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Part III

Impact of Foreign-Sector Regimes

Chapter 6

The Behavior of Merchandise Imports

In Part II of this study, I described the developments in the structure of Chilean foreign-sector regimes since the Great Depression, and I examined the impact of these developments on price- and cost-related measures of rates of exchange and of protection. I did so to lay out the groundwork for investigating a basic subject of this study: the impact of policy on the magnitude and composition of real variables. The price- and cost-related measures are important because they indicate the nature of the signals policies create for real variables and because they transmit many of the effects of policies. In this part, I analyze the real consequences of foreign-sector policies—perhaps as transmitted by price and cost variables—on five major areas of macroeconomic concern: the foreign economic position, economic stability in real and nominal terms, resource allocation and structural change, the distribution of control over income and resources, and economic growth. In the first three chapters of this part, I explore two interrelated general questions: (i) How have the international economic regimes affected the major components of the balance of payments? (ii) Have they succeeded in establishing the long-desired greater national control over the Chilean economic destiny?

SUMMARY AND CONCLUSIONS

i. In a gross sense the post-Depression regimes have clearly succeeded in lessening the level of relative dependence on imports. Imports per capita have

never again attained the pre-1931 peak levels. Imports relative to GDP have averaged about a fourth of the 1920s proportion.

ii. This reduction has been accomplished in large part by the use of quantitative restrictions because of pessimism concerning the effectiveness of prices in restraining demand for imports. In respect to total imports, this pessimism was well-founded. General-equilibrium price responses have been very low, partially because of the effects of changed international reserves on domestic prices. The Central Bank has been unable effectively to neutralize such reserve movements.

iii. For some important import categories, nevertheless, price responses were fairly substantial. Therefore, the secularly decreasing PLD-EERs created considerable additional demand for foreign exchange.

iv. Although the gross level of dependence on imports fell, the variance of imports did not. The regimes of recent decades, in fact, in some respects increased fluctuations by maintaining a disequilibrium system with an overvalued exchange rate. When reserves were available from capital inflows or export booms, pressures to utilize them immediately for increased imports were almost irresistible. When a shortfall developed in the supply of foreign exchange, imports quickly had to be cut back.

v. Efforts at changing the composition of imports have met with partial success. The geographical special regimes have at times been quite important. The share of total imports going to the government has fluctuated around an upward trend, with a rapid acceleration under the Allende government.

There have also been some changes in the geographic origin of imports: in the 1960s and 1970s the dominance of the United States declined substantially. Until very recently, however, the share from Latin America did not increase significantly despite considerable rhetoric about the development of regional economic links.

In type of use, the share of capital imports has increased secularly as part of development efforts, and intermediate imports have been subjected less than others to quantitative restrictions in order not to disrupt utilization of already existing capacity. However, announced intentions to favor mass-consumption imports and limit "postponable" durable imports at times of crisis often have not been carried out.

vi. Generalizing about movements to more liberal phases and changes during such phases in terms of total imports or their composition is limited because there have been differences from phase to phase in the availability of foreign exchange and in the government's over-all economic goals. The same is true of movements to more restrictive phases.

vii. Partial-equilibrium estimates of the reaction of the economy to price-related policies or to QRs often are misleading because there have been sub-

stantial indirect effects that can be captured only by general-equilibrium analysis.

6.1 IMPORT PATTERNS SINCE 1930

6.1.1 Aggregate Merchandise Imports.

GENERAL CHARACTERISTICS.

The catastrophic impact of the Great Depression on the Chilean economy was discussed in section 1.3. In response to that event, restrictive policies on imports were adopted because they were seen as the most effective means of encouraging domestic industry, reducing dependence on the foreign sector, and conserving scarce foreign exchange. This greater degree of restrictiveness has generally been maintained—albeit with variations—in the four ensuing decades (see sections 1.4 and 4.1 above).

This greater degree of restrictiveness may be seen in a number of indices. For example, the ratio of the black-market to the national accounts exchange rate increased from unity before 1931 to levels considerably above that thereafter (except for 1959–61). Again, although data are not available for the calculation of import premium rates before the Great Depression, they presumably were zero; means for phases and subphases after the Second World War, in contrast, were at least 0.50. Likewise, before the Great Depression, the extent of overinvoicing must have been nil, but it apparently has been extensive in recent decades (see lines 1.1.3, 1.1.6, and 1.2.5.1 in Table A.1).

The aggregate impact on imports of the policy of much greater restrictiveness combined with the changes in international market conditions is clear. Imports declined drastically in the 1930s.[1] The mean ratio of imports to GDP fell from 0.52 in 1908–27 to 0.38 in 1928–30 and to a range of from 0.09 to 0.14 in the subsequent phases and subphases (line 1.2.6.7 in Table A.1). On a per capita basis the pre-Depression import levels have never again been attained, despite the existence of significantly higher real per capita incomes! In a very gross sense, then, the objective was achieved of reducing foreign dependence as measured by the average relative importance of imports.

This relative reduction of imports did not imply complete success in lessening dependence on foreign goods, however, even on this gross level.[2] Another part of that goal was to diminish the vulnerability of the economy to fluctuations in imports. Relative variations in imports were, in fact, not decreased.[3] This failure partially resulted from the attempt to maintain a disequilibrium system with overvalued exchange rates. Whenever a short-run increase in the command over foreign resources occurred, the government

found it hard to resist the pressures for increased imports. When the next decrease occurred, the government had to cut back on imports because of the lack of sufficient reserves. In this sense, therefore, the control system itself contributed to rather than reduced import instabilities.

PHASE-COINCIDENT PATTERNS.

Phase-coincident patterns are quite pronounced in the three indices of restrictiveness mentioned above.[4] The mean implicit premium rate for imports dropped for each more liberal phase. The mean ratio of the black-market NER to the national accounts NER, the mean Ffrench-Davis quantitative restrictions index, and mean overinvoicing all declined at every move to a more liberal phase and increased at every move to a more restrictive phase (see lines 1.1.3, 1.1.6, 1.2.5.1, and 1.2.6.2 in Table A.1).

