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The Role of Foreign Direct Investment in Canada's Demand for Imports : 1971-1982

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and

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Abstract

In this paper we include a "foreign ownership" variable in the traditional and partial adjustment import demand functions and examine the role of "foreign direct investment" in Canada's demand for imports. We examine the stochastic process generating the error structure of the estimated models and adopt appropriate techniques for estimation purposes. The extent to which the adjustment between actual and long run demand for imports occurs in both models is also examined. In the process, we comapre the relative performance of the two models in explaining the demand for imports in Canada over the sample period 1971-1982. The results provide strong support for the partial adjustment model and suggest a positive and significant role of the "foreign control variable" in the Canadian demand for improts.

Introduction

There has been a considerable research about the Canadian demand for imports in the literature. Some studies have been to estimate the price and income elasticities with a view to identify their roles in the behaviour of Canadian trade flows (Kemp (1962), Houthakker and Magee (1969), Murry and Ginman (1976), and others), whereas

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others have focussed on the choice of the appropriate functional form (Yadav (1975), Khan and Ross (1977), Kohli (1978), and Wilson and Takacs (1979), among others). Econometric issues and modeling procedures have also been subject of discussion in these studies. The problem of aggregation bias, simultaneity bias, use of lag adjustment and the misspecification of the model are a few of the many that Leamer and Stern (1970), and Goldstein and Khan (1985) have discussed in detail. Insofar as the functional form is concerned, Khan and Ross (1977) have tested different forms (e.g. linear, log-linear and partial adjustment models) and found no clear-cut evidence as to the superiority of any functional form. On the other hand, Yadav (1975), using the partial adjustment model, examined the speed of adjustment between the actual and long run demand for imports and found that the actual quantity of imports adjusts to changes in the long run with three to four quarters of time lag. Khan (1974), however, concluded that the equilibrium model is adequate for estimation purposes.

The above studies, however, have ignored the fact that no other nation in the world has as high a proportion of its industry owned and controlled by foreigners as has Canada (Wilkinson (1968), and Maki and Meredith (1986)). Ignoring the role of foreign ownership in the Canadian demand for imports, the previous studies have provided not only a misleading interpretation on the income and price elasticities but also may have produced biased results. These results occur due to misspecification of the import demand function, in one way or another. Consequently, it is an important task to include the "foreign ownership" argument in the Canadian import demand function. This inclusion will not only reduce (or eliminate) the specifiction error bias but will also explain the implication the 'foreign direct investment' has for the Canadian demand for imports. As noted above, previous works have not made attempts to undertake such a task. The purpose of this study is to fill this lacuna.

Section II sets out the objectives, nature and scope of the study. Section III discusses the theoretical framework and empirical specification of the tests. Some data, estimation techniques and problems, and corrective measures are discussed in Section IV. Empirical results are contained in Section V. Section VI contains major findings of the study.

I. Objectives and Scope of the Study

As noted above, the major objective of this paper is to examine the role of "foreign direct investment" in Canada's demand for imports. Canadian data has been used because

there is substantial foreign control of the Canadian industries.[1] The availability of the major data at the two-digit S.I.T.C. (Standard International Trade Classification) level was also a consideration even though here there were some problems in obtaining time series data at disaggregated levels. As a result, the tests are conducted mainly on Canadian aggregate data over the sample period 1971-1982. To the extent that the availability of data has permitted, the tests are also conducted for seven manufacturing industries (Consumer and Capital Goods) over the same sample period. The later tests are done so as to look at the effects of 'foreign direct investment' on the Canadian demand for import at disaggregated levels. It is hoped that the results of the study would be interesting for both researchers and policy makers.

In order to implement our tests, we include a "foreign ownership" argument in both traditional and partial adjustment import-demand models and examine its effects on and implications for Canadian imports. In the process, we examine the extent to which the adjustment between actual and long run demand for imports occurs in both specifications. We also compare the relative performance of the above two models. In addition, we test for the stochastic process generating the error structure of the estimated models and adopt convenient techniques for estimation purposes.

