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

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Mexico.

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## Introduction

Mexico's postwar growth 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. The balance of payments, a bellwether of both internal and external trade conditions, has reflected periodic strains within the economy while at the same time it retains a high degree of flexibility on both current and capital account. After the imposition of a rash of trade restrictions in the late forties and early fifties plus devaluation of the exchange rate in 1948 and 1954, there has been no subsequent devaluation and little in the way of general tariff increases. Nevertheless, the structure of trade is changing rapidly even as the economy continues to expand, and much of this is attributable to public policy 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 especially since World War II. The author has been fortunate in being able to rely upon the experience of a number of economists, public officials, and businessmen as well as the data accumulated during his own research on the structure and growth of the Mexican economy.<sup>1</sup> Sometimes, as the Romans eventually came to realize, international trade in ideas may be worth far more than the exchange of goods and services. In this respect the author is indebted to many Mexican friends comprising a new group of economists dedicated to the free exchange of information and analysis. Without their assistance this paper could not have been written.

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1. An expanded presentation of the results of this study will appear as part of a monograph on the Mexican economy sponsored by the Country Analysis Project of the Economic Growth Center at Yale University.

## I. 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-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," and both groups determined to redeem the past. The major difference between pre- and post-Revolutionary policy involved a shift from the more simple goal of growth to one which also included income distribution and national economic integration. 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. If one is willing to accept the unequal distribution of income resulting from these conditions, it is quite conceivable that resource allocation was "rational" during those years. But rationality in the 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 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 and prevent civil war, the direct and indirect effects of which ultimately cost billions of pesos and over a million lives between 1910 and 1920.

Once peace had been restored, the government could not afford the luxury of returning to unrestrained foreign trade, even if alternative policies meant a slower short-run rate of growth. The author has estimated elsewhere that in the absence of Revolution and subsequent reforms in public policy, GNP would have been between 36% and 70% higher in 1940 and per capita GNP between 19% and 22% higher in the same year than was actually the case. Since well over half of this difference in total GNP 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.<sup>2</sup> 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.

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

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2. See C. W. Reynolds, "The Opportunity Cost of the Mexican Revolution," prepared with the assistance of Manuel Ramírez, summer, 1967 (draft). 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.

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.<sup>3</sup>

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 including military intervention if necessary to support their "rights". Meanwhile the production of traditional exports grew much more rapidly than that of domestic industries between 1910 and 1925. (See Table I). The figures, tentative as they are, suggest that the real value of exports probably increased more rapidly immediately after the Revolution

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3. 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 G. Butler Sherwell, "Mexico's Capacity to Pay, A General Analysis of the Present International Position of Mexico," Washington, D. C., 1929 (typescript). Sherwell estimates that the share of gross value of exports returned to Mexico actually declined between 1910 and 1926 from 79% to 66% (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.

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 IV reveals that mining and fuel exports which represented sixty per cent of traded goods in 1910 increased to 76 per cent by 1926. Table II shows that commodity exports as a share of GDP increased from 11% to almost 14% 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% in 1910 to 21% in 1926. (Table IV):

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 passaged 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. 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.

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 (1934-1940) would 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% between 1925/29 and 1945/48, lead production fell by 15%, and copper production fell by 4%, with only zinc production rising (44%).<sup>4</sup>

The zealotness 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 foreign 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 export toward import-competing activities by penalizing the private production of traditional exports. An unfortunate by-product was that uncertainty spread throughout the economy which had a dampening effect on private investment in general.

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4. The most complete treatment of Mexican foreign trade between 1925 and 1948, from which these figures are taken, is presented in the United Nations Economic Survey of Latin America: 1949, Chapter IX, "Economic Development of Mexico," New York, 1950.

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.<sup>5</sup> 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.)<sup>6</sup> 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, Ávila 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 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

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

6. See Sanford Mosk, Industrial Revolution in Mexico, Berkeley, 1950, 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.

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 (Table I) and the share of exports plus imports in GDP appear to have risen during the thirties (Table II).

