies operating on a global basis, the dropping dollar helps in some places but hurts in others. Van Jolissaint, director of corporate economics at DaimlerChrysler AG, says a weaker dollar helps it in the U.S., but works against it in Europe and Japan"* (*The Economy: Dollar's Decline Is Mixed Blessing for Goods Makers*, 『*Wall Street Journal*』, Dec. 19, 2003).

<Appendix> The US *Input-Output Accounts* Data and Pressure Proxies

(i) The Exporters' Pressure across the Industries

$XP^I = \sum_i export\_proportion_i \cdot w_i = \sum_i \frac{export_i}{total\_industry\_output}$, where $export\_proportion_i$ is the export proportion of industry i, and w_i is the proportion of industry i's output to $total\_industry\_output$, which is the sum of the industry outputs of exporters whose export proportion is above the threshold value as mentioned in the text.

(ii) The Importers' Pressure across the Industries

$MP^I = \sum_i imported\_input\_proportion_i \cdot w_i = \sum_i \frac{imported\_input_i}{total\_industry\_output}$,

where $imported\_input\_proportion_i$ is the imported input proportion of industry i.

(iii) The Exporters' Pressure across the Commodities

$XP^C = \sum_j export\_proportion_j \cdot w_j = \sum_j \frac{export_j}{total\_commodity\_output}$, where $export\_proportion_j$ is the export proportion of commodity j, and w_j is the proportion of commodity j's output to $total\_commodity\_output$, which is the sum of the commodity outputs of exporters whose export proportion is above the threshold value.

(iii) The Importers' Pressure across the Commodities

$MP^C = \sum_j import\_proportion_j \cdot w_j = \sum_j \frac{import_j}{total\_commodity\_output}$, where $import\_proportion_j$ is the import proportion of commodity j.

The annual *Input-Output Accounts* from the US Bureau of Economic Analysis during our data period were available only for 1977-1987, 1992, and 1996-1999. The relevant data by which to make the proxies across industries or commodities were calculated carefully each year. They were then linearly interpolated to produce the in-between annuals. We subsequently converted these into a quarterly series by the Chow and Lin (1971) method, which utilizes the highly correlated and quarterly series. That is, we used the GDP (*line 99b.c* from *IFS*) for the industry or commodity output (their correlations were both higher than 0.95), and the export (*line 90c.c*) or import (*line 98c.c*) for the export, import, or imported input across the industries or commodities (all correlations were higher than 0.90).

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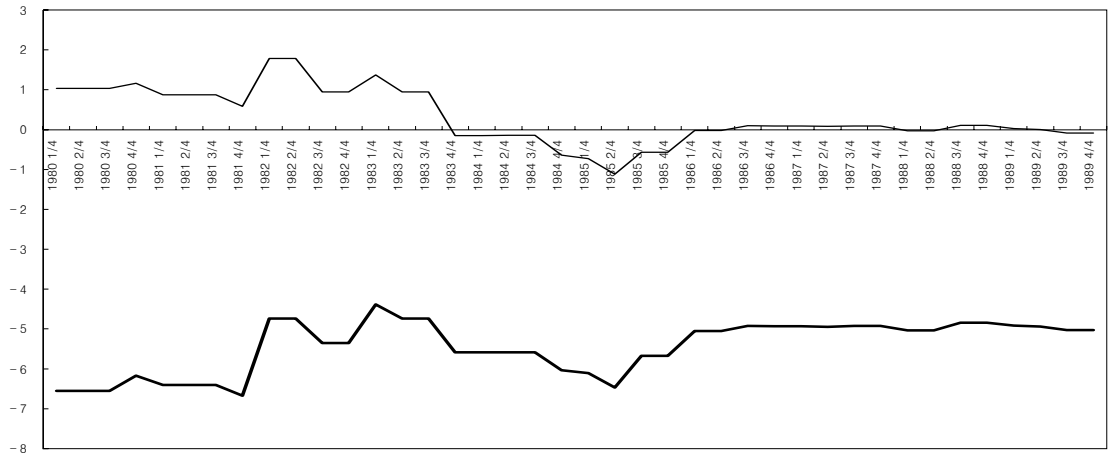
<Table 1> Interest Group Pressure Model for the Yen-Dollar Exchange Rate Movements for the 1980s