Ⅱ. Theoretical Framework and Empirical Specification of the Tests

The traditional import demand function relates the quantity of import demanded by a country '*i*' to the domestic real income and to the ratio of import prices to domestic prices of importable substitutes. In log-linear form, the demand equation is

$$\mathrm{Log}(M^{d}_{it})=\beta_0+\beta_1\log(P_{it})+\beta_2\log(Y_{it})+e_{it} \qquad \cdots(1)$$

where M^{d}_{it} is the quantity of imports demanded by a country '*i*' in the long run, $P_{it}=(PM/PD)_{it}$, is the ratio of import price (PM) to domestic price (PD), Y_{it} is the real GNP (activity variable) of country i, and e_i is the error term [NID(0, σ^2)]. β_1 and β_2 are the income and relative price elasticities respectively. As suggested by the import-

1.The Canadian subsidiaries of the foreign parent companies usually have higher propensities to import relative to the resident-owned firms. This could be due to lower information and transaction costs, higher costs of domestically produced inputs, or/and continuous development of new products and processes by the parents or affiliates of non-resident-owned firms. These benefits help foreign-owned firms import a greater proportion of their purchases from outside Canada than do domestic firms. See Wilkinson (1968) and Markusen & Melvin (1984) for a detailed discussion.

demand theory, the signs of the elasticity coefficients are expected to be $\beta_1<0$ & $\beta_2>0$.

In order to examine the impact of 'foreign ownership' on the Canadian imports, we include an additional variable, called 'foreign-control variable' (hereafter FCV), in the traditional import demand equation (e.g. in equation 1). The FCV is used as a measure of foreign direct control over the Canadian domestic market and is calculated as the ratio of foreign controlled sales (FCS) to total sales (TSAL) of the importables in Canada. The modified version of equation (1) then becomes

$$\text{Log}(M^d_{lt})=\beta_0+\beta_1\log(P_{lt})+\beta_2\log(Y_{lt})+\beta_3\log(\text{FCV})_{lt}+w_{lt} \qquad \cdots(2)$$

where w_{lt} is assumed to be NID(0, σ^2). The elasticity parameters are assumed to be constant and their signs are to be $\beta_1<0$, $\beta_2>0$ & $\beta_3>0$.[2]

However, in any economic analysis, the time dimension introduces a serious problem. With a change in the time, t, the behaviour of economic variables may also change. As a result, the assumption about the constancy of the elasticity parameters is sometimes questionable. In general, as the time period increases, the elasticities are expected to increase. This is because the adjustment process takes place over a period of time for a given change in the variable. This point is also valid for the import demand function specified above (equation 2). For example, Khan (1974) reports that the long run elasticities are considerably greater than the short run elasticities. Considering this problem, a partial adjustment mechanism is used to capture the effects of any change on the imports between periods t and $t-1$. This mechanism establishes a relationship between the demand for imports in period t and actual imports in period $t-1$. The logarithmic expression of this relationship is

$$\triangle\log M^d_{lt}=\lambda[\log M^d_{lt}-\log M^d_{lt-1}]+\eta_{lt} \qquad \cdots(3)$$

where $0\leq\lambda\leq1$, is the random error term, $\triangle\log(M_{lt})=\log(M^d_{lt})-\log(M_{lt-1})$, and shows the speed of adjustment between the actual and long run demand for imports.

Substituting equation (3) into equation (2), we write

2.The rationale for $\beta_3>0$ is that the higher the foreign direct investment the higher would be the propensity to import the corresponding commodities in Canada by the subsidiaries.

$$\text{Log}(M^{d}_{It})=\lambda\log\beta_0+\lambda\beta_1(\log P_{It})+\lambda\beta_2\log(Y_{It})$$
$$+\lambda\beta_3\log(\text{FCV}_{It})+(1-\lambda)\log(M_{t-1})+U_{It} \quad \cdots(4)$$

where U_{It} is an error term and equal to $\lambda e_{It}+\eta_{It}$. The coefficients $\lambda\beta_1$, $\lambda\beta_2$, $\lambda\beta_3$ respectively measure the short-run impact of changes in relative prices, real income and 'foreign ownership and control' on the Canadian imports.

