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CLARK W. REYNOLDS

CHANGING TRADE PATTERNS AND TRADE POLICY IN MEXICO: SOME LESSONS FOR DEVELOPING COUNTRIES*

Mexico's growth during the past three decades has been outstanding. Recent recessions have been mere inflections in the growth rate. The threat of inflation so real a decade ago is being countered by firm policy measures of the Central Bank and relative fiscal restraint. Although the balance of payments, a bellwether of both internal and external trade conditions, has reflected strains within the economy from time to time, it has retained such a high degree of flexibility on both current and capital account that its stability remains firm. Since the sudden increase in trade restrictions in the late forties and early fifties, accompanied by devaluation of the exchange rate in 1948/49 and 1954, there has been no subsequent devaluation and little in the way of general tariff increases. Meanwhile the structure of trade is undergoing major changes as the economy continues to expand, and much of this is attributable to an array of public policies favoring import substitution.

The purpose of this paper is to begin to describe, explain, and evaluate the changes in the pattern of trade and trade policy which have occurred since World War II, and to set these events in historical perspective. I have been fortunate in being able to rely upon the experience of economists, public officials, and businessmen, as well as the data accumulated during research on the long term structure and growth of the Mexican economy.¹ As the Romans came to realize, international trade in ideas is frequently of greater value than the exchange of goods and services. In this respect I am indebted to many Mexican friends who comprise a "new group" of economists dedicated to the free exchange of information and analysis. Without their assistance this paper and the larger study on which it is based could not have been written.

THE PRESENT TRADE POSITION OF MEXICO IN HISTORICAL PERSPECTIVE

Faced with the demands of a rapidly increasing population for improved levels of living, the Mexican government has attempted during the past half-

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¹ An expanded version of this study will appear shortly as Chapter 6 in 24.

century to transform an economy which had relied for centuries on the exportation of natural resources and the cultivation of subsistence crops. The Revolution of 1910 did not inaugurate a new spirit of modernization and technical progress. This was a major policy of the Díaz administration since the 1880's. Both Díaz and his successors recognized that Mexico had long since fallen from her envied colonial position as the "Jewel in the Crown of Castile." Both the Díaz and post-revolutionary administrations were determined to redeem the past. The major difference between pre- and post-revolutionary policy involved a shift from a more simple goal of economic growth to one which included income distribution, national economic integration, and broader social participation in the development process. The programs which resulted from this new and more complex set of national objectives proved to have notable effects on the level and pattern of both internal and external trade.

The Mexican economy in 1910 was divided into a cluster of social and economic enclaves. Foreigners and a select group of local oligarchs owned a large share of productive resources. Were one willing to accept the unequal distribution of income resulting from these conditions, it might be possible to conclude that resource allocation was relatively "rational" during those years and that the market mechanism was being permitted to work freely. But rationality in this narrow sense takes as given a situation in which the vast majority of Mexican society was both politically and economically disenfranchised. What might have been economic equilibrium in 1910 resulted in sharp political disequilibrium. Despite their impressive rates of growth, traditional exports during the Porfiriato had neither unified national markets nor broadened the distribution of income sufficiently to improve general welfare or prevent civil war, the direct and indirect effects of which ultimately cost billions of pesos and over a million lives.²

The Revolution disrupted an entire decade from 1910 to 1920. Once peace was restored, the government could no longer afford the luxury of returning to unrestrained foreign trade, even though alternative policies might mean a slower short-run rate of growth. I have estimated elsewhere that in the absence of revolution and subsequent reforms in public policy, GDP (Gross Domestic Product) would have been between 12 per cent and 61 per cent higher in 1940 and per capita GDP between 2 per cent lower and 18 per cent higher in that year than was actually the case. Since well over half of this difference in total GDP could be attributed to disease and armed conflict which had greatly reduced the size of the labor force by 1920 (a heritage of the laissez-faire economic and social policies of the Porfiriato), the cost to the economy of post-revolutionary policy seems not to have been exorbitant and the level of per capita product was recovered by the early forties.³ The cost was reflected primarily in a slower rate of growth of exports than would have otherwise occurred, especially after 1925 and particularly between 1925 and the early 1930's.

² The "Porfiriato" refers to the long dictatorship of General Porfirio Díaz, the last decade of which (1900-10) figures in this essay.

³ See Reynolds, *The Mexican Economy: Twentieth Century Structure and Growth*, Appendix B, "The Opportunity Cost of the Mexican Revolution," prepared with the assistance of Margery Coen (24). Further analysis suggests that institutional changes attributable to the Revolution help to account for increases in the subsequent rate of growth of GDP which are not explained by traditional economic inputs (23).

Based on the performance of similar export industries in the rest of Latin America, the policies of post-revolutionary administrations had a strong retarding influence on Mexican exports of agricultural, mining, and petroleum products after 1928. But during the early twenties the fact of revolution had just the opposite effect on these sectors. During the Obregón and Calles administrations (1920 to 1928) there was a tendency among American investors to regard Mexican industries as theirs for the taking. The provisions of the Constitution of 1917 which affirmed federal ownership of land and subsoil assets as part of the "national patrimony" were not taken seriously. In commerce British and American interests invaded the Mexican market. It is quite possible that between 1910 and 1926 the foreign-owned share of total Mexican assets actually increased.⁴

This increase in net foreign ownership of national assets was particularly true for traditional export activities. The violent years of revolution proved more harmful to the small, vulnerable, Mexican enterprises in mining and petroleum than to the large and well-financed foreign firms which eventually absorbed many bankrupt small operators. Moreover the new government tried to preserve a "hands-off" policy on American property in Mexico in an effort to maintain precarious diplomatic relations with that country and minimize intervention during the difficult period of reconstruction. As a result American and British export industries were less damaged by the Revolution than those of the Spanish and Germans. Indeed, the former two gained at the expense of the latter as well as the small Mexican investor. As elsewhere in Latin America, U.S. direct investors in those days regarded themselves as subject to American rather than foreign law and fully expected the support of U.S. diplomacy and military intervention if necessary to support their "rights." Meanwhile the production of traditional export goods grew much more rapidly than that of domestic industries between 1910 and 1925 (see Table 1). The figures, tentative as they are, suggest that the real value of exports probably increased more rapidly immediately after the Revolution than before while imports almost certainly did so.

By 1925 a paradoxical situation existed in that the Revolution, which had been in part a reaction against increasing economic dualism during the Porfiriato, resulted in an even more dualistic structure of production and trade than before. Table 4 (below) reveals that mining and fuel exports which represented 60 per cent of traded goods in 1910 increased to 76 per cent by 1926. Table 2 shows that commodity exports as a share of GDP increased from 11 per cent to almost 14 per cent over the same period. The implications for income distribution are evident, especially when one considers that the share of foreign ownership in mining and petroleum probably increased by 1926 while the proportion of returned value to Mexico declined. Although agrarian reform was gradually beginning to acquire force of law by the mid-twenties there was still little official land redistribution. As a result income distribution had not yet been strongly affected by agricultural policy, even though the share of commercial crops in commodity exports fell from 30 per cent in 1910 to 21 per cent in 1926 (Table 4).

⁴ For an illuminating and detailed comparison of foreign investment in Mexican export activities in 1910 and 1926, as well as a comparison of the balance of payments of Mexico in these two years, see 27. Sherwell estimates that the share of gross value of exports returned to Mexico actually *declined* between 1910 and 1926 from 79 per cent to 66 per cent (my calculations from his figures). This would help to explain subsequent tax policies, government support of labor unions, and outright nationalization, all tending to increase the domestic share of income from export activities.

TABLE 1.—GROWTH OF MEXICAN GROSS DOMESTIC PRODUCT, POPULATION AND FOREIGN TRADE, 1900–1965*
(Compound annual rates of growth)

	Porfiriato 1900–10	Period of Development		Period of Revolution and Reform		
		1910–25	1925–40	1940–50	1950–60	1960–65
(1) Gross domestic product	3.3	2.5	1.6	6.7	6.1	6.1
(2) Population	1.1	0.1	1.6	2.8	3.1	3.4
(3) Real per capita product	2.2	2.4	0.0	3.9	3.0	2.7
(4) Agricultural production	1.0	0.1	2.7	5.8	4.3	4.3
(5) Manufacturing production	3.6	1.7	4.3	8.1	7.3	8.1
(6) Mining and petroleum production	7.2	5.6	–1.9	2.5	5.3	4.2
(7) Exports of goods and services ^a	4.5	(2.7–5.1)	–1.4	8.2	1.8	(4.1) ^b
(8) Imports of goods and services ^a	1.3	(1.9–4.3)	–3.5	9.4	4.3	(3.0) ^b

* Rows (1) to (6) are taken from Reynolds (24, Chap. 1, Table 1.4). The growth rates, except for those of GDP of the 1940's and 1950's (which are time derivatives of annual series), are based on benchmark data for base and terminal years. The relevant statistical series for 1940 and following years are presented in Appendix D "Mexican National Economic Accounts," and information on precise sources for earlier years may be obtained from the author.

Rows (7) to (8) are from a number of selected sources: figures for 1900–10 are for (7) capacity to import and (8) imports in real terms from El Colegio de Mexico (11, p. 163). The data for "1910–1925" is really 1909/10 to 1926 from Sherwell (27). The constant value of exports used to estimate the rate of growth for the period 1910–25 reflects only the share of export earnings retained in Mexico. The larger of each of the figures for this period in Rows (7) and (8) is the growth of the value of this trade in dollars. The smaller of the figures is the value of trade in constant pesos, deflated by the wholesale price index in Mexico City. The data for 1925 to 1940 are from the United Nations (32) expressed in millions of 1937 pesos. The figures from 1940–60 are from Banco de Mexico (6) and represent the constant purchasing power of exports or "capacity to import" (7) and the real value of imports of goods and services (8). The figures for 1960–65 are from recent unpublished sources of the Banco de Mexico expressed in current (peso) values deflated by the implicit GDP deflator assuming constancy in the terms of trade.

^a The data for the years 1900 to 1940 reflect exports and imports of merchandise only. The data since 1940 reflect exports and imports of goods and services.

^b Estimate.

Nevertheless, by the late 1920's it was becoming increasingly probable that public policy in petroleum, mining, and agriculture would eventually turn against all foreign investors including Americans. If there were a general economic decline, political unrest would have to be assuaged by a return to revolutionary principles, and foreign investment would be the easiest and least costly to attack—especially if the exports of these industries were already falling because of changing national and international commodity market conditions. Had trade continued to flourish after 1929 the subsequent path of Mexican commercial policy might well have been different, but the onslaught of world depression and the blow it caused to Mexican exports were forceful reminders of the country's vulnerability to foreign trade and investment, reopening the case for nationalization and autarchy which had been suggested during the framing of the Constitution of 1917.

TABLE 2.—ESTIMATES OF THE MERCHANDISE TRADE SHARE OF MEXICAN GROSS DOMESTIC PRODUCT, 1910–60*

	1910		1925		1930		1940		1950		1960		1965
	A	B	A	B	A	B	A	B	A	B	A	B	B
	<i>(Million pesos—current value)</i>												
Merchandise exports	260	294	682	682	459	458	960	960	4,339	3,789	9,233	7,896	12,491
Merchandise imports	195	206	391	391	350	350	669	669	4,403	4,807	14,830	14,831	19,503
Gross domestic product	2,330	2,497	4,902	3,621	3,960	4,318	7,108	7,995	41,060	41,060	155,867	155,889	246,200
	<i>(Percentages of gross domestic product)</i>												
Merchandise exports	11.2	11.8	13.9	18.8	11.5	10.6	13.5	12.0	10.5	9.2	5.9	5.1	5.1
Merchandise imports	8.3	8.2	7.9	10.8	8.8	8.1	9.4	8.4	10.7	11.7	9.5	9.5	7.9
Sum	19.5	20.0	21.8	29.6	20.4	18.7	22.9	20.4	21.3	20.9	15.4	14.6	13.0

* For estimate A the current values of merchandise exports and imports for 1910 are from Sherwell; for later years from Nacional Financiera (27; 21). GDP figures in current values in estimate A before 1940 are based on estimates in millions of 1950 pesos in Reynolds (shown below as "Reynolds"), converted to current values using the wholesale price index for Mexico, D.F. of 19.7 for 1910, 28.7 for 1925, and 26.5 for 1930, with 1950 = 100 (24). For 1940 and later years GDP figures are directly from 24, Appendix Table D:1A.

For estimate B all figures are taken directly from Banco de Mexico (7, pp. 114ff).