One of the most serious impediments to effective import-substitution during the thirties was a shortage of foreign exchange. In order to alter its structure of production for whatever purpose an economy must import those intermediate goods which, in the short-run, cannot be produced domestically except at great cost. This requires foreign exchange 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 was observed in Mexico during the forties. From 1940 to 1950 the share of merchandise imports in GDP rose from 9.4% to 10.7% (Table II) and the rate of growth of both exports and imports of goods and services outstripped that of GDP throughout the decade (Table I). It was not until the fifties that the growth of total output was able to surpass that of imports and exports.<sup>7</sup> The paradox was that in order to reduce its

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7. 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 (Table II). 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 greater than in 1910 and almost as large as in 1925.

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 (since imports from the U. S. did not require sea transport, and since Mexico was considered an extension of the U. S. war economy) meant soaring sales for Mexican manufacturers. A large supply of previously underemployed labor and underutilized capacity permitted these 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.

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 trade restrictions.<sup>8</sup> By the mid-forties the growth of Mexican industrial production

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8. 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.

had begun to seriously strain capacity. Meanwhile, prices 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.<sup>9</sup>

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 to be favored with protection received assurances from the government that requests for licenses to import competing goods would not be granted. Tariffs were also widely applied and in 1947 specific tariff legislation dating back to 1930 was amended to include ad valorem duties on most articles, but as the primary objective of tariffs was revenue, direct controls

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9. 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 (op. cit.) and Frank Tannenbaum, Mexico: The Struggle for Peace and Bread, New York, 1962, (the latter is more zealous and less constrained by economic analysis), urged alternative policies favoring the development of agriculture, transportation, electric power, and communications relative to increased postwar industrialization. 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 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.

have subsequently been more important for protection (see Table VII). Once effective protection was assured, both Mexican and foreign investors vied to participate in the expanding Mexican market. The urban population and Gross Domestic Product were already growing at rapid rates, and substantial investments in rural infrastructure since the thirties offered some assurance that agricultural supply problems which were already afflicting other Latin American countries would not slow 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% between 1940 and 1950 while the capital stock (gross fixed reproducible assets) rose by 30%.<sup>10</sup> 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 developed since the beginning of 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, and Federal investments in power and communications were greatly expanded. The output-capital ratio for the economy as a whole reflects increases in productivity which doubtless were aided by expansion of the national market.

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10. Luis Cossio, unpublished estimates of gross and net investment and the capital stock, 1939 to 1966, Depto. de Estudios Economicos, Banco de Mexico.

<u>Period</u>	<u>Gross Domestic Product/ Reproducible Capital Stock</u>
1941 - 1945	.288
1946 - 1950	.325
1951 - 1955	.353
1956 - 1960	.377
1961 - 1965	.385

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Source: Cossío, op. cit.

Offsetting favorable effects from scale economies in those industries which were now well-established were negative influences on productivity caused by new firms which had not yet achieved optimal efficiency or volume of production. Furthermore, old firms which were reaching the stage of decreasing returns also tended to lower the output-capital ratio so that the net effect of all of these factors helps to explain why the marginal output-capital ratio in the fifties and sixties actually declined. Whether the achievement of increasing returns in the many new industries established since the War will ultimately offset negative effects of infant and senescent industries remains to be seen. The analysis in the fourth section of this report deals to some extent with the implications of import-substitution for requirements of imported and domestic capital goods and skilled labor. It is likely that opposing tendencies will offset each other, creating a more-or-less constant relationship between capital and output in the years to come.

The structure of imports from 1940 to 1960 reveals important changes in both supply and demand in Mexico, 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 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 23% in 1940 to 15% in 1963 (Table VI). This performance is typical of Latin American countries and 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 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 requiring two major postwar devaluations. 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 exports has also changed dramatically since 1940, partly as a result of public policy and partly in response to changing 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 II). The share of commodities in total exports of goods and services fell from 75% in 1940 to 58% in 1960, while tourism plus border transactions rose from 23% to 38% of total exports (Table III) as both commercial policy and declining terms of trade deflected investable funds away from the expansion of traditional exports toward production for the domestic

market. While 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% of commodity exports in 1940 to 26% in 1960. (Table IV). Meanwhile more capital-intensive commodities such as cash crops from the newly irrigated regions of the north and northwest and a few manufactures have risen from 23% to 63% 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 traditionally impoverished 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.<sup>11</sup> 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 income, effective demand for domestic goods, and capacity to import, before import-substitution policies could be successfully implemented.