We then use equations (2) and (4) for our estimation purposes and compare the relative performance of the two versions of the import demand models in explaining the Canadian imports. These equations (equations 2 and 4) also provide estimates to compare and contrast the short run and long run elasticities of the three independent variables. More importantly, the estimates help us understand the implications the "foreign ownership and control" has for the Canadian trade flows.

Ⅲ. Data, Estimation Techniques and Problems

① Data Definitions and Sources :

Quarterly data for the period 1971-1 to 1982-4 have been used in this study. The choice of the period is based solely on the availability of time series data on foreign controlled sales (FCS) and total sales (TSAL) of commodities in the domestic market. All data have been collected for seven two-digit S.I.T.C. manufacturing industry groups and for Canada as a whole. The selected industries are food, beverage, wood fabricated materials, fabricated materials, chemical and chemical products, transportation equipment, and machinery. The data on the FCS and TSAL have been obtained from the various issues of "Corporations and Labour Returns Act"(statistics Canada publications). All other data have been collected from the Statistics Canada's computerized data bank, CANSIM.

The volume of imports (on a 'balance of payment' basis) at 1971 constant prices is used as the dependent variable. Gross national expenditure (GNE) at constant prices has been used to measure the activity variable in the aggregate import demand equation. Personal expenditure on non-durable goods (in 1971 constant dollars) has been used as the proxy for the activity argument in the demand equation for food and beverage commodity groups. For other commodity groups, GNE has been used to approximate the activity variable on empirical grounds.[3] Laspeyres weighted import price indices

3.In our preliminary investigation we had also tried other alternative proxy variables, such as "gross fixed capital formation," and "expenditure on machinery and equipment"(for machinery and transportation

are used to measure foreign prices. For domestic prices of import substitutes, we have used the Consumers Price Index (CPI) at the aggregate level, and the domestic industrial selling price indices at the disaggregated level.

② Estimation Techniques used, Problems and Corrective Devices :

This study primarily attempts to use the ordinary least square (OLS) method to estimate the demand equations. In some cases, the generalized least square (GLS) procedure has been used. The GLS technique has been used based on our OLS results. Specifically, we have examined the stochastic process generating the disturbances of the OLS results and applied the appropriate GLS method to estimate the equations. The disturbances of the OLS results have been investigated by using the autocorrelation (ACF) and partial autocorrelation functions (PACF) and other test statistics (such as Durbin-Watson, H-statistic etc.). A brief discussion of the problems and the procedures used follows.

(i) Autocorrelation Problem :

When estimating empirical relationship between the volume of imports and independent variables, one is usually confronted with the assumption that the disturbance term in the equation is white noise. In practice, however, it has been found that the disturbances follow some sort of stochastic process. Under such a situation, most researchers simply assume that the error structures follow a 1st-order autoregressive process, AR(1). That is $U_t=PU_{t-1}+\varepsilon_t$, where $|P|<1$ and ε_t is NID(0, σ^2). The reason for doing so is not that the AR(1) process is the actual process, but rather that they can use a simple GLS technique to pursue their estimation procedures. This ad-hoc adoption of the AR(1) process introduces estimation error biases in the estimated demand function. In order to avoid the possibility of this sort of biases, it is then necessary to examine the true (but unknown) nature of the process generating the error term and to adopt a device accordingly. We have undertaken such a task in this study by examining the ACF and PACF of the OLS-residuals.[4] Then we have used corrective devices (such as, GLS autoregressive method, GLS moving average method, seasonal dummies, etc.)

groups). However, these variables privided wrong sings and statistically insignificant coefficients. Consequently we have chosen real GNE as a measure of the activity variable for these commodity groups. This practics, however, is not unusual in the empirical work. See Kemp(1962), and Kumar and Akbar(1982) for details.