The wide discrepancy in current value GDP estimates for 1925 and 1930 reflects alternative estimating procedures for the underlying physical production indexes (especially for agriculture) and different deflators used to transform estimates in constant prices (1950) to current values. The GDP estimates in constant prices used in this table (expressed in million 1950 pesos) are:

	1910	1925	1930	1940	1950	1960	1965
Est. A (Reynolds)	11,825	17,081	14,946	21,658	41,060	74,317	99,700
Est. B (Gutierrez)	11,650	14,816	15,540	22,889	41,060	74,317	99,616

TABLE 3.—THE STRUCTURE OF MEXICAN EXPORTS OF GOODS AND SERVICES, 1910-1960*

(Per cent of recorded current values)

	1909/10	1926	1940	1945	1950	1955	1960	1964
A. <i>Goods</i>	97	94	75	64	66	65	58	58
Commodity exports	53	75	44	54	60	61	54	56
Gold and silver exports	44	19	31	10	6	4	4	2
B. <i>Services</i>	3	6	25	36	34	35	42	42
Internal tourism	^a	0	8	9	13	10	11	13
Frontier tourism and other border transactions ^b	^a	2	15	13	15	22	27	25
Emigrant remittances ^c	^a	4	^a	11	2	2	3	2
Other exports of services	3	1	2	3	4	2	2	2
<i>Grand Total</i>	100	100	100	100	100	100	100	100

* Data for the years 1909/10 and 1926 are from Sherwell, expressed in pesos (27, pp. 6, 7, 39, 49). Data for 1940-64 are from Banco de Mexico, expressed in current dollars (6, Table VII-3). Totals do not always agree due to rounding. Since the writing of this manuscript a new breakdown of data on merchandise exports and imports from 1892/93 to 1910/11 and exports and imports of goods and services from 1920-67 by sector of economic activity has appeared (see Banco de Mexico, 7, note to Table II). These data are expressed in current pesos and are reconcilable with the 1960 input-output table of the Banco de Mexico. While the series provide a more complete and consistent coverage of the entire period, they do not significantly alter the analysis or conclusions of this paper.

^a Included in "Other exports of services."

^b "Other transactions" conceal certain commodity exports associated with tourism which, if they could be separated from the total, belong more appropriately under section A.

^c After 1940 this figure represents *bracero* income returned to Mexico.

What had not been fully anticipated was that the resurgence of revolutionary policy which occurred during the thirties and particularly during the administration of Lázaro Cárdenas (1934-40) would eventually sweep up not only foreign investments in petroleum and agriculture but the majority of large Mexican land holdings as well. Taxes applied to mining crippled Mexican and foreign enterprises alike, so that mineral production never fully recovered. Petroleum production did not recover 1927 levels until 1949, and among the principal export metals silver production declined by 46 per cent between 1925-29 and 1945-48, lead production fell by 15 per cent, and copper production fell by 4 per cent, with only zinc production rising (44 per cent).⁵

The zealotry of nationalization policies and threats of expropriation produced self-fulfilling results, since foreign investors who bore the brunt of government tax, wage, and import policies reacted by withdrawing profits from the country and slowing the rate of replacement of plant and equipment. This resulted in falling exports, a negative response to wage demands, and a growing impasse between the public sector and the labor unions on the one hand and for-

⁵ The most complete treatment of Mexican foreign trade between 1925 and 1948, from which these figures are taken, is presented in a United Nations publication (32).

TABLE 4.—THE STRUCTURE OF MEXICAN COMMODITY EXPORTS, 1910–1960*
(Per cent of recorded current values)

	1909/10	1926	1940	1945	1950	1955	1960
Agricultural and forest products	30	21	20	35	52	57	55
Cattle and fisheries	8	2	4	6	5	5	12
Fuels and lubricants	0	33	11	3	5	6	3
Minerals	60	43	62	26	31	24	23
Manufactures and other products	2	1	3	30	7	7	8
Total	100	100	100	100	100	100	100

* Data for years 1909/10 and 1926 are from G. Butler Sherwell, "Mexico's Capacity to Pay, A General Analysis of the Present International Position of Mexico," Washington, D.C., 1929 (typescript). Data for years 1940–60 are from Banco de Mexico, Grupo Secretaría de Hacienda, Estudios sobre Proyecciones, "Manual de estadísticas básicas para análisis y proyecciones del desarrollo económico de México" and Annex, July 1964, rev. Dec. 1964 (mimeo.), Table X-1.

eign investors on the other. What had begun as a gradual expropriation of the yield on foreign-owned assets eventually became, at least in the case of petroleum, outright expropriation of the assets themselves. The effect of these actions was to shift the relative rates of return from the production of export goods toward import-competing activities by penalizing the private production of traditional export commodities. An unfortunate by-product was that uncertainty spread throughout the economy which had a dampening effect on private investment in general.

As elsewhere in Latin America, and particularly in Argentina, Chile, and Brazil, the depression of the 1930's brought about a major attempt to restructure production toward manufacturing and other activities to serve the domestic market.⁶ But public policy in Mexico, while it did result in some growth of manufacturing as we have seen, was not met with the same enthusiasm among entrepreneurs as it was, for example, in Argentina (at least until Mexican trade conditions improved in the 1940's).⁷ The government's attempts to encourage domestic manufacturing in the thirties were offset by its own agrarian and petroleum policies which created an atmosphere of uncertainty among private investors. This situation was aggravated by the small size of the domestic market, a shortage of liquidity, lack of confidence in the peso, inflation, and balance of payments problems. Indeed the stability of the government was itself in doubt as late as 1940 when backers of the opposition candidate, General Almazán, threatened to secure his victory through force of arms. Fortunately the General disavowed their support by accepting with some misgivings the election of the official party candidate, Avila Camacho.

If the Mexican government in the 1930's had been able to offset unfavorable expectations arising from the expropriation of commercial agricultural and petroleum properties with positive expenditures on infrastructure and subsidies to

⁶ See the chapters by Carlos Díaz-Alejandro on Argentine industrialization in his monograph for the Country Analysis Project, Economic Growth Center, Yale University, which includes a detailed description of successful import substitution in manufacturing during the 1930's (12).

⁷ See 20 for a detailed analysis of the "new group" of entrepreneurs which arose in the thirties and forties and its positive response to improved economic conditions after 1940.

import-competing industry, the process of import substitution might have commenced earlier. But since the government was primarily dependent upon revenues from trade, and since the depression and reform were themselves producing sharp declines in tax revenues as well as foreign exchange reserves, the public sector was fiscally unable to provide industry with much tangible support. A deficit was run during the late thirties, but its effect on demand, while sufficient to raise prices, did not stimulate the growth of import-competing activities sufficiently to offset the stagnation and decline of traditional exports, nor did commercial policy do much to protect domestic producers. As a result per capita income failed to show any perceptible increase between 1925 and 1940 and the share of exports plus imports in GDP rose between 1930 and 1940 (Tables 1 and 2).

One of the most serious impediments to effective import substitution during the thirties was a shortage of foreign demand. An economy, in order to alter its structure of production, must import intermediate goods and capital equipment which cannot be produced domestically in the short run, except at great cost. This requires increased purchasing power which is obtainable either through capital inflows or expanded exports. In the absence of substantial foreign investment, the industrialization and increased economic autarchy which Mexico sought required an increase rather than a decrease in the absolute and relative volume of trade for a number of years. This pattern continued during the forties. From 1940 to 1950 the share of merchandise imports in GDP rose from 9.4 per cent to 10.7 per cent (Table 2), while the share of consumer goods imports declined, and the rate of growth of total exports and imports of total goods and services outstripped that of GDP between the same two years (Table 1). Indeed, it was not until the fifties that the growth of total output was able to surpass that of exports and imports.⁸ The paradox was that in order to reduce its ultimate dependence on trade without a loss in income, Mexico had to sharply increase its exports and imports in the short run and this was not possible until the advent of World War II.

The preceding section suggests that public policies designed to shift the structure of production from trade to autarchy did not have the desired effect by 1940, partly because of the shortage of investable funds and foreign exchange to pay for intermediate imports which were themselves dependent upon export earnings, and partly because of the adverse effect of government reform policies on entrepreneurial expectations. After 1940 import substitution began in earnest. The restrictions on exports to Mexico imposed by the countries involved in World War II, while less extreme than elsewhere in Latin America, meant soaring sales for local manufactures. (Since imports from the U.S. did not require sea transport, Mexico was considered an extension of the U.S. war economy; moreover, shipping from Mexico to the U.K. and other allied countries was more rapid and less risky than from South American suppliers.) A large supply of previously underemployed labor and underutilized capacity permitted Mexican firms to enjoy price increases far in excess of rising costs. Low effective rates of taxation meant that both exporters and local suppliers earned excess profits.

⁸ Although indexes of physical exports and imports during the years 1925 to 1940 indicate net declines, this is misleading since the rising relative prices of traded goods resulted in an increased share of both exports and imports in GDP during the thirties and a rising share of imports from 1925 to 1940. Despite the nationalization of petroleum and much of commercial agriculture and the increased taxation of mining, the commodity export share in GDP in 1940 was not below that of 1910 and almost as large as in 1925 by estimate A (Table 2).

As a result the expansion of effective demand for exports during the forties had a stronger multiplier effect on the rest of the economy and especially on the growth of manufacturing production than any of the policies of the thirties. This was partly because export expansion loomed so large in absolute terms but also because import leakages were temporarily reduced due to wartime controls, shortages, and trade restrictions.⁹ By the mid-forties the growth of Mexican industrial production had begun to seriously strain capacity. Meanwhile, price advances accelerated and inflated profits provided firms with large amounts of internal funds for new investment provided that they could be assured of a continued demand for their products and a stable source of essential machinery and raw materials. The termination of U.S. and European wartime trade restrictions threatened Mexican firms. In the view of many Mexicans this threat had to be met by commercial policy to prevent earlier gains from being lost through renewed foreign competition.¹⁰

After 1947 the government of Miguel Alemán (1946-1952) took steps to implement an extensive program of protection for domestic manufacturing through a system of import licensing for almost all categories of imported goods. Those industries which were most favored with protection received assurances from the government that future requests for licenses to import competing goods would not be granted except in extreme cases. Other industries were benefitted by greatly reduced quotas on competing imports and increased duties. In 1947 specific tariff legislation which dated back to 1930 was amended to include ad valorem duties on most articles. But as the primary objective of tariffs continues to be revenue, direct controls have almost certainly been more important instruments of protection than duties per se (see Table 7 below). As protection was assured and wartime supply shortages and restrictions were eased, local and foreign investors vied to participate in the expanding Mexican market. Urban population and GDP were already growing at rapid rates due to the initial stimulus of World War II. Substantial public investment in rural infrastructure since the thirties offered some assurance that agricultural supply problems which were already beginning to afflict other Latin American countries would not seriously retard Mexico's rate of growth.

The rate of increase in investment from 1940 to 1950 had few historical precedents. Gross investment increased in real terms by 170 per cent between 1940 and

⁹ Mexico has always had a very high income elasticity of demand for imported consumer goods and services. In recent years import restrictions have tended to blur this fact, since *recorded* consumer goods imports have fallen as a share of total recorded commodity imports. Yet at the same time the share of unspecified border transactions in total imports has risen sharply, and contraband (obviously missing from the reported figures) as a share of total imports has probably increased as well.

¹⁰ Major questions were raised in the late forties and early fifties over the advisability of increased protection to encourage continued Mexican industrialization. A number of foreign scholars including Sanford Mosk and Frank Tannenbaum (the latter more zealous and less constrained by economic analysis) urged alternative policies favoring greater emphasis on the development of agriculture, transportation, electric power, and communications (20; 29). Their point of view reflected a widespread fear that direct controls on trade and industrial subsidies would produce imbalance in the structure of production causing inflationary bottlenecks. This position, and particularly that of Tannenbaum, was answered by Alemán's former Undersecretary of National Economy, Manuel Germán Parra in *Industrialización de México* (Mexico, 1954). Germán Parra combined economics with anthropology to base his analysis on a simplistic theory of development in which all societies allegedly pass through similar stages of parallel social, political, and economic development. On this basis he arrives at the conclusion that industrialization is an essential precondition for a mature Mexican society.

1950 while the capital stock (gross fixed reproducible assets) rose by 30 per cent (4; 5). This impressive increase in capacity continued into the fifties and provided a basis for eventual economies of scale in many branches of industry. By the late forties the government was pursuing a number of policies which were eventually to have the effect of widening the national market as well as reducing sharp inequalities in income distribution which had existed at the end of the thirties and had been aggravated by price inflation during the war. Federal and state highway construction expanded rapidly during this period, gasoline and diesel fuel were subsidized, trucks, buses, and taxis were imported at low tariffs, the railroads were converted to diesel power, urbanization (which had fortunately been slowed in earlier years by agrarian reform) was encouraged, federal investments in power and communications were greatly expanded, and the government promoted the development of promising agricultural areas.