Phase-coincident movements in the constant-dollar value of merchandise imports or in the growth rates of these imports are less clear (Table A.2 and line 1.2 in Table 8.1). The average annual percentage growth rates of imports from the mean of the previous phase or subphase to that of the current one implied by the figures in line 1.2 of Table 8.1, for example, are 1.1 for 1956–58, 6.0 for 1959–61, and 4.6 for 1965–70 (all movements to more liberal phases); 3.0 for 1962–64, and 5.0 for 1971 (both changes to more restrictive phases).[5]

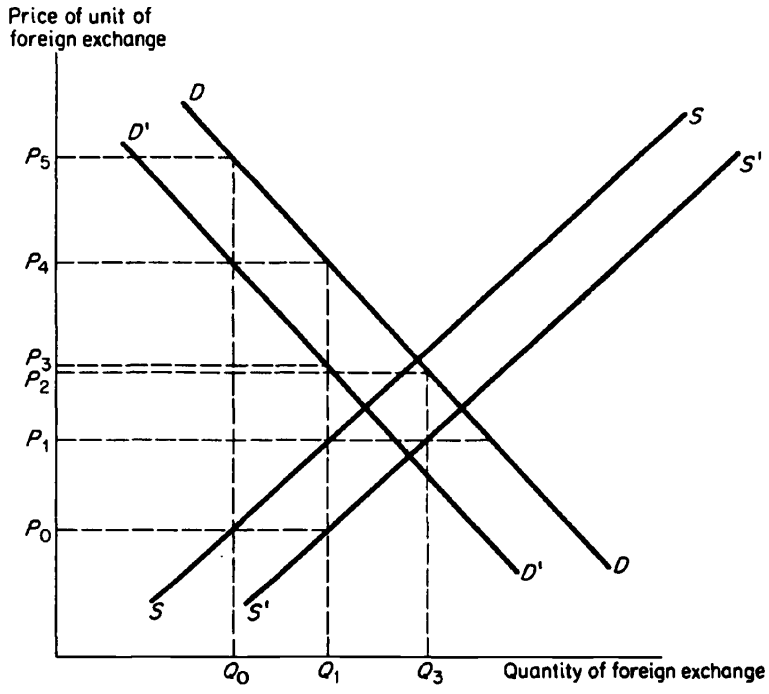
This lack of a clear pattern is not surprising. The explanation is illustrated in Figure 6.1 in a highly simplified supply-and-demand framework for foreign exchange constructed on the assumption that exports and imports face the same PLD-EERs.

Before liberalization the supply and demand curves are *SS* and *DD*, the price of foreign exchange is P_0, the quantity is Q_0, the import premium is P_5-P_0, and the import premium rate is $(P_5-P_0)/P_0$. If the supply and demand curves do not shift with liberalization, an increase in the price of foreign exchange to P_1 results in an increase in the quantity of foreign exchange to Q_1 and a drop in the import premium to P_4-P_1, and in the import premium rate to $(P_4-P_1)/P_1$.

At least in the short run, however, the demand for foreign exchange may shift downward because of domestic recession, or inventory decumulation to reduce levels built up in anticipation of devaluation or because the premium producers receive from import licenses is declining. If *DD* shifts to *D'D'* when P_0 moves to P_1, the new quantity of foreign exchange still becomes Q_1, but the premium and premium rate are lower: P_3-P_1 and $(P_3-P_1)/P_1$, respectively.

Likewise, the supply curve of foreign exchange may shift to the right, at least in the short run, because of expanded capital inflows resulting from liberalization or previous stockpiling of exportables in anticipation of the devaluation. If *SS* moves rightward to *S'S'* (with *DD* remaining at its original location)

FIGURE 6.1



when P_0 increases to P_1, the foreign-exchange supply increases to Q_3, and the premium and the premium rate fall to P_2-P_1 and $(P_2-P_1)/P_1$, respectively.[6]

The supply and demand curves might both shift at the time of liberalization. Also, in the sense that the import premium would decline, liberalization would result if the demand curve shifted to the left or the supply curve shifted to the right even without effective devaluations. (The opposite movements, of course, would imply a higher premium.)

For the 1956–58 liberalization, the mean PLD-EER increased from 3.35 to 4.29 escudos per dollar, the mean import premium rate dropped from 1.43 to 0.83, and mean imports in constant dollars rose very slightly (lines 1.1.6 and 1.1.7 in Table A.1, and line 1.2 in Table 8.1). This configuration of changes suggests that the supply of foreign exchange shifted substantially downward relative to the demand. (In chapters 7 and 8, it is confirmed that this supply curve did indeed shift downward relative to the underlying secular trend.) The data in Table A.1 indicate, for example, that mean net inflows in constant dollars on the current account (exclusive of merchandise imports) fell 15 per cent below the mean for the 1952–55 subphase, largely because of the decline in copper prices.

For the 1959–61 liberalization, the mean PLD-EER remained about the same, the mean import premium fell from 0.87 to 0.58, and mean imports in constant dollars rose substantially. This combination implies a substantial outward shift in the supply curve relative to the demand curve; this implication is confirmed in the next two chapters and in Table 8.1. This time the movement was due largely to expanded exports and net private capital inflows in constant dollars.

Finally, for the 1965–70 liberalization, when the sliding-peg policy was in effect, the mean PLD-EER fell from 4.00 to 3.60 escudos per dollar, the mean import premium dropped from 0.58 to 0.50, and mean imports in constant dollars rose significantly (although not quite as much relatively as in 1959–61). In that case the supply curve shifted far to the right relative to the demand curve primarily because of the copper boom of the late 1960s. Liberalization therefore was possible (at least in the short run) despite the decline in the PLD-EER.

WITHIN-PHASE PATTERNS.

It is particularly noteworthy that in the first year of each of the three liberalization attempts merchandise imports declined in constant-dollar terms even though the four indices mentioned above generally suggest substantial liberalization.[7] The regression for imports in Table A.2 also indicates a significant decline from the secular growth trend in those three years.

For 1965 these falls are understandable in light of the new import approval procedure put into effect in that year, which increased restrictiveness in some respects (subsection 4.1.2).

For 1956 and 1959, the falls in the level of imports are consistent with the analysis of Figure 6.1 and with the declines in the indices of restrictiveness only if the demand curve for foreign exchange shifted far to the left. In fact, a substantial shift may have taken place. Recessions are recorded in both years, with declines in capacity utilization rates and in per capita real GDP. The large decreases in import premiums going to producers also lowered import demand. Furthermore, inventory reductions of importables may have been substituted for current imports (although data do not exist which permit examination of this possibility).