4.ACF and PACF of the residuals were estimated by using a statistical software package named SCA. See "The SCA Statistical System : A Condensed Guide"(1985) for details. ACF represents AR (P) process whereas PACF the MA(Q) process. For a detailed explanation of ARIMA process, see Pankratz(1983).

as suggested by the ACF and PACF. This procedure helped us correct the problem associated with the error term and also provided accurate estimates of the elasticity coefficients of the import demand equations.

(ii) Multicollinearity Problem :

Our preliminary investigation suggested that there were a high degree of collinearity between the exlanatory variables (as indicated by the COND(X) index in TROLL and also by the correlation matrices).[5] In order to minimize the severity of the multicollinearity problem, we have expressed the dependent variable and the activity variable in per capita form. This corrective measure has been found to be effective in this study.

Ⅳ. Empirical Results

(i) Full Adjustment Equation Results

Table 1 shows the results for total imports and seven different commodity groups for equation (2) estimated with the GLS technique [with an exception for beverage group]. This technique has been applied upon examination of the residuals of the OLS estimates. For example, the ACF of the OLS residuals for the aggregate data showed that there were two statistically significant spikes up lag 2 and that their PACFs tailed off towards zero after lag 2. This pattern indicated that the disturbances for the aggregate data followed a second order moving average, MA(2), process. Accordingly, we have applied the "GLS MAV2"technique to correct this problem. In a similar manner, we have diagnosed the nature of the process underlying the error structure for other cases and applied the appropriate GLS techniques.

The results in Table 1 show that the full adjustment equation performs considerably well (in terms of R^2) for the aggregate data and for all commodity groups except for the textile and chemical products. The F statistics are found to be significant for all cases and the D-W test is satisfactory. The results also show that both the income and price elasticities have the expected signs. It is further seen that both these elasticities are highly significant for all estimated equations except for textile fabricated materials. Importantly, the FCV elasticity coefficient is positively and statistically significant at 5% level for the aggregate data and for transportation and machinery groups. This result makes sense because the foreign control in Canada is relatively high in these

5.COND(X) stands for the condition index of the data matrix[X]. It is given by the largest eigenvalue of the matrix[X x] divided by the smallest eigenvalue. A high index usually reflects the presence of multicollinearity [Kennedy, 1985].

Table 1 Full Adjustment Equation Estimates

M_t	Constant	Y_t	P_t	FCV_t	SD_2	SD_3	SD_4	R^2	F	D-W	H	Cond (X)	Rho 1	Rho 2
Total Imports	−5.17 (10.64)	2.05 (7.23)	−0.86 (−5.03)	0.11 (1.97)	0.10 (6.41)	−0.04 (−2.07)	0.04 (2.69)	0.82	30.8	1.62	8.5	88	−0.89	−0.49
Food	−4.04 (−5.40)	0.25 (2.18)	−0.61 (−4.39)	0.05 (0.23)	−0.03 (−1.99)	0.01 (0.52)	0.002 (0.13)	0.58	9.1	2.38	8.4	23	0.94	
Beverage	−8.14 (−5.28)	0.89 (4.83)	−0.89 (−3.02)	0.75 (1.63)				0.68	30.6	2.16	12.3	212		
Wood Fab. Material	−10.72 (−8.15)	2.45 (4.51)	−1.19 (−4.78)	0.20 (0.95)				0.46	12.0	1.47	13.4	87	−0.63	−0.69
Textile Fab. Mat.	−4.25 (−1.39)	1.13 (1.69)	−1.10 (−2.83)	−0.64 (−0.86)				0.23	4.2	1.92	10.9	48	0.95	
Chemical Ch. Prod.	−6.49 (−1.58)	1.89 (3.66)	−0.59 (−1.42)	−0.25 (−0.28)				0.28	5.5	1.92	13.1	335	0.70	
Transp't Equip.	−19.69 (−4.91)	3.12 (9.05)	−1.10 (−3.42)	2.70 (3.09)				0.67	29.2	1.78	10.4	627	0.52	
Mach'ry	−11.46 (−4.91)	2.83 (4.60)	−0.41 (−0.92)	0.80 (2.08)				0.38	8.9	1.41	17.8	88	0.88	