The structure of imports from 1940 to the 1960's reveals important changes in both supply and demand in Mexico (Tables 5 and 6), many of which are attributable to protectionist policies since the war. While the share of commodity imports in GDP has not declined since 1940 and is presumably higher than in 1910 (a reminder that import substitution itself depends upon trade) the share of consumer goods in total recorded commodity imports has fallen from 28 per cent in 1940 to 18 per cent or less since 1950 (Table 6). This performance is typical of Latin American countries. It means that Mexico is now more dependent on trade than ever before, since a much larger share of imports consists of capital goods and intermediate inputs for domestic industry. As will be shown in the following

TABLE 5.—THE STRUCTURE OF MEXICAN IMPORTS OF GOODS
AND SERVICES, 1910–1960*
(Per cent of recorded current values)

	1909/10	1926	1940	1945	1950	1955	1960	1964
A. Goods	63	72	82	85	86	88	85	78
(1) Registered commodity imports (including imports to free Zones)	...	...	71	75	77	76	72	66
(2) Frontier imports ^a	...	...	11	10	10	13	13	12
B. Services	37	28	18	15	14	12	15	22
(3) Tourism ^a	...	3	4	2	1	1	2	5
(4) Service of foreign direct investment	22	13	11	10	9	7	9	11
(5) Interest on government debt	9	5	...	0.2	1.5	1	2	2
(6) Others	6	7	3	3	3	3	2	4
(7) Grand Total	100	100	100	100	100	100	100	100

* Data for 1910/11 and 1926 are from G. B. Sherwell, "Mexico's Capacity to Pay, A General Analysis of the Present International Position of Mexico," Washington, D.C., 1929 (typescript); 1940–64 from Banco de Mexico, Grupo Secretaría de Hacienda, Estudios sobre Proyecciones, "Manual de estadísticas básicas para análisis y proyecciones del desarrollo económico de México" and Annex, July 1964, rev. Dec. 1964 (mimeo.), Table VII-5.

^a Much of row (2) represents Mexican border tourism which should be considered together with the data in row (3). For 1926 row (3) includes only frontier tourism.

section, the best opportunities for integration of domestic industry have already been taken and firms which now wish to enter the Mexican market, such as producers of machinery or equipment, must rely upon a larger share of imported inputs than their predecessors currently require (see Section III). Nevertheless, the process of industrialization in Mexico has continued without sustained high rates of inflation. The early stages of Mexican import substitution from 1940 to the mid-fifties were attended by severe inflation and balance of payments instability which required two major postwar devaluations, the second of which occurred in 1954. But these problems have subsequently diminished even as domestic production has continued to replace traditional imports, a circumstance virtually unique in Latin America. Indeed, Mexico appears to have import substituted more effectively than many other developing countries of similar size and wealth.

The structure of Mexican exports has also changed dramatically since 1940, partly as a result of public policy and partly in response to changing international market conditions which have altered Mexico's comparative advantage to a considerable extent. The share of commodity exports in GDP which declined somewhat during the forties fell drastically during the fifties (Table 2). The share of commodities in total exports of goods and services fell from 75 per cent in 1940 to 58 per cent in 1960, while tourism plus border transactions (including some manufactures) rose from 23 per cent to 38 per cent of total exports. (As shown in Table 3 above, this decline in commodity exports between 1940 and 1960 is completely attributable to gold and silver which decreased their share from 31 to 4 per cent, while other commodity exports rose from 44 to 54 per cent.)

TABLE 6.—THE STRUCTURE OF MEXICAN COMMODITY IMPORTS, 1940–1963*
(Per cent of recorded current values)

	1940	1945	1950	1955	1960	1963
(1) Consumer goods	28	28	18	15	11	14
(2) Fuels and lubricants	3	3	4	8	4	3
(3) Primary materials	41	40	42	37	41	38
(4) Capital goods	28	29	36	40	44	39
(a) Construction equipment	6	5	7	6	5	4
(b) Agricultural equipment	2	2	4	5	4	2
(c) Industrial and mining equipment	13	17	21	23	25	27
(d) Transport equipment	7	4	3	6	10	5
(5) Total ^a	100	100	100	100	100	100
(6) Unclassified frontier imports as a share of total commodity imports	13	12	11	15	16	18

* The data in rows (1) to (5) are calculated from Banco de Mexico, Grupo Secretaría de Hacienda, Estudios sobre Proyecciones, "Manual de estadísticas básicas para análisis y proyecciones del desarrollo económico de México" and Annex, July 1964, rev. Dec. 1964 (mimeo.), Table IX-1. The figures for 1963 are provisional. The percentages in row (6) are calculated from *ibid.*, Table VII-14, using its total which includes the unclassified frontier imports. It should be noted that for the years 1945 and 1950 the figures in the two tables for ordinary commodity imports do not coincide.

^a Excluding unclassified frontier imports.

Both commercial policy and changing terms of trade deflected investable funds away from the expansion of traditional exports toward production for the domestic market. While many of the substituting industries themselves may eventually be expected to grow out of infancy into full-fledged exporters in their own right, this has yet to occur for most. In the meantime the expanding national market presents an increasing demand for raw materials and primary products which were once export staples, while at the same time mineral depletion reduces the total supply of these goods, both factors tending to reduce their share in total exports. This historical pattern has been observed not only in Mexico but in other countries as well, including the U.S. and Japan. The share of traditional exports of minerals and fuels has fallen from 73 per cent of commodity exports in 1940 to 26 per cent in 1960 (Table 4). Meanwhile cash crops (especially cotton and wheat) produced by capital-intensive techniques in the newly irrigated regions of the north and northwest and a few manufactures have risen from 20 per cent to 50 per cent of exports during the same twenty-year period. It is important to note that natural resource-intensive activities including commercial agriculture and tourism, which also employ large amounts of relatively unskilled labor, still account for the majority of exported goods and services even as the composition of trade has been so remarkably transformed.

It is impossible to separate the influence of natural changes in the conditions of supply and demand from that of public policy on the changing structure of Mexican trade. While trade patterns reflect the evolution of comparative advantage the very word "comparative" implies that Mexico's changing trade position has depended to a large extent on that country's relative standing in the historic development race. Before 1940 Mexican growth lagged behind most of Latin America, partly because of her large share of subsistence agriculture and partly because of the Revolution and subsequent reform. Since 1940, however, the roles have been reversed and Mexico has moved into the leading ranks not only in Latin America but among all developing countries. The extent to which earlier social and political reforms stimulated a more rapid pace of development after 1940 than would have otherwise occurred cannot be adequately examined here, except to suggest that the influence of the Revolution undoubtedly played a more positive than negative long-run role in economic development and was more than likely a decisive factor.¹¹ But whatever conditions the Revolution and subsequent reform provided to shift public policy toward import substitution, they were not sufficient to bring about a major change in the structure of trade. As we have seen, other factors also needed to be present, including a rapid rise in national income, effective demand for domestic goods, and the capacity to import, as well as a wise choice of commodities to protect (i.e., those which had a *potential* comparative advantage) before import substitution policies could succeed.

Once these essential elements were present the process began, as will be detailed in subsequent sections of this paper. Import substitution has been accompanied by a drastic decline in the share of commodity exports in GDP even as the commodity import share has stayed relatively constant. The resulting potential trade gap has been bridged by increased exports of tourism, additional net for-

¹¹ The author deals with these factors in his broader study of the structure and growth of the Mexican economy (24).

eign borrowing, and shift toward the holding of domestic rather than foreign liquid assets. There is a growing possibility that in the future many of the import-competing activities will become sufficiently competitive to begin continuous exportation as well. As occurred in the U. S. shortly after the turn of the century, and more recently in Japan, there are some prospects that Mexico will eventually become a predominantly net importer of industrial raw materials and nonagricultural primary products and a net exporter of manufactures and agricultural and forestry products, but that day is still far in the future. In the meantime the share of manufactured exports has risen from 1 per cent of commodity exports in 1926 to 3 per cent in 1940, 7 per cent in 1950, and 8 per cent in 1960. At the same time the country has become self-sufficient in a number of formerly imported crops and a very sizable exporter of agricultural products which had long been exported in small quantities, cotton being a principal example. Wheat was an important net import in the mid-forties and early fifties but owing to the development and use of new seed varieties through research supported by the Rockefeller Foundation, plus the application of fertilizer and increased irrigation, Mexico achieved self-sufficiency in wheat cultivation by the early sixties. She is presently exporting a considerable share of this crop, even though both population and per capita consumption of wheat have risen very rapidly in recent years.¹²

In the case of manufacturing, the automobile industry was highly protected and inefficient as late as 1962, with prices far above international levels. There were too many firms, too many styles, and too great a variety of parts to permit economies of scale, given the size of the national market. Following a government decree in the early sixties calling for a high degree of integration of the industry, a number of manufacturers withdrew from the market and others made plans to restrict the number of models so as to produce over 50 per cent of the value of their automobiles in Mexico. Today car prices are still well above those in the U. S., but some firms are making plans to compete in the world market. The recently established Volkswagen subsidiary in Puebla is installing capacity far in excess of Mexican demands. While Volkswagens are currently selling locally at about \$2,300 (U.S.), plans are being made to reduce the export price below that of German-produced models for sale in the American Southwest.

A number of manufacturing companies have similar objectives and look forward to serving the American and Latin American markets in the near future. One example, the local Rolls-Royce affiliate, has a franchise to export diesel engines to the rest of Latin America as soon as it achieves full production and can guarantee equal quality with British engines. The local engineers and supervisors of this company claim that Mexican labor is highly qualified to do precision machining and assembling of even the most complex motors. They assert that sales volume is the only obstacle to competitive pricing of Mexican production in the world market.

Meanwhile many "border industries" are being established in the free zone along the U.S./Mexican frontier. (This zone does not include the major Mexican cities bordering Texas and is confined primarily to Tijuana, Mexicali, and No-

¹² As in the U.S., Mexican wheat exports partly reflect internal price supports, which at the present exchange rate are about 20 per cent above world price levels.

gales.) These plants will take advantage of cheaper Mexican labor to produce textiles, solid state electronics, handicraft items, and the like. In little over a year sixty firms have already been established employing over 4,000 Mexicans with the promise of doubling this number during the current year (Motorola alone will set up a plant to employ 4,000 additional workers in the very near future). The purpose of the border industries is to let Mexican labor compete with that of Hongkong, Taiwan, and other free zones in the production of goods for sale in the U. S. and other markets (at present these industries are expressly prohibited from selling their products inside the Mexican frontier), and to partially offset the reduced demand for Mexican labor in the U. S. following the termination of the bracero program.

The preceding pages have briefly described how the Mexican government, in cooperation with private investment and foreign technical assistance, attempted to restructure the pattern of trade, some of the early frustrations, the gradual success of import substitution policies since 1940, and prospects for the future. One of the principal findings is that import substitution is itself import-intensive. While the share of final goods imports has fallen in Mexico, that of intermediate goods has risen by the same amount, resulting in a relatively constant proportion of total imports in GDP over the past fifty years. Meanwhile structural changes in the economy have reinforced shifts in foreign demand to sharply reduce the share of traditional exports in GDP. Since there has been little change in the country's overall dependence on trade, sustained growth has necessitated a major shift in the composition of exports. Fortunately, favorable conditions of foreign demand have permitted Mexico to rapidly expand exports of natural resource and labor-intensive goods and services. Since there is also a high internal income elasticity of demand for these items (e.g., cash crops and tourism), the transformation of the export sector is entirely complementary with import substitution. And despite the fact that exports are likely to remain primarily labor- and natural resource-intensive for some years to come, Mexico is already on the threshold of a rapid expansion.

The historical experience of this country illustrates that regardless of the many difficulties involved it is nevertheless possible for a contemporary developing economy to successfully promote its potential underlying comparative advantage and ultimately begin to export wisely selected agricultural products, services, and manufactures, thereby reaching the final stage of import substitution. This does not imply, however, that a developing country can (by protective measures) establish a comparative advantage in the production of any product it chooses. It is most important that the government select from among its initial imports those items to be protected which development planning experts consider to be the most likely to reflect the long-term natural comparative advantage of the economy, once increasing returns, externalities, and other causes of deviation between private and social cost are fully considered. Such factors as climate, land availability, and tastes may be determining factors for major agricultural crops, animal products, and forest products, while these plus relative endowments of capital and labor of various skills are likely to be important determinants of the type of manufactured goods that can be successfully brought to a competitive level over time. In either case the absolute size of the internal market is an important

factor in the realization of economies of scale which lead ultimately to competitively priced exports.