Yet the declines in the value of imports for those two years still remain puzzling—especially for 1959. The downward movements of the demand curve could cause a reduction in the quantity demanded. But if it had moved far enough to do so, the currency would have been undervalued (at least temporarily) unless the supply curve also moved sufficiently to the right. All the available evidence, however, implies that the escudo was overvalued in both those years. Moreover, although the supply curve may have moved to the left in 1956, as is noted above, it clearly moved to the right in 1959.

A second interesting within-phase pattern is the increase in the indices of restrictiveness as the 1956–58 and 1965–70 liberalization attempts faltered. In 1958 imports in constant dollars declined as a result, although they did not do so in 1970. In contrast, at the end of the 1959–61 Phase IV period, there is no indication in most indices that liberalization was reduced before it was entirely abandoned in December 1961. Imports in constant terms also increased until the very end.

Finally, the increase in restrictiveness near the end of the 1965–70 phase, may seem prima facie in conflict with the concurrent reduction in restrictions noted in section 4.1. This apparent paradox is resolved if it is observed that the demand curve for foreign exchange shifted rapidly to the right because of speculative pre-election capital outflows. The result was an increase in restrictiveness as measured, for example, by the premium rate—even though liberalization was continuing in the sense that specific restrictions were reduced.

6.1.2 Disaggregate Merchandise Imports.

Three aspects of goods imports will be discussed: the role of special regimes and of the government, the origin of goods imports, and their end uses.

Role of Special Regimes and of the Government.

The development of a number of special import regimes, which were introduced primarily in the 1950s, was described in section 4.1. Jeanneret [1971:350] reports that by 1960 these regimes affected 41 per cent of Chilean imports, with the regional ones and the regime for CAP being specially significant. Subsequently, the Frei liberalization and rationalization substantially reduced the importance of these regimes. For the entire 1965–70 period they covered only 16 per cent of total import registrations. The relative importance of the regional regimes—especially that for Arica—rose in these years. The Allende government somewhat further decreased the share of special regimes in total imports because the regimes were seen to have negative effects on the distribution of income. Once again, however, the relative importance of those for remote areas increased. Over the past two decades, then, these special import regimes have affected a significant although varying proportion of total imports.

Also considered in section 4.1 was the exclusion of all or part of the trade on government account from the import regimes. As is noted there, such exclusions tended to increase as general restrictiveness intensified and vice versa. Under the Allende government, however, this exclusion became a major factor because of the prior-deposit requirement of 10,000 per cent imposed in 1971. As a result, the government share in registered imports increased from 34 per

cent in 1970 to 44 per cent in 1971 and to 65 per cent in the first eight months of 1972. The composition of imports in this respect, thus, changed radically.[8]

GEOGRAPHIC ORIGIN.

Mean percentage shares of Chilean imports by country of origin are shown in Table 6.1 for her most important suppliers for phases and subphases in 1948–70. It is clear from the table that the United States remained the dominant supplier throughout the period, but declined significantly in importance beginning in the 1960s because the dollar was overvalued for most of the period and because the Frei government was promoting diversification among sources as a matter of ideology and to avoid risk. For similar reasons—as well as in response to changes in the geographical distribution of available commercial credit—under the Allende government the relative importance of the United States as a supplier further decreased.[9]

Over the same period, Japan and a number of European countries increased their shares somewhat, but only the Federal Republic of Germany averaged as much as 10 per cent for as long as a decade. Also, despite the formation of LAFTA and of the Andean Group in the 1960s (see subsection 4.1.8), the share of Latin American sources did not increase substantially in this period. Argentina—and only Argentina among LAFTA members—was among the major suppliers. Even for Argentina, moreover, although a steady

TABLE 6.1
Mean Percentage Distribution of Chilean Imports by Country of Origin for Phases and Subphases of 1948–70

Major Trading Partners	1948–51 Phase II	1952–55 Phase II	1956–58 Phase III	1959–61 Phase IV	1962–64 Phase II	1965–70 Phase III
United States	50	47	50	47	37	38
Federal Republic of Germany (West Germany)	2	8	12	12	12	12
Argentina	7	11	5	8	9	10
United Kingdom	8	6	6	7	7	6
France	2	2	2	3	5	3
Italy	1	1	2	2	2	2
Japan	0	0	2	2	2	2
Netherlands	0	1	2	2	1	2
All others	30	24	19	17	25	25

SOURCE: Calculated from data in IMF and IBRD [1949–72]. The countries are listed in order of their mean shares for the entire period.

rise was recorded, there was no evidence of a strong acceleration in the 1960s.

Under the Allende government, however, once again substantial changes occurred. All imports of LAFTA and Andean origin were excluded from the 10,000 per cent prior-deposit requirement in 1971. As a result constant-dollar approved import registrations from LAFTA increased by 61 per cent in 1971 (with an associated increase of from 16 to 21 per cent in the share of total registrations), and those from the Andean Group increased even more.

End Uses.

Consistent series are available for 1940–66 for the breakdown of imports: consumption goods were 32 per cent of total imports in 1946–65; investment goods, 29 per cent; intermediate goods, 28 per cent; and services, 11 per cent. Consumption goods are further subdivided into staple goods (22 per cent), durable goods (7 per cent), and secondary goods (4 per cent).[10] Investment goods are disaggregated into machinery and equipment (19 per cent) and transportation-related items (10 per cent). Consumption imports averaged slightly less than 4 per cent of total consumption. Investment imports averaged 28 per cent of total investment.

Trends. In section 1.2 it was noted that at least since the 1830s, the secular shift in the composition of imports had been from consumption goods to intermediate and capital goods because of import-substitution policies. In sections 3.1 and 5.1 a description is given of how these policies were continued until the early 1960s, with increased emphasis over the years on import substitution in intermediate-goods production as well.

As a result of these policies, secular exponential growth rates for 1947–65 for the major components of imports were as follows: transportation-related capital goods, 14 per cent; machinery and equipment, 8.8 per cent; secondary consumer goods, 5.8 per cent; staple consumer goods, 4.5 per cent; durable consumer goods, 4.0 per cent; and intermediate goods, 1.5 per cent (see Table A.2, first column). The secular shift, thus, clearly was from intermediate goods to capital goods, with consumption goods in between. The rapid increase in capital goods imports reflected increasing dependence on foreign machinery and equipment in development programs.[11] In substantial part the emphasis on capital imports was due to the efforts of CORFO.[12]

The moderate increase in consumption goods imports was due to the constraint by the exchange-control system of rapidly rising demands for income-elastic durable and secondary goods, at the same time that foreign products were being substituted for domestic food. The authorities apparently did not lose control of the system, as Huddle [1972a:5] claims happened in Brazil, where low-priority consumer imports expanded more rapidly than equipment imports.