Notes:
1. Student's t-values given in parentheses.
2. 'H' values are associated with the lag (k=) 12.
3. SD_2, SD_3 and SD_4 are three seasonal dummies for the 2nd, 3rd and 4th quarter respectively. Seasonal dummies have been introduced only in import demand function for food and total imports, since in other cases we did not find any significant seasonal patterns.
4. Import demand function for Beverage is estimated by using OLS and that for Total Imports and Wood Fabricated Materials are estimated by 'GLS MAV2'. Except these, all other import demand functions have been estimated by employing 'GLS AUTO 1'.

two industry groups. The results, therefore, imply that the 'foreign control' on the transportation and machinery industries has a significant role to play in influencing the demand for Canadian imports.

On the other hand, both the income and price elasticity coefficients are lower in absolute magnitude for basic consumer goods (food and beverage) as compared to the capital goods. This result implies that the 'balance of payment' problem in Canada will be reduced in the event of recession, and vice versa. This is because Canada, mainly, imports capital goods, and that with the decrease in national income the demand for these imported goods will decrease. Nevertheless, the variation of the FCV elasticity across commodity groups does not exhibit any systematic patterns.

(ii) Partial Adjustment Equation Results :

Table 2 presents the results for the equation (4). The equation has been estimated for the aggregate data as well as for the data for seven commodity groups chosen [exceptions apply for beverage and wood] using the OLS technique.[6] We have used 'GLS AUTO 1' and 'GLS MV1' respectively for beverage and wood groups. These methods are used due to the fact that the OLS residuals for beverage and wood groups followed AR(1) and MA(1) processes, respectively.

The results reported in Table 2 show that the partial adjustment equation performs very well in explaining the variation of Canadian imports. Indeed in most cases R^2 exceeds 0.75 ; F statistic is highly significant, and the tests for the absence of serial correlation (DW, Box-Pieres test, Q^*, and h-statistic) are satisfactory for all estimated equations. The Cond(X) index is found to be very high for Chemical & Chemical Products and Transport Equipment. However, the t-values of the coefficients of all explanatory variables are greater than 2 in both cases. Except for Textile Fabricated Materials, the signs of the income and price elasticity coefficients are in accordance with our prior expectations in all cases. The price elasticity coefficients for Textile Fabricated Materials and Machinery, and the income elasticity for the former commodity group, are found to be statistically insignificant at the conventional level. T-values, however, are highly significant for all other groups.

Table 3 shows that the long-run income elasticity of demand for total imports appears to be 1.97. For individual commodity group, the elasticity estimates range from a low of 0.50 for food to a high of 4.98 for machinery. On the other hand,

6.This is because the OLS residuals are all estimated equations other than beverage and wood groups were white noise.