CONTEMPORARY MEXICAN COMMERCIAL POLICY

In 1945 a report to the United States Tariff Commission declared (33, p. 8):

Economic controls and commercial policies in Mexico differ from those of other Latin American countries principally in the greater extent to which they are employed to carry out a definite national program which seeks to improve the social and economic status of the Mexican people.

One of the first major programs designed to accomplish these broad social objectives was the Six Year Plan of the Cárdenas administration (1934-40) which appeared in 1934. Unspecific as the plan was in describing programs for the implementation of policy, its intent was clear, and among other things it (33, p. 17):

. . . contemplated the reduction of the country's dependence on foreign markets, the encouragement of medium or small industries instead of large units, and the development of Mexican enterprises rather than foreign-controlled enterprises.

Since a basic condition for the success of such a program involved, in the view of the Mexican government, a major restructuring of the pattern of trade and production, the economy needed a high degree of underdeveloped resources, internal flexibility, and wise internal management. Otherwise attempts to reallocate resources through public policy would almost certainly have resulted in severe unemployment of labor and capital, losses in output, reduced incentives to save and invest, and balance of payments problems. Fortunately the Mexican economy demonstrated considerable flexibility in recent years making the opportunity cost of resource reallocation through commercial policy relatively slight. Furthermore, government officials, businessmen, and bankers worked effectively together and with foreign firms to permit a high degree of efficiency in the use of foreign exchange, imported technology, and scarce savings.

During the past three decades Mexican commercial policy has undergone a series of transitions which reflect the evolution of national economic policy from a reliance on traditional patterns of trade toward the active support of import-competing industrialization. At the beginning of the 1930's the principal instrument of commercial policy was a specific tariff, broadly applied, and averaging about 16 per cent ad valorem from 1935 to 1939. Mexican commodity exports traditionally exceeded imports, and balance of payments problems were infrequent except during periods of political emergency such as from 1914 to 1916. The balance of payments crisis that might have arisen after the Revolution was prevented by a unilateral decision to postpone payments of interest and principal on the foreign debt (8, pp. 184-98). As a result the peso/dollar exchange rate was almost the same in 1925 as in 1910. When Mexico abandoned the gold standard in 1931 the peso showed a slight decline relative to the dollar but the U.S. silver purchase program initiated in December 1933 (a virtual guarantee to purchase all of Mexico's silver exports) helped to stabilize the exchange rate until the agreement was terminated in 1938 shortly after government expropriation of the petroleum industry.

During the 1930's tariffs and export duties were gradually increased. Some of the latter were earmarked for the support of rural collectives but the primary objective of each was revenue. The major source of government revenue was import duties although their share of the value of imports declined through the early 1940's, while the share of export duties in the value of exports rose, as the government made an increasing effort to siphon off excess profits derived first from devaluation in 1938 and later from unusually favorable wartime demand (8). (See Tables 7 and 8.) Despite their primarily revenue objectives, both import and export duties had as a secondary motive the stimulation of domestic as opposed to foreign trade in accordance with the Six Year Plan.

Meanwhile an outstanding characteristic of the Mexican balance of payments in the early years was its long-run stability. This was attributable to the openness of the economy and the relative insignificance of economic controls. Export fluctuations (which moved with and slightly ahead of the U.S. trade cycle) were closely followed by fluctuations in income and the demand for importables. With

TABLE 7.—IMPORT DUTIES COLLECTED COMPARED WITH THE
VALUE OF IMPORTS, 1939–61*
(Million current pesos, except as otherwise indicated)

Year	Import duties collected ^a	Value of imports	Duties as per cent of imports
1939	93.6	629.7	14.9
1940	90.1	669.0	13.5
1941	131.7	915.1	14.4
1942	95.5	753.0	12.7
1943	91.4	909.6	10.0
1944	128.1	1 895.2	6.8
1945	153.8	1 604.4	9.6
1946	231.2	2 636.8	8.8
1947	265.4	3 230.3	8.2
1948	321.2	2 951.5	10.9
1949	343.2	3 527.3	9.7
1950	432.3	4 403.4	9.8
1951	614.9	6 773.2	9.1
1952	632.1	6 394.2	9.9
1953	631.4	6 985.3	9.0
1954	757.9	8 926.3	8.5
1955	915.6	11 045.7	8.3
1956	998.0	13 395.3	7.5
1957	1 013.1	14 439.4	7.0
1958	1 312.6	14 108.0	9.3
1959	1 554.1	12 582.6	12.4
1960	1 752.6	14 834.4	11.8
1961	1 659.9	14 233.2	11.7
Sum: 1939–1961	14 219.7	147 843.3	9.6

* Data from Roberto Santillán López and Aniceto Rosas Figueroa, *Teoría general de las finanzas públicas y el caso de México*, UNAM, Mexico, 1962, p. 225.

^a Disregarding subsidies.

the exception of 1914 to 1916 and the late thirties, trade deficits were short-lived and the exchange rate was relatively stable. The price of balance of payments stability was instability in internal income and product. The cost of dependence on traditional exports was measured in terms of both fluctuations in GNP and a highly uneven distribution of the gains from trade as described earlier.

In order to change this situation the government has progressively attempted since the thirties to pursue full employment and growth policies at home while insulating domestic income from the unstabilizing effects of foreign trade. As one would expect, the effects of strains caused by changing conditions of demand have tended to be shifted from income to the balance of payments, producing periodic crises which have been met by an ever-widening array of commercial policy weapons. Thus while balance of payments stability still retains top priority for public policy, it must be viewed in the context of broad policy-induced changes in the structure of the economy which themselves place strains on the balance of payments. The economy still produces wide fluctuations in the rate of

TABLE 8.—EXPORT DUTIES COLLECTED COMPARED WITH THE
REPORTED VALUE OF EXPORTS, 1939-61*
(Million current pesos, except as otherwise indicated)

Year	Export duties collected ^a	Value of exports	Duties as per cent of exports
1939	47.7	914.4	5.2
1940	43.1	960.0	4.5
1941	38.6	729.5	5.3
1942	62.7	989.7	6.3
1943	117.4	1 130.2	10.4
1944	98.3	1 047.0	9.4
1945	113.7	1 271.9	8.9
1946	110.2	1 915.3	5.8
1947	122.9	2 161.8	5.7
1948	137.2	2 661.3	5.2
1949	457.0	3 623.1	12.6
1950	470.3	4 339.4	10.8
1951	669.8	5 446.9	12.3
1952	677.7	5 125.8	13.2
1953	588.5	4 836.2	12.2
1954	958.2	6 936.1	13.8
1955	1 446.4	9 484.3	15.3
1956	1 253.1	10 089.9	12.4
1957	1 045.4	8 826.5	11.8
1958	1 023.5	8 863.8	11.5
1959	945.6	9 037.6	10.5
1960	932.0	9 233.9	10.1
1961	807.3	10 049.2	8.0
Sum: 1939-1961	12 166.6	109 673.8	11.1

* Data from Roberto Santillán López and Aniceto Rosas Figueroa, *Teoría general de las finanzas públicas y el caso de México*, UNAM, Mexico, 1962, p. 226.

^a Total export taxes collected, disregarding subsidies.

growth of income and in the balance of payments although they are now more endogenous than exogenous in origin and no longer appear to coincide as closely with the U.S. trade cycle.¹⁸

The policies employed to decrease the economy's dependence on trade have tended to avoid manipulation of the exchange rate. Since 1940 the government has only devalued in 1948, 1949, and 1954. At other times the exchange rate has been kept within a very narrow range by operations of the Central Bank. Because of the long frontier with the United States and the correspondingly easy access to foreign exchange, exchange controls have been effectively ruled out as an instrument of commercial policy. Actual and threatened devaluation has traditionally created conditions of extreme uncertainty among holders of liquid assets, and as a result the capital account of the balance of payments has been subjected to great strains whenever devaluation was applied as a remedy to balance of payments problems. For this reason the government has generally considered the cure of devaluation to be worse than the illness and has relied on other measures to reduce excess demand for foreign exchange.

In 1938 an additional measure chosen to stabilize the balance of payments was a general increase in tariffs. In the late forties expansion of direct import controls provided some relief, although devaluation was again necessary in 1954 as the economy attempted to absorb the short-run strains of import substitution plus the shock of falling demand for exports during the post-Korean recession. By the late 1950's it became possible for the government to relieve balance of payments pressures by permitting an increase in long-term foreign borrowing while at the same time tightening domestic credit controls.

In view of the political and economic disadvantages from devaluation, the government's decision to actively promote the development of domestic industries through protection has placed most of the emphasis in recent years on tariffs and quotas, and particularly the latter. Rafael Izquierdo, presently in charge of economic planning in Mexico, provides a useful description of these aspects of commercial policy since 1940 (16). His study stresses the partial and short-term considerations underlying the progressive implementation of both tariffs and direct controls. He stresses the fact that import substitution was a mere by-product of commercial policy, the main objective of which was to relieve balance of payments pressures during the postwar period (16, pp. 275, 287):

The simple protectionist concept of "import replacement" at different times has been the rival of other objectives—notably maximizing government revenue, easing government procurement, encouraging foreign direct investment, holding down internal prices. . . .

In Mexico much of the import replacement which the private sector has undertaken has been a byproduct of import prohibitions as used to handle balance of payments difficulties, of tariffs levied for revenue purposes, and of devaluations. Though the government has almost always given favorable replies to requests for protection, it has done so without due consideration of the type of product or the proportion of imported in-

¹⁸ The increasingly endogenous character of the trade cycle in Mexico is demonstrated statistically in *I*. It is nevertheless likely that the rate of growth of the economy would reflect a decline in export demand of the U.S., Western Europe, or especially both combined.

puts, and without demanding the fulfillment of progressive integration programs. What might be called the "natural" theory of import replacement was widely accepted. If the internal market were protected, "invisible" forces would inevitably appear on the scene to profit from the opportunities the government had created.

Most commentators agree with Izquierdo's criticism that import substitution policy has only begun to be subjected to efficiency criteria. Neither government publications nor official remarks establish the reasons for particular controls and tariffs. Meanwhile the attitude of private enterprise is split, if not ambiguous, as representatives of the larger (and foreign) firms advocate a minimum of direct import controls. This position is represented in particular by the Confederación de Cámaras Industriales (CONCAMIN). The smaller manufacturers represented by the Cámaras Nacionales de la Industria de Transformación (CNIT) openly advocate direct controls including quotas and import licenses. The reasons, according to Izquierdo, are explained in part by the place of a given firm in the production process. Firms which are further along in the process including assembly plants which turn out finished goods, of which a large portion of components are imported, advocate a minimum of controls. The small domestic producer of components is generally a strenuous advocate of strict protectionism.

As to the mix among tariffs and quotas, it is widely accepted in Mexico that the inelasticity of demand for intermediate goods makes the former somewhat ineffective in restricting this type of import. The argument is often heard that Mexicans are inclined to pay a very large premium for imported goods because of the suspected or actual superiority of imports to domestic substitutes. Public officials claim that in order to adequately protect domestic producers, tariffs would have to be unreasonably high. It should be noted that the degree of Mexican tariff protection has traditionally been relatively low among Latin American countries. At present, according to Izquierdo, the average amount of duties on raw materials is 5 per cent, on capital goods 10 to 15 per cent, and consumer goods 50 per cent, with luxury goods paying duties of approximately 100 per cent (16, p. 254). Indeed when one compares one estimate of the average tariff level in the 1930's of 16 per cent with the share of duties in the value of imports today it is not even clear that Mexico has substantially increased the amount of tariff protection during the past two decades; the level remains far below that of most countries in the hemisphere (33, p. 10; Table 7).¹⁴ Quotas, while they are more effective in keeping out competing imports, permit a high degree of variation between domestic and foreign prices and thereby encourage inefficiency. Thus they should be used selectively to encourage production in potentially competitive sectors and should always be subject to changes except perhaps for luxury imports.

In fact, quotas of varying degree are presently being applied to about 80 per cent of Mexican imports including almost all manufactured goods. Import licenses are customarily granted whenever an article cannot be obtained locally in a reasonable period of time, of comparable quality, or at a reasonable price.¹⁵

¹⁴ This table of course underweights those tariffs which are sufficiently high to be restrictive. The weighting procedure used for the U.S. Tariff Commission estimates for the 1930's is not specified.