The low rate of growth of intermediate goods imports is surprising. In Table 5.2, the ratios of PLD-EER(PI)s for these goods have a slight secular upward trend. But it is not sufficiently pronounced to imply that such items were in increasingly short supply, nor that protection for them rose greatly during this period. Section 5.2 does contain a suggestion that EPRs for intermediate goods increased, but not before the mid-1960s. In any case, the growth of intermediate imports was much less than expected, given the frequent characterization of import substitution for consumption goods as a device leading to increased dependence on intermediate imports. On the other hand, the slow growth may only reflect the fact, discussed in Chapter 10, that most of such import substitution took place before World War II.

Phase-Coincident Patterns. Mean shares of imports by the three major categories are shown in lines 1.2.1.1–1.2.1.3 of Table A.1. The most immediate feature of the figures shown is that they are not very systematic for movements either to more liberal phases or to more restrictive ones. In the 1956–58 movement toward a more liberal phase, the weight of import shares shifted substantially from intermediate to investment goods; for 1959–61 it shifted somewhat toward consumption goods; for 1965–70, it shifted somewhat toward intermediate imports. In each case the movements differed, depending upon the details of the policies of over-all liberalization plus stabilization (see sections 1.3 and 4.1 and Chapters 5 and 13).

For the movements toward more restrictive phases there is seemingly somewhat more consistency in that in both 1962–64 and 1971[13] the share of consumption imports increased. However, in 1962–64, the rise in the consumption share of imports was entirely at the expense of intermediate inputs; the proportion of investment-goods imports remained unchanged because the Alessandri government continued to emphasize infrastructural development. In 1971, the share of capital goods plummeted, raising not only the share of consumption, but—even more—that of intermediate inputs.[14] The short-run consumption and capacity-utilization gain was being bought in part at the price of decreased long-run capacity.[15]

In Table A.2 further evidence is provided about phase-coincident changes in the exponential growth rates of various import categories during 1947–65. According to those estimates, phase-coincident deviations of consumption imports were limited. Declines for staple and durable goods are indicated for the Phase II period before 1956 and for durables during the Phase III period of 1956–58, but only the second of these three is significantly nonzero even at the 10 per cent level. Transportation-related investment goods imports have a positive deviation in the 1946–58 Phase III years and a negative one in the 1962–64 Phase II period, but only the latter is significantly nonzero at the 10 per cent level. Intermediate goods has the most significant phase-coincident

deviation in growth rates, with negative values for both the Phase II years before 1956 and the 1956–58 Phase III period. These deviations from the secular trend are largely negative and concentrated in the phases before 1959. As is the case for mean shares, however, there is no systematic relation between these deviations and movements to more liberal or more restrictive phases.

Within-Phase Patterns. In the first year of liberalization attempts, the composition of imports tended to shift from capital goods[16] and staple and durable consumer goods toward secondary consumer goods and intermediate goods.[17] Secondary consumption imports gained more relatively because they had been more discriminated against in the preceding Phase II periods. Intermediate goods gained more relatively because of the attempt to avoid production declines occurring in response to the over-all programs of liberalization plus stabilization.

During subsequent liberalization phases, however, the share of intermediate imports declined. These falls reflected policies favoring increased consumption imports intended to stem inflation and increased capital goods imports intended to promote industrial development.

In the last year of both liberalized and restrictive phases, finally, the share in total imports of both consumer and producer durables increased regularly except for transportation-related investment imports in 1958. One possible explanation for the pattern of increase is that demand for durables increased because of uncertainty and the often associated expectations of devaluation generated by the faltering of the prevailing exchange control regime. Because of this same faltering, at least part of the increased ex ante demand was satisfied by imports.

Variations in Trend. As a result of both phase-coincident and within-phase changes, fluctuations in some of the import subdivisions have been considerable. The ratio of the standard deviation from the secular trend of imports in a category to the mean for that category gives an index of the degree of relative variation. The index for intermediate goods is 0.10; machinery and equipment, 0.12; staple consumer goods, 0.20; durable consumer goods, 0.20; secondary consumer goods, 0.28; and transportation-related investment goods, 0.52.

One function of the index is to evaluate the success of the government in restricting particular categories of imports. In times of foreign-exchange shortages, the Chilean government often indicated its intention of restricting "postponable" imports, i.e., primarily consumer and producer durables, but also secondary consumption goods. If the government's intentions are carried out, ceteris paribus, the imports restricted will show relatively large variations. The ordering indicates partial success.[18] Three of the four postponable cate-

gories had the three highest indices. However, the indices for consumer durables and for staple consumer goods are identical, and the index for machinery and equipment, moreover, is the second lowest of all.

Another point to notice is that the ranking of subsectors here is the same as the ranking by relative fluctuations in PLD-EER(PI)s given in section 5.1.2 (the subdivisions there, in increasing order, are intermediate goods, consumer goods, and investment goods).[19] This coincidence should not be surprising, since fluctuations in imports were the major source of fluctuations in PLD-EER(PI)s.

Finally, to judge by the index, the government avoided disrupting production in industries using imported intermediate products: this category has the lowest index of variation of the six shown.

Changes in Percentage Shares. The subsectoral mean percentage distribution for consumption, investment goods, and intermediate imports is shown in Table 6.2 for 1960–61, 1962–64, and 1965–68.

Among consumption imports the most striking feature is the substantial and growing relative importance of processed food items. This trend continued in recent years under the Allende government, moreover, as evidenced by a 76 per cent increase in the current-dollar value of approved registrations for food and beverages in 1971. This increasing dependence on imported foodstuffs has preoccupied a number of Chilean economists and government officials for some time. The high EPR long granted to this subsector (Table 5.3), however, has not sufficiently speeded up the growth of domestic production.

A second noteworthy feature is the substantial fall in the share of clothing and footwear. That this fall occurred despite the substantial decline in the EPR for this subsector in the 1960s (Table 5.3) is of considerable interest. Apparently domestic producers were able to meet the competition from cheaper imports; so the latter did not flood the market. If so, this response was especially impressive because this subsector had enjoyed substantial protection for decades.

Finally, the effect of increased restrictiveness in 1962–64 was to cut back the share of vehicle imports below what it was in the preceding or succeeding more liberal phases.