Tabel 2 Partial Adjustment Equation Estimates

M_t	Constant	Y_t	P_t	FCV_t	M_{t-1}	SD_2	SD_3	SD_4	R^2	F	D-W	H-stat.	Cond (X)	Rho
Total Imports	−1.34 (−2.24)	0.51 (1.89)	−0.33 (−2.92)	0.04 (1.44)	0.74 (7.03)	0.13 (7.02)	−0.09 (−4.72)	0.10 (5.01)	0.89	43.7	1.71	1.44	11.4	291	
Food	−1.35	0.17	−0.22	0.04	0.66	−0.01	−0.01	0.04	0.77	19.1	2.09	−0.38	8.9	215	
Beverage	−6.21 (−4.24)	0.73 (3.67)	−0.51 (−1.83)	0.68 (1.91)	0.28 (2.24)				0.80	42.5	2.12		12.4	274	−0.29
Wood Fab. Material	−4.38 (−2.80)	0.97 (1.83)	−0.87 (−3.77)	−0.02 (−0.14)	0.53 (5.13)				0.67	21.7	1.83		14.1	183	−0.48
Textile Fab. Mat.	−1.57 (−1.03)	−0.21 (−0.96)	−0.13 (−0.50)	0.23 (0.77)	0.80 (7.79)				0.73	27.9	1.66	1.64	12.4	394	
Chemical & Ch. Prod.	0.53 (0.29)	1.08 (2.94)	−0.95 (−3.34)	−0.89 (−2.28)	0.62 (6.23)				0.78	36.9	2.04	0.19	11.5	563	
Transp't Equip't.	−10.94 (−3.76)	1.70 (3.80)	−0.75 (−3.15)	1.54 (2.88)	0.46 (3.82)				0.87	72.0	1.82	−1.18	13.6	655	
Mach'ry	−3.60 (−3.85)	0.78 (2.87)	−0.18 (−1.01)	0.43 (4.30)	0.84 (9.88)				0.93	129	1.80	0.85	13.6	311	

Notes:
1. Student's t-values given in parentheses below coefficients.
2. 'H' values are associated with lag 12.
3. For all H >1.645, one would reject the hypothesis of zero autocorrelation at 5% level.
4. Import demand function for Beverage and Wood Fabricated Materials have been estimated by 'GLS AUTO 1' and 'GLS MAV1' respectively; except these, all other equations have been estimated by the OLS technique.
5. SD_2, SD_3 and SD_4 are seasonal dummies.

Table 3 Long-Run and Short-Run Elasticity Coefficients

Imports	Adjust-ment Coef.	Income Elasticity		Price Elasticity		FCV Elasticity	
		LRE	SRE	LRE	SRE	LRE	SRE
Total Imports	0.25	1.97	0.51	−1.29	−0.33	0.15	0.04
Food	0.34	0.50	0.17	−0.63	−0.22	0.11	0.04
Beverage	0.72	1.01	0.73	−0.70	−0.51	0.94	0.68
Wood Fabricated Materials	0.47	2.05	0.97	−1.84	−0.87	0.05	0.02
Textile Fabricated Materials	0.20	−1.06	−0.21	−0.63	−0.13	1.13	0.23
Chemical & Chemical Products	0.38	2.86	1.08	−2.52	−0.95	−2.37	−0.89
Transport Equipment	0.52	3.24	1.70	−1.42	−0.75	2.93	1.54
Machinery	0.16	4.98	0.78	−1.11	−0.18	2.70	0.43

Source: Table 2
Note: LRE = Long-run elasticity and
SRE = Short-run elasticity

the over-all long-run price elasticity of demand is 1.29 (in absolute terms), with individual group estimates ranging from a low of 0.63 for food and textile fabricated materials to a high of 2.52 for chemical and chemical Products. The FCV elasticity is significant at the 5% level, with a positive sign for Beverage, Transport Equipment and Machinery, and has a negative sign for Chemical and Chemical Products. In other cases it is not significant at the conventional level (however, t=1.44 for total imports). The long-run FCV elasticity coefficient for total imports is 0.15 and it lies between 0.05 to 2.93 for subgroups.

The coefficient of the lagged endogenous variable $(1-\lambda)$ is significant at the 5% level with a positive sign in all estimated equations. The speed of adjustment (λ) for total imports appears to be in the region of 0.25. The corresponding estimate for commodity groups range from a low 0.16 for imports for Machinery to a high 0.72 for Beverage. These estimates seem to make sense because the speed of adjustment between actual and desired quanitity of imports is usually faster for basic consumer goods than for heavy capital goods.