¹⁵ According to government officials the definition of "reasonable" is becoming more restrictive.

With few exceptions legitimate applications for import licenses are granted within a period of four or five weeks. Those wishing to import an item may obtain advance information as to its legitimacy from the Ministry of Industry and Commerce which is in charge of import licensing. (The Ministry of Finance is responsible for tariff policy.) An actual license application is not submitted until the goods have arrived in customs. Since there is generally a delay of three to four weeks in processing an application, and since there is usually a delay of one or more weeks in advising the customs officials and obtaining possession of imports, the present system of direct controls increases annual inventory charges by an amount equivalent to the current rate of interest on approximately 8 to 10 per cent of the annual value of imports.¹⁶

The character and flexibility of the present licensing system makes it a potential two-edged sword in the hands of skilled administrators. Those firms which comply with the broad criteria for domestic industrialization are assured that licenses will not be issued for similar imports.¹⁷ More mature firms which have already gone through a several-year probation period and still do not produce at reasonable prices or provide adequate service to the customer are threatened by government retaliation in the form of newly granted licenses for competing imports. This threat along with internal competition among producers is designed to reduce the danger of monopoly pricing which import quotas would otherwise tend to create. It is not clear whether the possibility of granting import licenses to break local monopolies is a more effective instrument of antitrust policy than the threat of tariff reduction. Certainly the revenue motive underlying Mexican tariffs works against the reduction of import duties, while the granting of licenses tends to increase government revenues, since almost all imports are subject to a tariff.

The difficulty with direct import controls such as the Mexican licensing system is their arbitrary nature and the high cost of administration. Every single item which a firm wishes to import requires the filing of an application which must be approved by the Ministry of Industry and Commerce. This places a costly drain on skilled labor in addition to the added inventory costs mentioned above. Moreover, there is no guarantee that import permits will conform to any economic criteria (other than those of availability, quality, and occasionally price) or that bribery and political influence will not be facilitated more under this system than under an alternative system of tariffs and/or a more flexible exchange rate. Furthermore, the issuance of licenses permits excess profits to be

Whereas simple availability was the primary consideration a decade ago, today licenses are beginning to be granted for those goods the domestic price of which is more than 100 per cent above that of comparable imports before taxes.

¹⁶ Representatives of the Ministry of Industry and Commerce have already undertaken a major program designed to computerize license applications. Nevertheless decisions as to which items may or may not be admitted are not readily relegated to machines. It is likely that the waiting time will not be reduced by much more than two weeks. The advance issuance of blanket licenses to import is resisted at present because of the government's desire to maintain tight short-run control on imports. In lieu of effective exchange controls this policy makes some sense. Much of the criticism of the licensing procedure is directed not at the final decisions which are generally favorable but at the waiting time and manpower costs which the application procedure entails. Many companies retain one or more officers who must spend a large percentage of their time applying for licenses and clearing imports through customs.

¹⁷ The term "similar" is subject to wide interpretation and offers less security to the local producer than most firms interviewed would wish.

earned by importers which are only partly offset by duties and direct taxation, again tending to misallocate resources. The proof of the pudding is in the eating. One must resort to a statistical investigation of the effectiveness of Mexican import substitution before drawing any final conclusions about the choice of policy instruments for industrialization adopted by Mexican authorities. The next section begins to deal with these issues.

EFFECTS OF COMMERCIAL POLICY ON THE STRUCTURE OF PRODUCTION AND TRADE SINCE 1950

To determine the amount of protection which domestic producers receive from all aspects of public policy, much less to estimate their response to this protection, is a virtually impossible task. As shown in the previous section, Mexican commercial policy since 1950 has included exchange devaluation, import and export duties, and direct controls which now provide the major form of protection. In addition to trade policy, relative prices have been affected by a wide spectrum of internal policies all of which make it difficult to separate out cause and effect in the resource allocation process. Economists hoping to determine the effect of commercial policy on import substitution in other countries have tried to measure the degree of "effective protection" of value added which local producers receive in terms of the net tariff component of value added after removing the offsetting effect of duties on intermediate imports.¹⁸ While this procedure is well suited to those countries which rely primarily on tariff protection, in cases such as Mexico these calculations are partial at best, since the predominance of quotas often makes prices diverge by more than the tariff component. Effective protection in these countries would be more closely approximated by comparing domestic prices and import (export) unit values. Analysis of protection even in terms of this calculation requires the implicit assumption that all differences between domestic prices and the price of traded goods are attributable to commercial policy per se, a weak argument in the Mexican case where differential subsidies and tax allowances are widely applied to promote industrialization. Indeed all such policies which affect resource allocation have an impact on the structure of trade and must therefore be regarded as elements in "commercial policy" more broadly defined.

The Case of Mexican Manufacturing

Rather than attempt to measure the total degree of protection and its effect on resource reallocation directly, the present paper first deals with the ways in which the growth of Mexican manufacturing industry has differed from what might have been expected in recent years. In order to do this an estimate is made of the divergence of the structure of industrial production in both 1950 and 1960 from that of a hypothetical economy based upon data from 38 countries in a well-known study by Hollis Chenery (10). In that study it was assumed that the pattern of per capita industrial production of a given country may be explained by per capita income and population size. In fact many other factors such as resource-, labor-, and capital-endowments, transport costs, taste differences, the stage

¹⁸ For an application of this type of analysis to developed countries see J. Balassa is currently directing a similar study for selected developing countries (2). The portion dealing with Mexico is being prepared by Gerardo Bueno, Nacional Financiera, Mexico.

TABLE 9.—ACTUAL AND PREDICTED PER CAPITA OUTPUT IN FIFTEEN MEXICAN MANUFACTURING INDUSTRIES*
(U.S. dollars per capita)

Industry group	1950			1960		
	Actual output	Predicted output	A-P ^a	Actual output	Predicted output	A-P ^a
1. Food and beverages	16.97	9.62	+	21.06	14.77	+
2. Tobacco	1.45	1.36	+	1.58	2.08	-
3. Textiles	6.68	4.75	+	5.80	9.32	-
4. Clothing	4.57	2.09	+	4.99	4.04	+
5. Wood, etc.	1.51	1.58	-	1.98	2.83	-
6. Paper	3.23	0.58	+	1.58	1.91	-
7. Printing	1.10	1.51	-	1.52	3.04	-
8. Leather	1.35	0.33	+	0.79	0.61	+
9. Rubber	0.79	0.46	+	1.25	1.13	+
10. Chemicals	4.03	2.50	+	5.66	5.08	+
11. Petroleum	6.87	0.17	+	10.85	0.53	+
12. Nonmetallic minerals	2.04	1.69	+	2.52	3.29	-
13. Metals	3.33	2.89	+	5.98	2.87	+
14. Machinery	1.95	1.18	+	3.08	3.76	-
15. Transport equipment	1.15	1.52	-	2.52	3.98	-
Total: 15 industries	57.02	32.23	+	71.16	59.14	+

* Data represent value added per capita in constant pesos converted to (1953) U.S. dollars at current exchange.

Actual output is from Saúl Trejo Reyes, "A Model of Import Substitution and the Changes in Industrial Output in Mexico in 1950-60," *Econ. Growth Cen.*, Yale Univ., June 6, 1967 (mimeo.), based upon the 1950 and 1960 input-output tables prepared by the Departamento de Estudios Económicos, Banco de Mexico, converted to 1953 pesos with the Banco de Mexico wholesale price index for Mexico City and then to U.S. dollars. Predicted output is based upon Hollis Chenery, "Patterns of Industrial Growth," *Am. Econ. Rev.*, Sept. 1960, in similar terms.

^a "A" refers to actual output, "P" to predicted output.

of industrial development, and distribution of income will influence the results. In addition, government policy may well distort the pattern of relative prices and thereby alter the structure of production. There is no simple international prototype to which a given country's performance may be compared. But for the sake of illustration the Chenery model has been used to estimate hypothetical levels of output for 15 Mexican manufacturing industries in both 1950 and 1960. These results were then compared with data obtained from the 1950 and 1960 input-output tables of the Bank of Mexico in order to get a very rough picture of that country's performance in an international context. (All data were converted into 1953 pesos, using the Mexico City wholesale price index as a deflator, and then into U.S. dollars to permit comparison with results from the Chenery study. See Tables 9 and 10.)¹⁹

In 1950 actual output exceeded predicted levels in 12 of the 15 industries selected, suggesting that even then the Mexican economy was considerably more industrialized than might have been expected of a "representative" country of

¹⁹ The author gratefully acknowledges the assistance of Saúl Trejo in the preparation of the following section on Mexican manufacturing. Much of the material is taken from a research paper by Trejo, subsequently revised and published in 31 (30).

TABLE 10.—RATIO OF ACTUAL TO PREDICTED OUTPUT IN PRINCIPAL
MANUFACTURING INDUSTRIES*
(U.S. dollars per capita)

Industry group	1950	1960	Change
1. Food and beverages	1.76	1.43	—
2. Tobacco	1.06	0.76	—
3. Textiles	1.41	0.62	—
4. Clothing	2.19	1.24	—
5. Wood, etc.	0.96	0.70	—
6. Paper	5.57	0.83	—
7. Printing	0.73	0.50	—
8. Leather	4.09	1.30	—
9. Rubber	1.72	1.11	—
10. Chemicals	1.61	1.11	—
11. Petroleum	40.41	20.47	—
12. Nonmetallic minerals	1.02	0.77	—
13. Metals	1.15	2.08	+
14. Machinery	1.65	0.82	—
15. Transport equipment	0.76	0.63	—
Total: 15 industries	1.77	1.21	—

* Based on Table 9.

similar population size and per capita income.²⁰ However the 1960 results show only 7 of the 15 industries to be above expected levels of per capita output. Both World War II and the industrialization program of the Alemán administration (1946–52) had a definite effect on the structure of production, tending to increase the share of manufacturing much above the level that might have been expected in the absence of official support. In view of the debates which surrounded the government's decision to actively promote Mexican industrialization at the expense of other activities, and specifically of small-scale agriculture, it is important to bear in mind that these statistical results say nothing about relative efficiency of resource allocation nor about the relative degree of government protection (including subsidization) of the various industries. In the subsequent section we shall deal with this problem in terms of the implications of industrialization policy for the demand for scarce resources including skilled labor, imported and domestic capital equipment, and imported intermediate goods.

Mexico's relative lead in industrialization failed to keep pace between 1950

²⁰ The interpretation of results such as these is filled with pitfalls. Even if the composite economy were truly representative and free from distortions due to non-random effects of, for instance, public policy in the sample, Mexico's comparative advantage undoubtedly differed from that of the average less-developed country. For example, because Mexico was relatively rich in petroleum reserves due to the fortunes of geography, the petroleum processing and petro-chemical industries show outputs far in excess of the composite economy, as observed in Table 10 for groups 10 and 11, both of which have coefficients well above unity. Since public policy effects are not neutralized in the model, the coefficients of the composite economy reflect a general international tendency to favor import-competing over export industries. Thus the absolute divergence of Mexico from the model understates the effect of public policy on Mexican industrialization on the one hand, while failing to correct for deviations in comparative advantage favoring Mexican mineral and other natural resource-intensive exports on the other. For these reasons the *relative* change in the ratio of actual to predicted output from 1950 to 1960 may more closely reflect the net effect of Mexican industrialization policy during the fifties, to the extent that changes in this policy differed from those of the sample.

and 1960. Although per capita output in manufacturing remained above expected levels in 1960, the margin was much smaller (Table 10). The percentage by which actual output exceeded predicted output was greater in 1950 than in 1960 for all but one of the 15 industries (Table 10). Actual performance surpassed expectations in both years in only seven of the sectors, and for wood products, printing, and transport equipment both years showed less output than the Chenery study would have predicted.²¹ Of those activities which received assistance in the form of government finance, subsidies, and protection—including chemicals, petroleum, and transportation equipment—the latter failed to reach predicted levels by 1960 and all three showed a deterioration in their position relative to the composite economy as reflected in falling ratios between the two years (Table 10). The machinery manufacturing industry which was ahead in 1950 fell behind in 1960, although there is independent evidence that machinery service and repair has shown rapid growth. It would appear that the policies of protection for the machinery industry have not been sufficient to allow production to remain above predicted levels, suggesting that scale factors may have imposed powerful limiting conditions on this sector. An analysis of this problem was made by the Nacional Financiera under the direction of Alan Manne (19).