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 trade gap has been closed by increased exports of tourism, additional net foreign borrowing and an internal shift toward the holding of domestic rather than foreign liquid assets. There is a growing possibility that in the future import-competing industries will become sufficiently competitive to begin exporting manufactured goods as well. As occurred in the U. S. shortly after the turn of the century and more recently in Japan there are prospects that Mexico will eventually become a net importer of raw materials and primary products and a net exporter of manufactures, but that day is still far in the future. In the meantime the share of manufactured exports has risen from 1% of commodity exports in

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11. The author deals with these factors in his broader study of the structure and growth of the Mexican economy, op. cit.

1926 to 3% in 1940, 7% in 1950, and 8% in 1960. At the same time the country has become self-sufficient in a number of formerly imported crops. For example, wheat was a very important net import in the mid-forties. But so successful was the development and use of new hybrids plus the application of fertilizer and irrigation that Mexico achieved self-sufficiency in wheat cultivation in the early sixties and is presently exporting a considerable share of that crop, even though both population and per capita consumption of wheat have risen very rapidly in recent years.<sup>12</sup>

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 and produce well over 50% of the value of their automobiles in Mexico. Today car prices are still well above those in the U. S., but some firms including the recently established Volkswagon subsidiary in Puebla are making plans to compete in the world market. The new Volkswagon factory is installing capacity far in excess of Mexican demands. While VW's 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 in order to sell 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,

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

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 assembly 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 a number of "border industries" is 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 Nogales). 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 attempts by the Mexican government to restructure the pattern of trade, its prewar frustrations, the gradual success of import-substitution policies since 1940, and prospects for the future evolution of Mexican trade. Some of the principal implications are 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 transform its comparative advantage and ultimately begin to export manufactures which is the final stage of import substitution.

## II. Contemporary Mexican Commercial Policy

In 1945 a report to the United States Tariff Commission declared,

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.<sup>13</sup>

One of the first major programs designed to accomplish these broad social objectives was the Six Year Plan of the Cárdenos administration (1934-1940) 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

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.<sup>14</sup>

If one of the conditions for success of such a program involves, as it did in the view of the Mexican government, a major restructuring of the pattern of trade and production, then the economy itself must possess a high degree of internal flexibility. Otherwise attempts to reallocate resources through public policy will be likely to result in unemployment of labor and capital, losses in output, reduced incentives to save and invest, and balance of payments problems. But fortunately the Mexican economy has shown considerable flexibility in recent years so that the opportunity cost of resource reallocation through commercial policy has probably been slight.

During the past three decades Mexican commercial policy has undergone a series of transitions which reflect the evolution of national economic policy

13. United States Tariff Commission, Economic Controls and Commercial Policy in Mexico, Washington, D. C., 1945, p. 8. A detailed description of Mexican commercial policy from 1930 to 1945 is found in this report.

14. Ibid., p. 17.

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% ad valorem from 1935 to 1939. Mexican exports traditionally exceeded imports, and balance of payments problems were infrequent except during periods of political emergency such as from 1914 to 1916. 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 were gradually increased and export duties were instituted partly to encourage rural collectives but primarily for revenue purposes. 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 1928 and later from unusually favorable wartime demand.<sup>15</sup> (See Tables VII and VIII). 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 scarcity of economic controls. Export

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15. Ibid.

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 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 growth of income and in the balance of payments although they are now more endogenous than exogenous in origin and no longer closely coincide with the U. S. trade cycle.<sup>16</sup>

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 twice, in 1948-49 and in 1954. At other times the exchange rate

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6. The increasingly endogenous trade cycle in Mexico is demonstrated statistically in Aspra, A., La Transmisión de las Fluctuaciones Cíclicas a la Economía Mexicana, Thesis for the Licenciatura in economics, UNAM, Mexico, 1964.

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 produced 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 trade cycle. 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<sup>18</sup> 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.<sup>18</sup> His study stresses the partial and

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18. Izquierdo, Rafael, "Protectionism in Mexico," in Public Policy and Private Enterprise in Mexico, Raymond Vernon, Editor, Harvard, 1964.

short-term considerations underlying the progressive implementation of both tariffs and direct controls. He stresses the fact that import substitution was a mere byproduct of commercial policy, the main objective of which was to relieve balance of payments pressures during the postwar period.

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.<sup>19</sup>...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 its proportion of imported inputs, 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.<sup>20</sup>

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 the

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19. Ibid., p. 275.