Among investment goods the most notable pattern is a shift from transportation equipment to nonelectrical machinery. Presumably this reflects expanded domestic production of some components of the former.

Among intermediate goods the importance of agricultural and chemical products merit note. The former had a relative phase-related increase in the more restrictive years of 1962–64. The latter increased relatively rapidly throughout this period.

TABLE 6.2
Percentage Composition of Chilean Consumption, Investment, and Intermediate Imports, 1960–61, 1962–64, and 1965–68

	1960–61 Phase IV	1962–64 Phase II	1965–68 Phase III
Consumption goods	100	100	100
Processed foods	32	40	45
Clothing and footwear	14	8	4
Vehicles	12	10	14
Metal-fabricated products	7	6	4
Books and other printed matter	5	8	8
Agricultural products	5	5	7
Rubber products	1	2	5
All other	24	21	13
Nonelectrical machinery	39	49	49
Investment goods	100	100	100
Transportation equipment	35	27	25
Electrical machinery and apparatus	11	11	13
All other	15	13	13
Intermediate goods	100	100	100
Agricultural products	22	25	22
Chemicals	19	22	25
Machinery intermediate imports	10	10	11
Crude petroleum and gas	9	4	5
Basic metals	7	7	6
Petroleum and coal derivatives	5	4	4
Food products	5	6	3
All others	23	22	24

SOURCE: Based on unpublished ODEPLAN data which are consistent with the input-output table in ODEPLAN [1970]. The subsectors are listed in order of their importance in 1960–61.

6.2 EFFECT OF THE REGIMES ON IMPORTS

Up to this point, the focus of this chapter has been on patterns of imports in the decades since 1930, with only general suggestions offered about the nature of responses to different aspects of various regimes. What follows now will be a systematic analysis of these reactions, using specific econometric structural relationships as the framework.

6.2.1 Partial-Equilibrium Responses.

Single-equation estimates of import functions for 1947–1965 are shown in Table 6.3. The disaggregation is the same as the one discussed under end uses in subsection 6.1.2, above. On an over-all level the results in the table seem reasonably satisfactory. The point estimates have the anticipated signs. No undue problems of serial correlation are apparent (but see note a to the table). The corrected coefficients of determination indicate that the hypothesized determinants are consistent with from 83 to 97 per cent of the variance in the dependent variables. Greater consistency is implied for investment goods imports than for consumption and and intermediate imports.

In the basic underlying model current real imports are hypothesized to depend on four factors: relative prices, other demand variables, the degree of policy restrictiveness, and lagged imports.

Relative Prices.

Relative price terms include the levels (or their inverses) and standard deviations of PLD-NERs, PLD-EERs, and PLD-EER(PI)s.[20] Since these different terms may capture somewhat different features of the regimes, more than one price term is allowed in each relation.

The estimates suggest significant and substantial responses to relative price levels among some imports. For example, the implied elasticities at the point of sample means for a change in the general NER are −0.9 for secondary consumption goods, −1.4 for transportation equipment, and −0.3 for intermediate goods.[21] For these three categories, therefore, price-related policies instead of quantitative restrictions could have been used to control the balance of payments. Such a choice would have been preferable because it would have resulted in more flexibility, less fluctuation in the related PLD-EER(PI)s as supply and demand curves shifted, and less income redistribution toward importers.

For those same three import categories, the secular decline in the over-all PLD-EER caused a secular rise in the demand for imports. The 41 per cent fall in the PLD-EER for imported goods between 1946 and 1970 (column 1 in Table 5.1) and the size of the elasticities listed above, for example, imply respective demand increases of 37, 57, and 12 per cent for the three categories, ceteris paribus. Such intensified demand pressures added substantially to the post-World War II foreign-exchange problems.

For staple and durable consumption goods and for machinery and equipment, in contrast, there is no evidence of a significant real import response to relative prices. For durable consumption goods and machinery and equipment, the extensive use of quantitative restrictions may obscure price responses. However, variables are included in the relations to represent policy restrictiveness

TABLE 6.3

Chilean Real Import Functions[a] for Major Uses of Goods, 1947–65

Type of Import	Relative Prices[b]			Other Demand Factors		
	Level		Stand.	Private Consump-	Real Total	Sector-
	1	2	Dev.	tion	Credit	Specific[c]
Consumption goods						
Staple				0.0344[f]	0.0506	−369.0
				(6.0)	(3.4)	(1.7)
				[1.3]	[0.8]	[−1.2][g]
Durable				0.0099[f]	0.0296[f]	
				(6.6)	(5.0)	
				[0.8]	[0.5]	
Secondary	−15.6			0.0019[f]		189.0
	(2.5)			(1.3)[h]		(4.1)
	[−0.9]			[0.7]		[4.7]
Investment goods						
Machinery and equip.			45.0			
			(1.2)[h]			
			[0.1]			
Transport. equip.	182.0	59.0[b]				17.4
	(3.0)	(1.2)[h]				(10.4)
	[1.1]	[0.3]				[1.3]
Intermediate goods	−161.0				0.0182	
	(2.4)				(1.4)[g]	
	[−0.3]				[0.1]	

Type of Import	Policy Restrictiveness			Lagged Imports	Con- stant	$\bar{R}^2$ SE	DW
	Ffrench-Davis QR Index	Export Capacity to Import[d]	Sector-Specific[e]				
Consumption goods							
Staple	−1,207.0				1,324.0	0.88	2.2
	(2.3)				(2.4)	44.6	
	[−3.8]						
Durable			−20.0	−0.532		0.87	2.2
			(4.8)	(2.6)		11.4	
			[−0.2]				
Secondary	−107.0		−13.6	0.418		0.83	1.9
	(2.8)		(1.9)	(2.2)		8.3	
	[−3.5]		[−0.1]				
Investment goods							
Machinery and equip.	−703.0	0.0779		0.678	577.0	0.97	2.4
	(2.6)	(4.6)		(7.6)	(2.2)	23.1	
	[−7.4]	[2.1]					
Transport. equip.	−1,520.0	0.239	−1,891.0		2,988.0	0.94	2.2
	(4.1)	(3.0)	(5.2)		(8.0)	23.8	
	[−9.1]	[−0.0]	[−11.3]				
Intermediate goods		0.113		−0.322	5,549.0	0.86	2.8
		(4.7)		(1.4)[g]	(3.6)	34.0	
		[0.4]					

Notes to Table 6.3

$\bar{R}^2$ = coefficient of multiple determination adjusted for degrees of freedom.