The Manne study examines the possibilities of substitution between imports and domestic manufactures for 12 key sectors of the Mexican economy. It also includes a detailed treatment of the possibilities of substitution in 12 individual machinery industries, allowing for scale requirements and comparative costs by U.S. standards. Results of this specialized study indicate that 9 of the 12 machinery industries selected for analysis might be efficiently located in Mexico, the exceptions being turbines and generators, ships, and locomotives. Indeed several sectors would have markets by 1972 far in excess of optimal firm size, especially mining and construction machinery, metal-cutting and many metal-forming machine tools, cutting tools, jigs and fixtures, machinery for special industries, and power transmission equipment. Since the degree of disaggregation in this study is still insufficient to disclose actual scale factors for particular product lines (since value rather than physical units were used in the estimates) Manne calls for further research on the subject, though his initial results are highly suggestive.

Aside from the analysis of the individual machinery industries, one of the more interesting results of the general Nacional Financiera study of the 12 key sectors of the economy was that most potential substitution could be restricted to a small number of commodity imports (particularly iron ore, semi-kraft paper, sodium carbonate, kerosene, diesel oil, and jet fuel). Furthermore sharply increasing the degree of protection would not have much effect on the amount of intermediate import substitution although it would raise costs and particularly capital requirements. At a 6 per cent projected rate of growth of GNP and allowing for 20 per cent protection, import requirements for the 12 key sectors of the economy would decline by 7 per cent. With an infinite degree of protection (which assumes local production of all possible importables regardless of price) foreign exchange requirements for these sectors would fall by only 25 per cent. Of course the trade-off is between imported inputs and the efficiency of

²¹ The results combine changes in both price and quantity since the deflator employed fails to allow for relative price changes.

domestic production as measured by both total costs and capital requirements. With 20 per cent protection, the study indicates that costs would rise by 4 per cent and capital requirements by 5 per cent, but with infinite protection costs would rise by 6 per cent and capital requirements by 19 per cent, since a number of industries would thereby be permitted to operate which would otherwise have little chance of reaching a competitive scale of production.

An important finding of the study was that almost 70 per cent of the intermediate imports in the 12 key sectors of the economy are complementary to import substitution. That is, as import substitution increases these intermediate imports increase as well. In an extreme case, with complete protection the imports of intermediate goods in the petroleum, petro-chemical, and heavy chemical sectors increase from 86 to 96 million dollars. In fact there is a general rise in imports which are complementary to domestic machinery production of from 259 to 278 million dollars when that sector is provided with total protection.

This is a clear example of the narrow space within which Mexican policy makers must operate in order to achieve import substitution, now that the simplest industries have been integrated. Those sectors showing the greatest possibility for import substitution were paper and petroleum. In the case of petroleum the aggregate output of this sector is well in advance of international standards but there is still considerable scope for expansion of those items mentioned above (Table 9). Output in the paper industry, according to Table 9, is relatively close to international levels at the present time.

The Effect of Industrialization on the Demand for Imports

The fact that output in most Mexican manufacturing activities exceeds expectations does not prove anything about the efficiency of import substitution policy. It is theoretically possible for the government to promote hothouse industries which, even though they replace imports of final goods, are prodigal in their use of intermediate imports leaving the country worse off than before. In order to evaluate the government's industrialization policy during the 1950's, one should examine the effect of the divergent growth path on the country's overall demand for imports. While time has not permitted this to be done in detail for the 15 subsectors of manufacturing listed above, initial results indicate that Mexican import substitution policy has been remarkably effective in replacing final goods imports with local products, if not always economically efficient.²²

Not only final goods but also intermediate goods imports have fallen sharply as a share of total value of production. This has permitted the rate of growth of gross domestic product to outstrip the much slower growth of exports without creating major balance of payments problems or requiring a devaluation since the early fifties. Of course, somewhat more efficient policies might have permitted a more rapid growth of exports and stimulated overall growth by this means. One set of data suggests that total imports fell from 13.5 per cent to under 10 per cent of gross domestic product between 1950 and 1960 (according to Mexican input-output tables for the respective years).²³ While these estimates probably

²² The author was assisted in these calculations by Ibrahim Samater.

²³ Import figures in the input-output tables appear to represent only merchandise imports in both years. In addition to this the coverage of the two tables appears to differ, since the Banco de

exaggerate the decline, independent figures indicate that merchandise imports alone seem to have fallen slightly as a share of GDP (from 10.7 per cent to 9.5 per cent) between 1950 and 1960 (Table 2).

The changing share of *intermediate* imports in gross value of production (value added plus the sum of intermediate imports) is presented in Tables 11 and 12. Here the total value of production in Mexico is disaggregated into 15 sectors using data from the input-output tables for the corresponding years. The changing composition of output and import demand reflects the reaction of the whole economy to changes in conditions of supply and demand many of which are directly attributable to import substitution policy.

While it is impossible to isolate the direct effects of commercial policy on the structure of trade and production, as mentioned above, it appears that the net demand for intermediate imports has been reduced. The share of intermediate imports in total value of production has fallen from 4.9 per cent to 4.0 per cent between the two benchmark years 1950 and 1960, a reduction of almost 20 per cent. If these years may be said to mark a trend, the results reflect a decline in two factors, the share of intermediate imports in intermediate production and final imports in final demand. The former fell from 13.2 per cent to 10.7 per cent over the decade, while the latter (adjusting the 1960 import figure upward for evident omissions in the 1960 input-output table) fell from 6.5 per cent to 5.5 per cent of gross value added in the economy.²⁴

Nine of the 15 subdivisions of Mexican GDP showed a decline in the proportion of intermediate imports to total value of production over the decade (Tables 11 and 12). The most important were food products, commerce, and services which together accounted for over 42 per cent of the value of production in 1950 and almost 50 per cent in 1960. The decline in intermediate import requirements of food processing industries is a dramatic illustration of the possibilities which countries like Mexico have for the forward integration of raw material and primary product producing sectors in which they already possess a comparative advantage. Import requirements as a percentage of production also declined sharply for mining, petroleum extraction and refining, and construction, all of which further illustrate this principle.

On the other hand the manufacturing sectors did not show a net reduction in intermediate import requirements. On the contrary four of the seven manufacturing sectors (four to ten inclusive) increased their average import requirements.

Mexico value of merchandise imports including *fronteriza* imports (those entering the 15-mile frontier zone which are unclassified) is approximately equal to the figure in the 1950 input-output table but is considerably in excess of the 1960 input-output figure. If frontier imports are excluded from Banco de Mexico figures, the result approximates that of the 1960 input-output table. This source understates total import requirements by approximately 18 per cent. While an important consideration, this factor does not seriously alter our conclusions about import substitution among intermediate goods, since most *fronteriza* imports are final goods.

²⁴ In an independent study by Timothy King, the proportion of intermediate imports to intermediate production of goods and services was calculated for 21 sectors of production (17). In his monograph the share fell from 13.2 per cent to 10.4 per cent, which is almost identical to the figures presented above. His justification for using only *intermediate* production as a base was that intermediate imports are more closely related to the former than to value added. In the present study it was felt that an advantage would be gained by observing the shift in demand for intermediate imports as a function of total demand in the economy including final demand for goods and services, since public policy is generally related to value added. Regardless of the comparison used, the conclusions of the two studies are quite similar since the relationship between final demand and intermediate demand has not changed sharply during the decade.

TABLE 11.—STRUCTURE OF MEXICAN PRODUCTION AND INTERMEDIATE IMPORTS, 1950*

Industry group	Value of production		Value of intermediate imports	
	Million pesos (1)	Per cent of total (2)	Million pesos (3)	Per cent of production (4)
1. Agriculture, cattle, forestry, and fisheries	11,357	19.5	113	1.0
2. Mining and quarrying	1,682	2.9	87	5.2
3. Petroleum extraction and refining	1,680	2.9	191	11.4
4. Food products, beverages, and tobacco	7,131	12.2	424	5.9
5. Textiles, clothing, and leather goods	5,083	8.7	209	4.1
6. Wood products and furniture, paper, printing, and publishing	1,750	3.0	130	7.4
7. Chemicals, rubber and plastics	1,962	3.4	375	19.1
8. Nonmetallic minerals manufacturing	648	1.1	30	4.6
9. Basic metals industries	1,265	2.2	78	6.2
10. Metal products manufacturing and repair	1,548	2.7	288	18.6
11. Construction	3,000	5.2	419	14.0
12. Electricity	599	1.0	40	6.7
13. Commerce	10,698	18.4	112	1.0
14. Transportation	2,941	5.1	139	4.7
15. Services	6,885	11.8	228	3.3
Total	58,229	100.0	2,863	4.9

* Data in current pesos from C. W. Reynolds and Ibrahim Samater, "The Structure of Production and Imports (1950-60)," (rev. working paper, Econ. Growth Cen., Yale Univ.,

Summer, 1967). The data were obtained from 1950 and 1960 input-output tables, Banco de Mexico.

TABLE 12.—STRUCTURE OF MEXICAN PRODUCTION AND INTERMEDIATE IMPORTS, 1960*

Industry group	Value of production		Value of intermediate imports			Imports (million pesos)	
	Million pesos (1)	Per cent (2)	Direct (million pesos) (3)	Per cent of production		1950 coefficient 1960 structure (6) ^a	1960 coefficient 1950 structure (7) ^b
				Direct (4)	Direct and indirect (5)		
1. Agriculture, cattle, forestry, fisheries	32 166	14.0	548	1.7	2.6	322	760
2. Mining and quarrying	4 311	1.9	61	1.4	3.6	224	93
3. Petroleum Extraction and refining	9 586	4.2	700	7.3	14.0	1 093	485
4. Food products, beverages, and tobacco	29 455	12.8	567	1.9	4.0	1 738	531
5. Textiles, clothing, and leather goods	12 957	5.7	599	4.6	9.1	531	917
6. Wood products and furniture, paper, printing, and publishing	5 603	2.4	440	7.8	10.0	415	536
7. Chemicals, rubber and plastics	8 781	3.8	1 664	18.9	18.4	1 677	1 473
8. Nonmetallic minerals	2 528	1.1	156	6.2	11.9	116	156
9. Basic metals industries	4 690	2.0	366	7.8	11.3	291	393
10. Metal products manufacturing and repair	10 502	4.6	1 934	18.4	21.1	1 953	1 139
11. Construction	13 938	6.1	921	6.6	8.7	1 951	786
12. Electricity	2 205	1.0	107	4.9	7.4	148	112
13. Commerce	53 539	23.3	119	0.2	1.2	535	84
14. Transportation	8 040	3.5	482	6.0	8.4	378	701
15. Services	30 994	13.5	429	1.4	2.9	1 023	378
Total							
Million pesos	229 295	100.0	9 093	...	...	12 395 ^c	8 544 ^c
Per cent of total value of production	(100.0)		(4.0)	...	...	(5.4)	(3.7)

* Data in current pesos from C. W. Reynolds and Ibrahim Samater, "The Structure of Production and Imports (1950-60)," (rev. working paper, Econ. Growth Cen., Yale Univ., Summer, 1967). The data were obtained from 1950 and 1960 input-output tables, Banco de Mexico. "Direct intermediate imports" are those which appear only in the column(s) of the input-output matrix referring to the individual sector(s) specified. "Indirect intermediate imports" are those which are utilized in the produc-

tion of intermediate inputs to the individual sector(s) specified above and appear in their respective columns.

^a Column 4 of 1950 times column 1 of 1960.

^b Column 4 of 1960 times column 2 of 1950 times total value of production in 1960.

^c Sum of calculated values for industry groups.

Textiles, wood and paper products, nonmetallic minerals, and basic metals industries increased their share of intermediate imports in total value of production from 5.1 per cent to 6.0 per cent over the decade. The repair and manufacturing of machinery and equipment showed no perceptible change in the relatively high proportion of imports (18.6 and 18.4 per cent in the two years). Independent estimates of machinery and equipment manufacturing and imports do, however, indicate a sharp rise in the proportion of machinery and equipment produced in Mexico.²⁵ The intermediate import requirements of manufacturing as a whole were 7.9 per cent in 1950 and 7.7 per cent in 1960. This suggests that the policies mentioned earlier which provided for relatively rapid growth of manufacturing probably tended to offset the general decline in intermediate imports as a share of GDP. Among the six sectors which showed an increase in intermediate import requirements, the most important were agriculture, textiles, and transportation. Table 12 reveals that imported agricultural inputs in 1960 were over 200 million pesos greater than they would have been had 1950 relationships obtained.