20. Ibid., p. 287.

specific 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 a choice between tariffs and quotas, it is generally asserted that the inelasticity of demand for intermediate goods makes tariffs somewhat ineffective in restricting imports. The argument is often made 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%, on capital goods 10 to 15%, and consumer goods 50%, with luxury goods paying duties of approximately 100%.<sup>21</sup> Indeed when one compares the average tariff level of 16% in the 1930's<sup>22</sup> with the share of duties in the value of imports (Table VII)<sup>23</sup> it is not even clear that Mexico has substantially increased the amount of tariff protection during the past two decades, so that it is still far below that of most countries in the hemisphere.

Quotas are now applied to about 80% of Mexican imports including almost all manufactured goods. Import licenses are granted whenever the article cannot be

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21. *Ibid.*, p. 254.

22. U. S. Tariff Commission, *op. cit.*, p. 10.

23. 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 is not specified.

obtained locally in a reasonable period of time, of comparable quality, or at a reasonable price.<sup>24</sup> 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 eight to ten per cent of the annual value of imports.<sup>25</sup>

The great flexibility of the licensing system makes it a potential two-edged sword in the hands of skilled administrators. Those firms which comply with the

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24. According to government officials the definition of "reasonable" is becoming more restrictive. 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% above that of comparable imports before taxes.

25. 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.

broad criteria for domestic industrialization are assured that licenses will not be issued for similar imports.<sup>26</sup> 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 supposed 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 political influence will not be facilitated more than under a system of tariffs and/or exchange devaluation. Furthermore the issuance of licenses permits excess profits to be earned by importers which are only partly offset by duties and direct taxation again tending to misallocate resources. The

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

proof of the pudding is the eating. One must resort to a statistical investigation of the effectiveness of Mexican import substitution before drawing any final conclusions on the choice of policy instruments for industrialization adopted by Mexican authorities. The next section begins to deal with these issues.

### III. Effects of Commercial Policy on the Structure of Production and Trade Since 1950

To determine the amount of protection which domestic producers receive from commercial policy much less 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 from tariffs after removing the off-setting effect of duties on intermediate inputs.<sup>27</sup> While this method may be suited to countries relying primarily on tariff protection, in cases such as Mexico where quotas predominate the calculations become difficult since they require that "implicit" tariff rates be obtained by comparing domestic prices and import (export) unit values. Moreover the underlying assumption that all differences between domestic prices and the price of traded goods is attributable to commercial policy is weak in the Mexican case because of the widespread use of differential subsidies and tax allowances to promote industrialization.

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27. For an application of this type of analysis to developed countries see Bela Balassa, "Tariff Protection in Industrial Countries: An Evaluation," Journal of Political Economy, December, 1965. This author is currently directing a similar study of selected developing countries, "The Structure of Protection and Resource Allocation in Less-Developed Countries: A Proposal for Research," 1966. The portion dealing with Mexico is being prepared by Gerardo Bueno, Nacional Financiera, Mexico.

The Case of Mexican Manufacturing

Rather than directly attempt to measure the degree of protection and its effect on resource reallocation, the present report 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 now-classic study by Hollis Chenery, "Patterns of Industrial Growth," American Economic Review, September, 1960. In this study Professor Chenery assumes that the pattern of per capita industrial production of a given country may be explained by per capita income and population size. Using the results of this extremely simple model, hypothetical levels of output were estimated for 15 Mexican manufacturing industries in both 1950 and 1960 and the results were compared with data obtained from the 1950 and 1960 input-output tables of the Bank of Mexico. All data has been converted into 1953 prices using the wholesale price index as a deflator for comparison with results of the Chenery study. (Tables IX and X).<sup>28</sup>

In both 1950 and 1960 actual output exceeded predicted levels in 12 of the 15 industries, suggesting that as early as 1950 the Mexican economy was considerably more industrialized than the average economy with the same population and per capita income.<sup>29</sup> Both World War II and the industrialization program of

28. The author gratefully acknowledges the assistance of Saul Trejo in the preparation of the following section on Mexican manufacturing. Much of the material is taken from a research paper by Trejo, "A Model of Import Substitution and the Changes in Industrial Output in Mexico in 1950-1960," June 6, 1967, and a subsequent appendix prepared on July 21, 1967 at Yale.