SE = standard error of estimate.

DW = Durbin-Watson statistic.

a. Data sources and estimation techniques are discussed in Chapter 2 and in Appendix A. The figures in parentheses are the absolute values of the t statistics. All point estimates are significantly nonzero at the 5 per cent level unless otherwise noted. The figures in brackets are the long-run elasticities at the point of sample means. These elasticities are long run in the sense that all adjustments due to the inclusion of lagged imports are assumed to have occurred. For such relationships in which the lagged import value is included, the Durbin-Watson statistic is biased toward 2.0.

b. The variable used for secondary consumption goods is the corresponding PLD-EER lagged one year, under the assumption that average tax and import deposit cost rates were applicable. For transportation equipment at level 1, the variable is the inverse of the PLD-EER(PI) based on wholesale price indices; at level 2, the inverse of the PLD-EER(PI) lagged one year. The variable used for intermediate investment goods is the ratio of the PLD-NER calculated from unit values of imports to the deflator for inventories; for machinery and equipment, it is the standard deviation of the PLD-NER (see text).

c. The variable used for staple consumption goods is the ratio of current to lagged values of total inventory; for secondary consumption goods, the ratio of wage income to total income; for transportation equipment, a time trend.

d. Nominal value of exports divided by unit value of imports. For transportation equipment, the ratio of net foreign-exchange reserves held by the banking system to the unit value of imports was used with a one-year lag.

e. The variable used for durable consumption goods is the ratio of the black-market NER to the national accounts NER; for secondary consumption goods, a dummy variable with a value of 1.0 in 1962–64 to represent the reversion to a Phase II regime in those years; for transportation equipment, the lagged Ffrench-Davis QR index.

f. Lagged one year.

g. Significantly nonzero at the 10 per cent level.

h. Significantly nonzero at the 15 per cent level.

(see below). Under the assumption that in fact they do so relatively well, significant coefficents for any import price responses should have been obtained even if quantitative restrictions were at times effective.[22]

For the three import categories considered in the previous paragraph, therefore, price-related policies could not have been so easily substituted for quantitative restrictions to enforce balance-of-payments goals. Likewise, the secular decline in the PLD-EER did not generate substantial additional pressures for foreign exchange for use in these categories.[23]

The standard deviation of relative price terms over the past three years is included in the basic model as a proxy for risk associated with future price movements. Table 6.3 includes almost no evidence of a risk-aversion response. Only for machinery and equipment is the relevant coefficient significantly nonzero even at the 15 per cent level. Even for this category the implied extent of hedging against uncertainty by importing more when risks of future price changes are higher is very small.

OTHER DEMAND VARIABLES.

Other demand variables included are selected activity indices (a time trend; the ratio of current to lagged stocks; consumption, for categories of consumption; investment, for categories of investment imports and GDP for intermediate imports),[24] total real credit, and the distribution of income between labor and other factors.

Activity indices have significantly nonzero coefficients for consumption goods and transportation equipment. Total private consumption enters into all three categories of consumption imports. The distribution of elasticities across these categories, however, is somewhat surprising. In contrast to usual Engle-curve patterns, the estimate for staple goods is greater than 1.0 while that for durable goods is less than 1.0. This inversion of the normal ordering may be due to the more extensive use of quantitative restrictions for the latter category. The measure of inventory accumulation (see note d of the table) has a significantly nonzero, inverse relation to the level of imports of staples. Apparently, high inventory accumulation rates lessen the current demand for these imports, but there is no evidence of a significant impact on other categories. Finally, a time trend representing secular shifts in demand is significant for transportation equipment.

Total retail credit is emphasized as an important variable by the Instituto de Economía [1963:73].[25] It has significantly nonzero coefficients for staple and durable consumption goods and for intermediate goods (with implied elasticities descending in the order of presentation). A very direct link, thus, existed between internal monetary policy and international economic flows. Note, however, that there is no evidence of this direct link between monetary policies and investment goods imports. This last result accurately reflects the predominantly short-term nature and use of Chilean bank credit.

Pinto [1962:88] hypothesizes that a shift in the distribution of income from nonlabor factors to labor would reduce Chilean imports. The data in Table 6.3 provide no support for this hypothesis. An income distribution variable is significantly nonzero only for secondary consumption imports. In that case the estimate implies an *increase* in imports as income shifts from nonlabor factors to labor.[26]

POLICY RESTRICTIVENESS.

Policy restrictiveness is represented by five variables: the Ffrench-Davis quantitative restrictions index; the export capacity to import; the net foreign-exchange reserves held by the banking system, deflated by the unit value of imports; the ratio of the black-market NER to the national accounts NER; and phase-specific dummy variables. The first and fourth of these are discussed in

Appendix A. The second and third are included because restrictions were increased when reserves fell.[27] The last makes it possible to explore specific restrictions (or their lack) for various import categories during particular phases.

The results in Table 6.3 indicate that significant and substantial responses to policy restrictiveness occurred for all types of imports: The Ffrench-Davis quantitative restrictions index is significantly nonzero for all but consumption durables and intermediate goods. The export capacity to import has significantly nonzero coefficients for machinery and equipment and intermediate imports. The ratio of net foreign-exchange reserves held by the banking system to the unit value of imports has a significant coefficient for transportation equipment. The ratio of the black-market NER to the national accounts NER has a significantly nonzero coefficient for durable consumption goods. A dummy variable for the reversion to a Phase II regime in 1962–64 has a significantly nonzero coefficient for secondary consumption imports, implying an average reduction of 17 per cent for the three years.

Quantitative restrictions, therefore, had pervasive and substantial impacts. In fact, they apparently were the only effective policy instrument for staple and durable consumption goods and for machinery and equipment imports. Because several different indices of quantitative restrictions are used in the estimates, the relative impact on the various categories of imports cannot be characterized with complete confidence. However, I would suggest that the impact of the QRs was greatest on transportation equipment, followed by machinery and equipment, and then by stable and secondary consumption goods, with the impact on durable consumption goods and intermediate goods not clear. On this basis, QRs can be characterized as favoring consumption goods, at least the nondurable kinds, over investment goods.

LAGGED IMPORTS.