Not only did supply conditions in much of Mexican industry favor import substitution, there is some indication that changes in demand also favored domestic industry. This is especially noteworthy since the replacement of imports of intermediate goods with domestic production probably increased relative costs and prices in these industries at least in the short run. During the fifties the share of total demand for goods and services shifted toward the nine import-substituting sectors so that their share of the total value of production rose from 60.5 per cent in 1950 to 71.2 per cent in 1960. Of these only the mining sector showed a decline in the share of value of production and this was caused by external rather than internal demand conditions.

What would the demand for intermediate imports have been in 1960 had import coefficients (the share of intermediate imports in gross value of production) remained the same as in 1950? If the economy had produced the actual volume of 1960 production with sectoral import requirements at 1950 percentage levels, Table 12 reveals that intermediate imports in 1960 would have risen by 36 per cent or from 9 to over 12 billion pesos. Since this would have implied less import substitution, final goods imports would almost certainly have exceeded 1960 levels as well. It is, of course, incorrect to assume that the structure of production would have remained the same either in absolute or relative terms had the actual import substitution in intermediate goods not occurred. In fact market and policy-induced changes in the conditions of supply and demand combined to shift the structure of production toward *more* import-using sectors.

Even though all of the seven sectors which increased their share of the total value of production had reduced intermediate import coefficients, this was not sufficient to offset their high average demand for imports. This is illustrated by comparing columns 3 and 7 in Table 12. Had the 1950 structure of demand obtained in 1960, imports would have been 550 million pesos below actual levels. This provides an important lesson for import-substituting countries. The substitution gains within individual sectors may be offset by the fact that the average

²⁵ Estimates of the Bank of Mexico indicate a fall and then a rise in the internal production of machinery and equipment as a share of total demand for capital goods from 46 per cent in 1940 to 43 per cent in 1950 and up to 53 per cent in 1960 (4).

share of imports in these sectors is itself relatively high. As demand shifts in the direction of import-competing industries, average intermediate import requirements may actually *increase*, even though each individual sector is reducing its requirements. Indeed this situation may be favorable for long-term development to the extent that structural changes in the economy are consistent with comparative advantage and promote exports as well.

The rough calculations presented above reveal an interesting pattern in the development of the Mexican economy during the fifties. The replacement of finished goods imports with domestic products, the gradual substitution of domestic for imported intermediate goods, and increased encouragement of the most efficient export products such as cotton and wheat have jointly permitted the economy to grow more rapidly than it would otherwise have done, since the availability of foreign exchange has almost certainly been one of the most important potential constraints on Mexican growth.²⁶ Imports in 1960, which were actually 36 per cent below what they would have been with 1950 coefficients, might have been even lower (41 per cent) had aggregate demand not shifted toward more import-intensive production. This was primarily attributable to shifts in domestic rather than foreign demand, since the principal export sectors are agriculture, mining, and services, all of which have relatively low intermediate import requirements. The relationship between Mexican import substitution and the demand for other scarce factors including skilled labor and capital goods is examined in the following section.

EVALUATION OF CONTEMPORARY COMMERCIAL POLICY IN TERMS OF THE DEMAND FOR SCARCE RESOURCES

The principal arms of Mexican commercial policy, import and export duties, and subsidies, licensing, and devaluation of the exchange rate (or the lack of it) have had varying and occasionally offsetting effects on the pattern of resource allocation. This is best illustrated by dividing Mexico's recent experience in commercial policy into three periods, 1941-48, 1948-54, and 1954 to date. By separating total domestic production into three general categories, export activities, import-competing industries, and industries producing non-traded or home goods, the effect of commercial policy during the three periods on the allocation of resources among these sectors may be examined.²⁷

From 1941 to 1947 the Mexican exchange rate was held by the government at 4.85 pesos per dollar. Meanwhile the share of export duties in the value of exports rose during the war years and then fell again in the immediate postwar period (Table 8), while import duties as a share of imports tended to decline

²⁶ Recent research indicates that Mexico's extremely active monetary policy is highly sensitive to changes in the level of foreign exchange reserves. In the event of a decline in foreign exchange reserves, the Central Bank increases reserve requirements of banks and non-bank financial intermediaries which, through credit rationing (in view of a pegged interest rate) operates directly on both private and public investment. As a result the growth rate is directly related through public policy to overall balance of payments conditions (9; 18).

²⁷ Without attempting to minimize the serious identification problem involved in attempting to assess the affect on supply incentives of relative price changes which themselves may affect changing conditions of supply rather than demand, this section deals primarily with the *probable* supply effects of relative price changes induced by the three types of commercial policy, duties, quotas, and exchange devaluation. Note that the definition of "home goods" becomes more inclusive as the gradual implementation of direct import controls places embargoes on an increasing number of commodities.

TABLE 13.—RELATIVE PRICE CHANGES BETWEEN MEXICO AND THE U.S.,
AND EXCHANGE DEVALUATION, SPECIFIED PERIODS 1941-63
(Per cent)

	1941-48 ^a	1948-54 ^b	1954-63
(1) Change in the Mexican price level ^c	+149	+63	+60
(2) Change in the U.S. price level ^d	+ 69	+13	+20
(3) Change in the peso-dollar exchange rate ^e	+ 40	+46	0
(4) Change in relative prices: Mexico, divided by U.S., adjusted for exchange devaluation ^f	+ 5	- 1	+33

^a 1941 is used as a base since the somewhat lower Mexican exchange rate in 1940 reflected unsettled conditions of the late thirties and could not be regarded as an equilibrium rate. The peso-dollar rate rose by 12 per cent between 1940 and 1941. This column includes only the 40 per cent devaluation in 1948.

^b This period includes the devaluations of 21 per cent in 1949 and of 31 per cent in 1954, which placed the dollar value of the peso 46 per cent below that of 1948.

^c GDP deflator from Banco de Mexico, Grupo Secretaría de Hacienda, Estudios sobre Proyecciones, "Manual de estadísticas básicas para análisis y proyecciones del desarrollo económico de México" and Annex, July 1964, rev. Dec. 1964 (mimeo.).

^d GNP deflator from U.S. Department of Commerce, Office of Business Economics, *The National Income and Product Accounts of the United States 1909-1965* (1966), pp. 160-61.

^e From Nacional Financiera, *50 Años de Revolución en Cifras* (Mexico D.F., 1963), p. 115.

^f Equal to

$$\frac{[(\text{Row (1)} + 100) \div (\text{Row (2)} + 100)] \times 100}{\text{Row (3)} + 100} - 100$$

throughout the period (Table 7). Although import licensing received government approval in the early forties it was not widely applied until 1947; until then duties on exports and imports provided the major form of protection. Since the incidence of both import and export duties (with the exception of the early forties) was falling during this period, commercial policy if viewed in isolation actually tended to *slow down* the rate of expansion of import-competing activities relative to that of export industries.²⁸ Relative price changes had a similar effect since peso export prices rose far more rapidly than those of importables and even more rapidly than domestic prices in general if the effect of the devaluation of 1948 is included (Table 14). What this suggests is that if one looks at actual changes in commercial policy from 1941 to 1948 the government did little to improve the climate for investment in import-competing activities aside from making loud encouraging noises. There may indeed have been a conscious strategy of permitting growth to follow market forces insofar as possible in these years so as to maximize the foreign exchange earnings of the wartime boom. Imports were relatively scarce at this time and local suppliers were operating at full capacity, hence there was little need for greater protection, and increased controls might have seriously retarded the rate of growth.

After 1947, however, conditions were created which forced a new approach. The years 1948 to 1954 produced perhaps the greatest sustained pressure on the

²⁸ It is assumed here that relative price increases resulting from commercial policy as well as conditions of excess demand are positively correlated with relative rates of return among the three branches of Mexican industry. Clearly the pressure on relative prices from various aspects of commercial policy does not necessarily reflect the *net* change in relative prices which actually occurred in the economy. We are just discussing in this section those elements among the many pressures on relative prices which may be attributable to known applications of commercial policy.

TABLE 14.—RELATIVE CHANGES IN THE PRICES OF MEXICAN HOME GOODS
VERSUS EXPORTABLES AND IMPORTABLES, AND CHANGES IN THE
TERMS OF TRADE, SPECIFIED PERIODS 1941-63*
(Per cent)

	1941-48	1948-54	1954-63
Change in prices of Mexican home goods:			
(1) relative to prices of exportables	-16	-13	+36
(2) relative to prices of importables	+27	-25	+16
(3) Change in terms of trade	+52	-14	-15

* Prices of home goods are measured by the GDP price deflator (changes shown in Table 13); prices of exportables and importables are measured by the implicit price indexes (peso values divided by volume indexes) shown in Banco de Mexico, Grupo Secretaría de Hacienda, Estudios sobre Proyecciones, "Manual de estadísticas básicas para análisis y proyecciones del desarrollo económico de México" and Annex, July 1964, rev. Dec. 1964 (mimeo.), Table I-8; terms of trade are from *ibid.*, Table I-8.

Expressed in decimal terms:

Row (1) = [(Change in GDP deflator + 1.0) ÷ (change in export price index + 1.0)] - 1.0

Row (2) = [(Change in GDP deflator + 1.0) ÷ (change in import price index + 1.0)] - 1.0

Row (3) = [(Change in export price index + 1.0) ÷ (change in import price index + 1.0)] - 1.0

Mexican balance of payments in history. Every device in the policymaker's bag of tools was called into play to reduce imports and increase exports. High and increasing levels of aggregate demand during the forties and early fifties, spurred by booming wartime export markets and sustained by government deficit financing and substantial increases in liquidity, caused prices to soar. As a result the long-promised licensing system was finally applied to a broad range of imports, and ad valorem duties were added to the specific tariffs already in effect. As Tables 7 and 8 reveal, the incidence of both export and import duties rose sharply accompanying the 40 per cent devaluation of 1948. This increase in tariffs and quotas tended to favor the expansion of import-competing activities and home goods over exports. Devaluation, on the other hand, favored both import-competing and export activities, but the terms of trade failed to reinforce this favorable effect on exports between 1948 and 1954, despite a temporary upswing during the Korean War. Because they made imports more costly in pesos, these policies combined to push domestic prices upward. Yet a comparison of Table 13 with Table 14 reveals that although domestic prices rose 63 per cent, 50 per cent faster than those abroad (U.S.), the devaluations of 1948/49 were effective in causing home goods prices to decline 25 per cent relative to imports and 13 per cent relative to exports (Table 14, rows 1 and 2).

Yet increased tariffs and direct controls after 1947, in addition to devaluation, were insufficient to prevent serious balance of payments disequilibria once the Korean War markets for Mexican exports collapsed in 1953. Again internal prices rose, though more moderately this time, with the rate of increase decelerating through 1963 (excepting 1960). Although one might have expected the 1954 devaluation to again keep the price of exports and import-competing goods above those of home goods production, Table 14 reveals the prices of the latter to have risen relative to traded goods. Exporters appear to have been price takers adhering to international price levels while home goods prices responded to domestic inflationary pressures. Whatever initial advantage might have been gained from the

1954 devaluation has vanished by now as prices in Mexico have outstripped those in the U.S. by more than the original 31 per cent fall in the exchange rate (Table 13). The history of the 1954 devaluation is one of considerable controversy. Ruiz Cortines' government (1952-58) consistently defended both the timing and magnitude of the devaluation. Economists at the Mexico City office of ECLA, on the other hand, challenged the decision in a pathbreaking analysis of the structure of Mexican trade and development and its likely response to devaluation (13).²⁹

In dealing with the characteristic tendency of a developing country such as Mexico to experience external disequilibrium, the ECLA study considers devaluation among other policies which may be applied to correct these disequilibria. Its conclusions stressed that (13, pp. 76, 77) :

. . . the increasing dependency on imports of intermediate goods which is typical of the initial phases of industrialization also characterize the case of Mexico, or so it may be inferred from the disproportionate expansion of imports of raw materials and semi-processed imports in relation to aggregate consumption.

. . . external disequilibria were aggravated when development was accompanied by a concentration of income, owing to the fact that import demand for consumer goods originated primarily in the medium- and high-income brackets. This was associated with a high income elasticity of demand for durable consumer goods.

. . . demand for capital goods also grew disproportionately once the periods of contraction or stagnation were superseded by modern development. This characteristic feature of the economic development process is also illustrated by the change in import elasticity.

While acknowledging that the 1954 devaluation might have stimulated certain export items (for example, cotton) and fostered import substitution of easily produced manufactures, the study attempted to discourage similar policies in the future by saying (13, p. 77) :

. . . on the whole however export prospects were very restricted, and it is problematical whether even commodities whose export trends show a sharp upward trend will be able to imitate the exceptionally rapid development of cotton which finally reached an inflection point when the foreign cotton policy of the United States underwent a change in 1956.