	Δe_{t-1}	Δrd_{t-1}	Δcad_{t-1}	z_{t-1}	$D_{X,t-1}\Delta XP_{t-1}$	$D_{M,t-1}\Delta MP_{t-1}$	$D_{X,t-1}$	$D_{M,t-1}$	$D_{E,t}$	$D_{P,t}$	α	$Adj.R^2$
Base	0.067 (0.079)	-0.006 (0.032)	-0.983*** (0.285)	-0.032*** (0.007)							-0.001 (0.010)	0.19
Case 1T	0.077 (0.083)	-0.002 (0.037)	-1.009*** (0.295)	-0.033*** (0.007)	-1.736 (3.676)	-0.320 (0.241)	-0.010 (0.015)	-0.006 (0.013)	-0.002 (0.015)	0.003 (0.010)	0.004 (0.014)	0.15
Case 1M	0.071 (0.079)	0.006 (0.039)	-1.049*** (0.296)	-0.033*** (0.007)	-2.524 (3.500)	0.513 (0.648)	-0.019 (0.016)	-0.005 (0.015)	-0.001 (0.015)	0.001 (0.009)	0.011 (0.014)	0.17
Case 2T	0.100 (0.084)	-0.004 (0.032)	-0.962*** (0.297)	-0.030*** (0.007)	0.921 (1.846)	0.971 (0.611)	0.003 (0.016)	-0.019 (0.015)	-0.001 (0.016)	0.000 (0.009)	0.008 (0.013)	0.18
Case 2M	0.045 (0.075)	0.009 (0.035)	-1.121*** (0.307)	-0.033*** (0.007)	-6.359*** (2.634)	3.038*** (1.070)	-0.015 (0.014)	-0.005 (0.013)	0.003 (0.015)	0.003 (0.010)	0.006 (0.013)	0.20
Case 2Ma	0.046 (0.077)	0.008 (0.036)	-1.132*** (0.302)	-0.033*** (0.007)	-6.254*** (2.585)	3.030*** (1.046)	-0.015 (0.014)	-0.005 (0.013)			0.008 (0.013)	0.22
Case 2Mb	0.051 (0.076)	-0.009 (0.033)	-0.998*** (0.293)	-0.029*** (0.007)	-0.252 (3.019)	2.582*** (1.076)	0.009 (0.013)	0.006 (0.011)			-0.004 (0.011)	0.20
Case 2Mc	0.083 (0.082)	-0.020 (0.034)	-1.007*** (0.320)	-0.026*** (0.007)	4.555 (4.155)	2.514*** (0.714)	0.037*** (0.013)	-0.009 (0.016)			0.001 (0.011)	0.22
Case 2Md [a]	0.080 (0.085)	0.002 (0.033)	-0.902*** (0.272)	-0.032*** (0.007)	-0.448 (1.432)	-1.799* (0.982)	-0.001 (0.014)	-0.010 (0.014)			0.003 (0.014)	0.18
Case 2Me [b]	-0.076 (0.076)	-0.005 (0.033)	-1.061*** (0.283)	-0.033*** (0.007)	-4.207* (2.271)	0.157 (0.949)	-0.008 (0.013)	0.011 (0.011)			-0.004 (0.013)	0.19
Case 2Mf	0.078 (0.081)	0.000 (0.034)	-0.954*** (0.287)	-0.032*** (0.007)			0.002 (0.009)	-0.002 (0.015)	-0.004 (0.015)	-0.008 (0.015)	0.004 (0.013)	0.16