A priori lagged imports may have either positive or negative coefficients. A positive coefficient reflects Houthakker-Taylor [1970] habit formation: more than one year is needed for actual imports to adjust to desired levels.[28] A negative coefficient indicates a Houthakker-Taylor inventory effect: stocks built up from previous imports diminish the demand for current imports.[29]

The estimates in Table 6.3 imply the dominance of the inventory effect for durable consumption goods and intermediate imports. They indicate the dominance of the adjustment or habit formation effects for secondary consumption goods and for machinery and equipment imports. For the other two categories the two effects tend to nullify each other. A priori such a pattern does not seem unreasonable.

One implication of this pattern is that, under liberalization, staple and durable consumption imports, transportation imports, and intermediate imports all adjust rapidly to new levels. Secondary consumption goods and ma-

chinery and equipment adjust much more slowly. Ceteris paribus, the result would seem to be more probable relative to increases in EPRs for domestic production of the last two categories than for the others, since in those two, competitive imports adjust more slowly than intermediate imports.

6.2.2 General-Equilibrium Reaction of Imports.

The model described in Chapter 2 provides a tool for examining the general-equilibrium impact of specified changes, ceteris paribus. The resulting elasticities or proportional deviations are shown in Table A.11 for exogenous changes in price-related variables and in QRs.

6.2.2.1 Price-related Changes.

Simulation 1.2 in Table A.11 involves variations of equal proportion in all import prices and unit values for the first year only. The direct effects of these changes are primarily in imports and various prices.

The total general-equilibrium import elasticity is −0.2 in the first year and −0.3 in the third year. On the basis of these low values, it is questionable whether price-related policies can be effectively used to limit Chilean demand for foreign exchange for imports. Of course it is always possible to hypothesize that radical changes in policies (e.g., elimination of quantitative restrictions) would alter behavior and substantially increase these elasticities. But it is the case that such a hypothesis is very speculative and is not based upon actual Chilean experience.

The underlying composition of imports is altered substantially in this simulation. Shifts reflect the combination of positive first-year elasticities for capital goods and staple consumption goods and fairly large (in absolute value) negative ones for intermediate imports and secondary consumption goods. The indirect effects reinforce the direct effects with the result that the absolute values of the general-equilibrium elasticities exceed those of the partial-equilibrium elasticities for some categories, e.g., intermediate and secondary consumer imports. Examples of the opposite kind also are found, e.g., transportation-related imports. In either case, the possibly misleading nature of partial-equilibrium estimates is illustrated. The other simulations discussed below provide further examples of the same phenomenon.

In simulation 2.1.1 equal proportional changes are assumed in all legal exchange rates in the first year only. This assumption implies direct impacts on exports in addition to those on imports and prices. The general-equilibrium import elasticity is −0.1 for both the first and third year. These estimates are lower in absolute value than those in the previously discussed simulation. The lower values reflect the much more rapid adjustment of domestic prices in this case and the consequent neutralization of much of the relative price effect.

Domestic prices adjust more because of direct links to export prices, changed competition for domestic production from changed exports, and, most important, alterations in the money supply due to larger variations in foreign reserves.

Such results lead to even greater doubt about the effectiveness of devaluation in restraining demand for foreign exchange for imports. They also point to the importance of neutralizing the effects of changes in reserves on the money supply as part of any devaluation effort. Unfortunately, however, at least historically the Central Bank has not had enough control over the money supply to have been very effective in its neutralization attempts (see Chapter 9).

In simulation 2.1.3, the legal exchange rates in all years are represented by the Bacha and Taylor [1973] equilibrium exchange rates. For the first three years this implies respective increases of 45, 35, and 61 per cent above the actual national accounts NER. Devaluations of this magnitude may seem large, but they occurred several times in the sample period and thereafter (see Chapter 3). Given the time required for adjustments, of course, the maintenance of higher exchange rates over the years results in larger effects than does the one-period change of the first two simulations.

This simulation once again reinforces doubts previously expressed concerning import elasticity. For the rather substantial NER devaluations hypothesized, imports decline only 3 per cent in the first year and 5 per cent in the third. The implied elasticities, moveover, are generally smaller in the first year than are those for simulation 2.1.1. Diminishing returns to devaluation, thus, apparently exist.

Simulation 2.2 explores the impact of multiplying the import tax function by 0.9 in the first year only. As expected, given the results of the previous simulations, the effects on imports are quite minor. One interesting feature of this experiment, however, is that over-all government tax revenues in real terms actually increase slightly. The decline of 9 per cent in import taxes is offset by increases in other tax collections. Among the most important is a 4 per cent rise in taxes derived from large-scale mining because of induced additional exports.

6.2.2.2 Changes in Quantitative Restrictions.

Simulation 2.3.1 investigates the results of equal proportional changes in all the QR indices in the first year only. The direct impact of these indices is primarily on various imports and price levels in the model.

Total imports have a substantial inverse initial response to changes in the QR indices. The first-year elasticity is -2.4. By the third year, in contrast, the elasticity is almost zero. QRs thus seem to be quite effective in restraining foreign-exchange demands in the short run.

On a more disaggregate level the first-year responses also are all elastic, except for intermediate imports. The third-year responses are all less in absolute value than the first-year responses, except for secondary consumer imports.[30]

The ordering of the absolute value of the first-year reactions across import categories is transportation-related investment goods, secondary consumer goods, habitual consumer goods, durable consumer goods, machinery and equipment investment goods, and intermediate goods.[31] This ordering is different in some important respects from the ordering suggested by the partial-equilibrium estimates in Table 6.3—especially in the case of machinery and equipment imports.

This ranking provides some basis for evaluating the goals frequently mentioned in regard to the use of quantitative restrictions. The intention has been to use them in periods of foreign-exchange crises to limit luxuries such as vehicle imports, but not to limit the availability of crucial imported intermediate inputs. The high rank of transportation-related imports and the low rank of intermediate imports are consistent with this. Other intentions have been to favor mass-consumption imports in order to limit measured inflationary pressures and to restrict "postponable" durable consumer goods and investment goods imports. The ranking of staple consumer goods ahead of durable consumer goods and machinery and equipment is not consistent with these objectives.

Quantitative restrictions thus appear to have been a powerful tool in restricting short-run demands for foreign exchange. The resulting compositional changes, however, have not always been the ones intended.

NOTES

1. Subsequently, however, the mean rate of growth of imports for subphases and phases generally was positive except in 1962–64 (line 1.2.4.1 in Table A.1). A comparison of relation 1.2 (see section 1.2) with that for total imports in Table A.2, moreover, suggests that the mean exponential secular growth rate for 1940–65 was not less, and was possibly more, than for 1860–1927.