For these reasons there appears to be little likelihood that future devaluations will serve to attenuate the disequilibria produced by a contraction of demand and intensified income concentration. In contrast to the effect of adjusting the exchange rate, a redirection of productive resources according to the development trends in demand and capacity to import would enable structural changes in supply to take place more gradually, and thus reduce the possibility of a disequilibrium in the balance of payments. In other words, if investment were so planned that the requisite rate of import substitution was obtained, this would largely help to eliminate or reduce the trend toward external disequilibrium, without imperiling the free exchange regime prevailing in Mexico.

²⁹ This document is obtainable in mimeograph form from the UN Documents Division, New York.

This study was criticized at the time for implicitly suggesting that the peso had been undervalued. Yet it contains much worthwhile and surprisingly up-to-date analysis including what turned out to be a fairly accurate forecast of the 1965 balance of payments. One of its principal assertions was that U.S. travel in Mexico was price inelastic. If true, which is doubtful, the undervaluation argument followed, since exchange policy could be shown to have lowered potential tourism revenues after 1954. (Relative Mexican price increases since 1954 might have tended to increase these revenues by the same logic.) There is some question as to the price elasticity of demand for tourism in Mexico. It is quite possible that U.S. tourists, shopping for bargain travel, favored Mexico more than would have been the case had post-1954 prices continued to rise without devaluation. This subject deserves considerably more attention in future research.

The allegation of undervaluation of the Mexican exchange rate after the 1954 devaluation may receive some support from a recent ECLA study of purchasing power parity in Latin America, which shows that the legal rate was 36 per cent below the parity rate for Mexico in 1960 (14).³⁰ Since this measure includes a large share of non-traded goods it is not designed to reflect an "equilibrium" exchange rate. Still it does help to explain why Mexico has been able to continue to develop rapidly during 13 years of relative price increases without another devaluation (Tables 12 and 14). Undervaluation, if it did occur, might prove to have been an important precondition for the successful application of monetary policy in Mexico by minimizing exchange risk for a number of years.

Almost the entire burden of commercial policy for import substitution since 1954 appears to have fallen on the licensing system, if one does not include in the term "commercial policy" the vital role of government expenditures on transport, irrigation, and other projects which promoted import-competing activities. Since there has been no subsequent devaluation, the incidence of export duties has remained relatively constant and the share of import duties in imports has risen only slightly (Tables 7 and 8). The allocative effects of these policies have tended to favor import-competing and home goods production at the expense of traditional exports, although relative price changes have partly offset the advantages to import-competing industries from commercial policy (see Table 14).

Traditional economic theory tells us that under certain conditions (the most relevant being free competition, no increasing returns to scale, and an initially acceptable income distribution) the unfettered flow of trade will maximize welfare. Obviously any assessment of Mexican commercial policy in general and industrialization in particular must come to grips with this basic issue: were the "gains from trade" which were lost in the short run through the distortions of commercial policy regained in the long run through a higher rate of growth of income and product? One must also determine how the distributional effects of commercial policy (including government disposition of tariff revenues) affected total welfare. Only a few aspects of this question are touched upon here. The following paragraphs examine the sectoral impact of import substitution in the fifties on the demand for capital goods, capital goods imports, skilled labor, and direct plus indirect intermediate imports.

³⁰ This study indicates that in terms of purchasing power parity, the peso in 1960 would have been valued at 8 to the dollar rather than 12½ according to the official exchange rate. This suggests a 36 per cent undervaluation of the Mexican currency as of 1960, or by a much greater factor in 1954.

TABLE 15.—OUTPUT CAPITAL RATIOS BY SECTOR, 1960*

(Million current pesos except as otherwise indicated)

Industry group	Gross value of production	Stock of fixed reproducible assets	Ratio: production to assets
1. Agriculture, cattle, forestry and fisheries	32 166	53 258	.604
2. Mining and quarrying	4 311	5 524	.781
3. Petroleum extraction and refining	9 586	16 127	.594
4. Food products, beverages, and tobacco	29 455	21 180	1.391
5. Textile, clothing, and leather goods	12 957	8 318	1.558
6. Wood products, furniture, paper, printing, and publishing	5 603	6 046	.927
7. Chemicals, rubber and plastics	8 781	8 836	.994
8. Nonmetallic minerals manufacturing	2 528	4 187	.604
9. Basic metals industries	4 690	8 485	.553
10. Metal products manufacturing and repair	10 502	11 472	.915
11. Construction	13 938	6 372	2.187
12. Electricity	2 205	14 747	.150
13. Commerce	53 539	52 194	1.026
14. Transportation	8 040	42 520	.189
15. Services	30 994	29 506	1.050
Total	229 295	288 772	.794

* Column 1 from 1960 Input-Output Table in C. W. Reynolds and Ibrahim Samater, "The Structure of Production and Imports (1950-60)," (rev. working paper, Econ. Growth Cen., Yale Univ., Summer, 1967). Column 2 from Leopoldo Solis M., "A Projection of the Development of the Mexican Economy in the Coming Decade," Ithaca, 1966, Table III, p. 16.

We have seen that 9 out of 15 major sectors of the Mexican economy reduced their average intermediate import requirements between 1950 and 1960 (Tables 11 and 12). Six of the 9 also proved to be relatively light users of capital as of 1960 (Table 15). These and related results show that import substitution first took place in activities which were not capital intensive either in terms of domestic or imported capital requirements. A Bank of Mexico study which estimated sectoral coefficients for imported capital requirements in 1960 shows that only 3 of the 9 import-substituting sectors have above average imported capital/output ratios (machinery and metal products, electricity, and chemical and rubber products).

Different results appear from the relationship between human capital requirements and import substitution. Five of the 9 import-substituting sectors in Tables 11 and 12 representing 56 per cent of the value of production in 1960 have above-average labor skill requirements. (The exceptions were food processing, commerce, construction, and mining.)⁸¹ These findings are consistent with Professor Hirschman's hypothesis that human capital is initially the most scarce factor, to the extent that those industries which developed since 1950 were at a comparative disadvantage with those which import substituted before that year. These results argue for the importance of formal education and on-the-job training if programs of industrialization are to succeed in the long run.

⁸¹ The rank ordering of skill requirements used in this paper was prepared with the advice of Donald Keesing using data from 15. The indicators used refer to the number of professional and technical personnel per thousand employed workers, using an unweighted average for eight countries (U.S., Canada, West Germany, England and Wales, France, Sweden, Netherlands, and Belgium).

Finally, the effect on overall demand for intermediate imports which would arise from a change in the value of production of each of the 15 sectors was estimated using the 1960 input-output table. As of 1960, 6 of the 9 import-substituting sectors had below average direct plus indirect intermediate import coefficients. (For a definition of these concepts, see the note to Table 12.) On the other hand, the 3 sectors which were import-intensive (metal products manufacturing, chemicals, rubber and plastics, and petroleum extraction and refining) had above average direct plus indirect import requirements. In the Mexican case direct intermediate import requirements provide a good proxy for indirect requirements, since the rank correlation of direct plus indirect import requirements with the former is +.92.

A number of tentative conclusions can be drawn from the foregoing. First, import substitution occurred most readily in less capital-intensive sectors. To the extent that the capacity to save and invest places limits on Mexican growth, import substitution within manufacturing has not unduly raised the capital-output ratio and has helped to maximize the growth obtainable from the available capital stock. Moreover, by permitting the structure of the economy to evolve in the direction of foreign exchange saving and/or earning capacity, import substitution may well have increased the share of foreign exchange available for essential growth promoting imports. On the other hand, import substitution has almost certainly increased the overall demand for skilled labor. This suggests that traditional import-substitution policy models must be expanded to include investment in human resources. In extreme cases this factor might offset the beneficial effect of savings in physical capital and foreign exchange mentioned above.

SUMMARY AND CONCLUSIONS: LESSONS FROM THE MEXICAN EXPERIENCE

Mexico illustrates a case of successful import substitution, although the transformation of the structure of production which brought this about involved tremendous strains on the economy and the balance of payments. That the country was unable to accomplish the task in the 1930's, and that trade revenues from wartime expansions in demand proved indispensable in subsequent years, offer important lessons. Although in 1960 Mexico was able to reduce her intermediate imports 36 per cent below the level which would have obtained with the old 1950 import coefficient structure, shifts in final demand caused commodity imports as a share of GDP to fall by only two percentage points over the 1950's after having risen during the 1940's.

Meanwhile commercial policy had a negative influence on the expansion of traditional exports, augmenting the unfavorable impact of declining terms of trade. As a result the share of commodity exports in GDP fell by three percentage points in the 1940's and by almost five percentage points in the 1950's. Had it not been for a transformation in the pattern of exports, from minerals toward cash crops and certain manufactures, the decline would have been even greater. The resulting commodity trade gap was partially bridged by expanded exports of services and particularly tourism. Fortunately the promotion of import substitution was complementary to the growth of tourism so that public policy served to expand new lines of trade even as it discouraged traditional exports.

In the final analysis the effectiveness of import substitution policies may be measured by the maturation of domestic industry and the availability of profitably developed natural resources. In assessing the effectiveness of Mexican policy one must examine the degree to which domestic prices have approached world prices for goods of equal quality. Once competitive pricing is achieved, whether through the market mechanism or through wisely selected taxes and subsidies, it then becomes possible for import-competing activities to become net exporters rather than importers. In some branches of Mexican agriculture this has already occurred, notably in wheat and maize cultivation, although in both cases support prices are used to stimulate production. This does not necessarily represent inefficient resource allocation, to the extent that support prices are designed to equate private with social cost of domestic inputs and foreign exchange is valued at its social opportunity cost. In mining the movement has, if anything, been in the other direction. Almost all of the mineral production of Mexico was exported in 1910, while today only half of the output is traded. In this case domestic demand increased more rapidly than foreign demand, increasing domestic prices of raw materials (net of transport costs) relative to those abroad.

For the service sector the continued rapid increase in revenues from tourism suggests that at the present exchange rate the cost of tourism in Mexico is still below that of the U.S. or comparable localities abroad. Yet the net gain from tourism, once Mexican border expenditures are deducted, is a much smaller figure, and the gap is narrowing year by year. In manufacturing import substitution has certainly occurred within most sectors, but changing conditions of demand among the subsectors have tended to prevent overall import requirements in manufacturing from falling. Meanwhile products such as black-and-white television receivers, shoes, textiles, handicraft articles, furniture, plastics, and glassware are beginning to be sold at prices competitive with those abroad at the present exchange rate. Border industry articles produced only for export are proving their ability to compete in the U.S. market. There is every indication that the exportation of initially "import-competing" goods will rapidly expand both to Latin America and the U.S., provided they are not faced with increasingly restrictive policies abroad and domestic price inflation is kept under control.

The ability to generalize from the Mexican experience to other developing countries is limited by many factors which tend to make it a special case. These include proximity to the U.S., the role of tourism (itself a product of public policy), the absolute size of the market, the abundance of natural resources including land, the effect of the Revolution and subsequent reforms on income distribution, entrepreneurship, and perhaps most importantly the commitment of the government to economic and social progress and national autonomy. Perhaps the key issue raised by this paper, and one yet to be resolved, concerns Mexico's success in avoiding many of the pitfalls which one customarily associates with widespread controls on trade. Several hypotheses may be proposed in this regard. Tariff levels have been low and relatively uniform, reducing this source of price distortion. Quotas have remained flexible and may be raised or lowered according to the extent to which local suppliers satisfy price, quality, or delivery-time criteria. This tends to reduce the non-tariff component of protection. The six-year cycle of public administrations, including those responsible for commercial policy,

limits the duration of favoritism if and when it exists. Government enterprises may enter any market in which prices and costs unduly diverge, or in which the latter reflect a high degree of technical inefficiency. The threat of competition from contraband exists for those commodities whose prices move far out of line with those abroad. Local entrepreneurs may easily benefit from the examples of prior successes and failures in the U.S. Foreign direct investors are subject to the threat of rising taxes and broader application of the 51 per cent ownership law if their performance does not meet policy-makers' specifications. All of these factors undoubtedly play a role in the minimization of distortions in the production process and the inefficiency which this entails. The extent to which the lessons they suggest are transferable to countries with much different resource endowments, size, and location, as well as alternative social and political structures must remain in doubt. Nevertheless we have evidence that at least one country has achieved major changes in the structure of production, along with rapid growth, by following a variety of highly unorthodox economic policies.

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