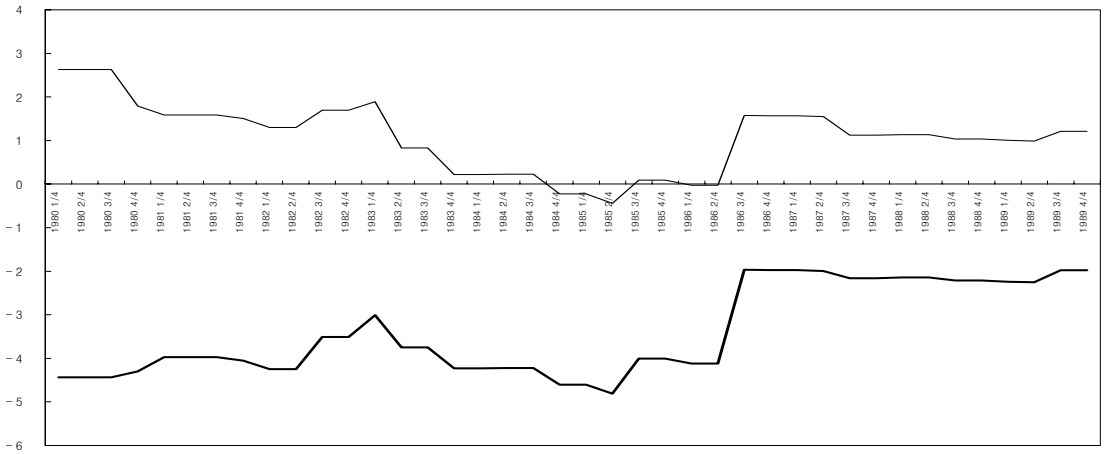
***, **, * indicate significances at the 1%, 5%, and 10% level, respectively. Numbers in parentheses are standard errors. We used the Newey-West (1987) estimation method. *a* (*b*) denotes that $D_{X,t-1}\Delta XP_t$ ($D_{X,t}\Delta XP_t$) and $D_{M,t-1}\Delta MP_t$ ($D_{M,t}\Delta MP_t$) are substituted for $D_{X,t-1}\Delta XP_{t-1}$ and $D_{M,t-1}\Delta MP_{t-1}$, respectively.

<Figure 1> $\hat{\delta}_{1,t}$ and Their Upper-Bound of the 95% Confidence Interval



<Figure 2> $\hat{\delta}_{2,t}$ and Their Lower-Bound of the 95% Confidence Interval

<Figure 3> $\hat{\Theta}_{t}$ and Their Upper-Bound of the 95% Confidence Interval



<Referee's Appendix> Preliminary Empirical Work

We first applied the augmented Dickey-Fuller test on each of the fundamentals variables (e_t, rd_t, cad_t), and found that they follow I(1). Furthermore, to check whether they have the long-run linear relationship, we undertook the Johansen' (1991) cointegration test. It turns out that there exists one cointegration vector among them as shown below.

Johansen's Cointegration Test (e_t, rd_t, cad_t)

	H_0: n=0	H_0: $n \leq 1$	H_0 $n \leq 2$
Trace statistic	39.70** (34.91)	19.42 (19.96)	5.45 (9.24)
Cointegraton equation: e_t = 4.081 - 1.817 rd_t - 0.001 cad_t			

n is the number of the cointegration vectors. The number in parenthesis implies the 5% critical value. ** means that H_0 is rejected at 5% significance level.

We accordingly ran VAR(p) on e_t, rd_t and cad_t, and found that p=2 is appropriate, based on the statistics below. Therefore, the lag order of the VECM was determined as one (=p-1). As long as VECM includes the same explanatory variables in each equation, there should be no harm in estimating each equation separately.

Akaike and Schawarz Statistics

	VAR(1)	VAR(2)	VAR(3)
Akaike	-8.69	-9.58	-9.64
Schwarz	-8.36	-9.00	-8.81