2. As is discussed below, moreover, compositional changes have differed in certain respects from those officially sought.

3. The mean absolute proportional deviation from the level implied by the exponential trend for the constant-dollar value of imports in 1931–55 is 0.19 (with a standard deviation of 0.23). This is not significantly less than the mean value of 0.20 (with a standard deviation of 0.20) reported in section 1.2 for the 1878–1927 phase (under the same assumptions as are indicated in section 1.2).

4. If this statement were not true, of course, serious questions would arise about the delineation of the phases.

5. The fairly large increase in the constant-dollar value of merchandise imports in 1971 may raise the question whether or not in fact the regime became as restrictive

in that year as is claimed. The answer is "yes," despite the large increase in real merchandise imports, for three reasons. First, the regime became much more restrictive during the year, but high rates of imports or import registrations occurred before the new restrictions were announced because of the overvalued exchange rate and uncertainty concerning future import policies. Second, many of the most restrictive changes did not affect merchandise imports as much as invisible imports and capital movements. Third, the direct impact of the new quantitative restrictions altered the composition of imports much more than the level (see below).

6. Whether the premium with a supply shift above is greater than that with a demand shift alone obviously depends upon the magnitude of the shift and the slope of the curves.

7. The only exception is a slight increase in the Ffrench-Davis quantitative restrictions index in 1965. Also, although a slight decline in overinvoicing occurred in 1959, the level still remained relatively high.

8. One rationale for this shift given by the government was that it would have greater bargaining power by dealing as a monopsony with foreign suppliers. Cauas and Corbo [1972:32], however, claim that the uncoordinated purchases of a multitude of state agencies did not permit the government to exploit this power.

9. For example, the source of all mining-related imports, which totaled $36 million for large-scale copper companies alone in the first year of nationalization, was switched from the United States to Europe.

10. Staple goods are essential mass-consumption items (especially food). Secondary goods are nonstaple, nondurable products.

11. Over this same period the ratio of imported to total capital increased at a mean annual rate of 4.6 per cent.

12. CORFO was particularly important in the development of national steel (CAP), electrical (ENDESA), and petroleum (ENAP) enterprises, but also in many other developments which depended heavily on foreign capital goods.

13. According to Allende's annual message to Congress on May 21, 1973, as summarized in CORFO [1973a: June 8, p. VIII], relative price increases for food imports underlay part of the increased consumption share. He stated that the same physical volume of food imports cost $50 million more in 1971 than in 1970 and $120 million more in 1972 than in 1970.

14. Early in 1972, however, according to de Onis [1972a:4], the government began to cut the share of intermediate imports because of foreign-exchange shortage. De Castro [1972:53] also predicted that the rate of growth of intermediate imports in that year would be less than 70 per cent of the over-all import growth rate.

15. In the Phase II years before 1956, a similar pattern favoring the short run also often existed. For example, Mamalakis [1965:133] reports ECLA estimates that in 1953–54 exchange-rate-policy subsidies averaged 44.7 per cent for consumption imports, 41.5 per cent for fuel imports, 37.2 per cent for raw materials imports, and 22.3 per cent for investment goods imports.

16. The only significantly nonzero deviations from the secular growth rates reported in Table A.3 for the first year of liberalization attempts are the negative ones for capital goods imports.

17. There are several exceptions: in 1965 staple consumer imports increased relatively; in 1956, capital goods imports rose, and intermediate imports fell relatively.

18. In contrast, the Instituto de Economía [1963: Table 243] suggests that for the shorter period of their study, i.e., 1950–59, variations in postponable imports exceeded those in nonpostponable imports.

19. If the categories of machinery and equipment and of transportation-related investment goods are combined, the index of variation exceeds a similar one for combined consumption imports.

20. PLD-EERs give the imported price relative to domestic alternatives for the importer if the appropriate domestic price is used as the deflator. Therefore, they are the most appropriate of these relative prices to use in import functions. As is indicated in section 2.2 and chapters 3 and 5, however, PLD-EERs are very costly to estimate for Chilean disaggregates, as are the import premiums—which also would be of interest in these functions. Alternative relative prices, hence, are utilized in some of these functions.

21. These elasticities are based on the assumption that EERs change proportionately to the general NER. For transportation equipment the sign of the elasticity is negative despite the positive coefficients in Table 6.3 because those coefficients are for the inverse of the levels.

22. Multicollinearity with other variables also might make such price responses difficult to identify. It does not appear to be a problem, however, in these cases.

23. The differences in price responses among the six import categories, moreover, point to the difficulties of estimating Chilean import functions on even more aggregate levels, as Corbo [1971:192–196] and Ffrench-Davis [1971:297–314] have attempted. The relatively low price elasticities obtained by the latter apparently in part reflect the aggregation over a wide range of policies and over responses which vary among categories.

24. The inclusion of investment for investment imports might cause problems of interpretation if Mamalakis [1971b] is correct that the level of investment depended on the level of such imports, and not vice versa. This activity index does not have a significantly nonzero coefficient in any case, so it is not included in the results in Table 6.3.

25. Imports in fact are determined simultaneously with total credit. The latter depends partially on the size of foreign-exchange reserves which, in turn, depend partially on imports.

26. The increase in consumption imports which accompanied the redistribution of income in favor of labor under the Allende government also may raise doubts about Pinto's hypothesis. At the same time, however, expectations were altered drastically in a way that might account for the import splurge.

27. Díaz-Alejandro [1974] uses the alternative hypothesis that restrictions were increased when reserves fell below some desired level. The more constant the desired level, the more this hypothesis is like the one in the text for estimation purposes.

28. Another necessary assumption is that the adjustment process is well represented by a geometric distributed lag.

29. The Houthakker-Taylor inventory effect cannot be derived exactly from neo-classical theory. This should be intuitively clear from the lack of an interest rate in their formulation. The added precision obtained by utilizing a theoretically somewhat more satisfactory formulation in this case, however, would be misleading because of the quality of the data. Therefore, the original Houthakker-Taylor form is adopted.

30. For this category the lagged adjustment in Table 6.3 results in a two-year cycle in simulation 2.3.1. Machinery and equipment imports undergo an even slower adjustment in the estimates in Table 6.3, but a cycle is not generated for this category.

31. The largest elasticity recorded, however, is a value of -9.2 in the second year for transportation-related investment imports.