V. Summary and Conclusion

In this research we examine the role of "foreign direct investment" in Canada's demand for imports. We include a "foreign ownership" variable in the traditional and partial adjustment import demand functions, and compare the relative performance of the two models in explaining the demand for imports in Canada. In the process, we examine the extent to which the adjustment between actual and long run demand for imports occurs in both specifications. The results of our tests are summarized as follows :

(a) This study provides strong support for the partial adjustment hypothesis which states that the actual quantity of imports adjusts to changes in the long-run demand for imports with a significant time-lag.[7] Indeed the partial adjustment model outperforms the full adjustment model in explaining the Canadian demand for imports. The partial adjustment model seems to be empirically more sound than the full adjustment model. This is because the inclusion of the lagged endogenous variable (in equation 2) in the partial adjustment model has remarkably reduced the severity of serial correlation and at the same time increased the explanatory power $[R^2]$ of the regression equations. This explanation simply indicates that there is a specification error problem in the

7.This result is consistent with the Yadav's [1975] study on Canadian demand for imports.

Table 4 Comparison of the Estimates of Long-Run Price and Income Elasticities of Total Canadian Import Demand

Empirical Studies on Canadian Import Demand	Income Elasticity	Price Elasticity
Our estimates for 1971-82 (Partial adjustment model estimates)	1.97	−1.29
Houthakker and Magee (1969) Estimation period: 1951-66	1.20	−1.46
Khan and Ross (1977) Estimation period: 1960-72	1.43	−0.85
Wilson and Takacs (1979)	1.87	*n.a.
Yadav (1975) Estimation period: 1956-72	1.11	−2.49
Kemp (1962) Estimation period: 1926-55	0.96	−0.93
Samuelson (1973)	0.95	−1.29
Taplin (1973)	1.18	−1.59

*The price elasticity coefficient is not available in this study.

full adjustment equation. It is also found that the partial adjustment equation, with a uniform adjustment coefficient 'λ' for all exogenous variables, is more effective in estimating the time-pattern of adjustment of imports.

(b) The estimated elasticity coefficients seem to be reasonable in magnitude. Table 4 shows that at the aggregate level our estimate of price elasticity is quite resonable and consistent with other studies. However, the income elasticity coefficient is slightly higher than other estimates. There are significant differences in both price and income elasticities across commodity groups. For example, the price and income elasticities for basic goods (e.g. Food, Beverage) are much lower than that for capial goods (e.g. Transport Equipment).[8]

The short-run price elasticities of demand for imports are considerably lower than the long-run price elasticies. The difference between the short-run and long-run price elasticities of demand for imports carries at least two policy implications. First, the trade balance response to depreciation can follow a pattern described by the "J curve."[9] The value of trade balance can worsen in the short-run in response to currency depreciation. This could be because of low short-run price elasticities of foreign demand and the tendency of increased import prices, as compared to export prices, in domoestic currency. The second and most significant implication of low short-run price elasticities is that short-run changes in countries trade balances will then be dominated by the movements of real income at home and abroad.[10]

(c) Foreign ownership and control over the domestic market has a positive impact on total imports. However, the total import demand is less sensitive to FCV as compared to prices and income. Different FCV elasticities across commodity groups support the view that the import demand for secondary manufacturing (Machinery, Transport Equipment and Chemical & Chemical Products) is more sensitive to FCV than that for primary manufacturing (Food, Beverage, Wood Fabricated Materials and Textile Fabricated Materials) industries. The main implication of this intra-commodity difference in the FCV elasticity is that any changes in the foreign direct control over the secondary manufacturing industries may lead to a substantial variation in the trade balance through its influence on the demands for imports. As a result, in a peak period Canada

8.However in case of activity elasticities, the comparisons are clouded by the use of different activity variables across commodity groups.

9.The Marshall-Lerner condition provides the basis of this analysis.

10.Since the aggregate level the short-run income elasticity of import demand is greater than that of price elasticity, and the FCV elasticity is negligible in magnitude (0.04).

may face the balance of payment problem, in part, due to the foreign control of the transporation and machinery industries and vice versa. Therefore, the results of this study may have important implications for Canadian policy makers at least with regard to the 'foreign direct investment' in Canada.

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