29. The interpretation of these results is filled with pitfalls. Even if the composite economy were truly representative and free from distortions due to non-random effects of e.g. 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, petroleum-processing and petrochemical industries show outputs far in excess of the composite economy, as observed in Table IX for groups 10 and 11. Since public policy effects are

the Alemán administration (1946-1952) had a definite effect on the structure of production increasing the share of manufacturing substantially above what it might otherwise have been. In view of the debates which surrounded the government's decision to actively support Mexican industrialization at the expense of other activities and specifically small-scale agriculture, it is important to bear in mind that these statistical results say nothing about relative efficiency of resource allocation. 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 relatively high degree of industrialization continued during the 1950's as per capita output in manufacturing rose faster than results of the Chenery study would have predicted. The percentage by which actual exceeded predicted output was greater in nine of the fifteen industries in 1960 than in 1950 (Table X) although in both years actual performance surpassed expectations in all sectors but printing and transportation equipment in 1950 and printing, wood products, and textiles in 1960.<sup>30</sup> Two of the three industries which fell below the composite economy in 1960 were textiles and wood products, neither of which received a large degree of government support during the fifties. Those which did receive assistance in the form of government financing, subsidies, and

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29. (continued)

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. 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 this policy differed from that of the sample.

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

protection included chemicals, petroleum, and transportation equipment, all of which showed substantial improvements in their positions relative to the composite economy. The machinery manufacturing industry however did not show much change. It would appear that the policies of protection for the machinery industry have not been sufficient to allow production to expand beyond predicted levels, suggesting that scale factors may <sup>have</sup> imposed powerful limiting conditions on this sector. A study of this problem was prepared by the Nacional Financiera under the direction of Alan Manne.<sup>31</sup>

That study examines the possibilities of substitution between imports and domestic manufactures for twelve key sectors of the Mexican economy. It also includes a detailed treatment of the possibilities of substitution in twelve individual machinery industries, allowing for scale requirements and comparative costs by U. S. standards. Results of this specialized study indicate that nine of the twelve machinery industries selected for analysis could be efficiently established in Mexico (excepting turbines and generators, ships, and locomotives). Indeed preliminary results indicate that several would have markets by 1972 far in excess of optimal firm size, and 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) the author calls for further research on the subject, but 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 twelve

31. Manne, A., "Key Sectors of the Mexican Economy, 1962-72," Memorandum No. 41, Research Center in Economic Growth, Stanford, August 1965.

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% projected rate of growth of GNP and allowing for 20% protection, import requirements for the twelve key sectors of the economy would decline by 7%. With an infinite degree of protection (which assumes local production of all possible importables regardless of price) foreign exchange requirements would fall by only 25%. Of course the trade-off is between imported inputs and the efficiency of domestic production as measured by both total costs and capital requirements. With 20% protection, costs would rise by 4% and capital requirements by 5% but with infinite protection costs would rise by 6% and capital requirements by 19%.

An important finding of the study was that almost 70% of the intermediate imports in the twelve key sectors of the economy are complimentary 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 complimentary to domestic machinery production of from 259 to 278 million dollars when that sector is provided with complete 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 (Table IX) but there is still considerable scope for expansion of those items mentioned above. Output in the paper industry according to Table IX 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 fifteen subsectors of manufacturing listed above, initial results indicate that Mexican import substitution policy has been remarkably effective.<sup>32</sup>

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. One set of data suggest that total imports fell from 13.5% to under 10% of gross domestic product between 1950 and 1960, according to Mexican input-output tables for the respective years.<sup>33</sup> While these estimates probably

32. The author was assisted in these calculations by Ibrahim Samater, Summer, 1967.

33. Import figures in the input-output tables appear to represent only merchandise imports in both years. In addition to this the coverage in the two tables appears to differ, since the Banco de Mexico value of merchandise imports including fronteriza imports (those entering the fifteen-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

exaggerate the decline, independent figures show merchandise imports alone to have fallen as a share of GDP from 10.7% to 9.5% between 1950 and 1960 (Table II).

The changing share of intermediate imports in total value of production (value added plus inter-industry demand) is presented in Tables XI and XII. Here the total value of production in Mexico is disaggregated into fifteen 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 is evident that the net effect on demand for intermediate imports has been very favorable. The share of intermediate imports in total value of production has fallen from 4.92% to 3.97% between 1950 and 1960, a reduction of almost 20%. This reflects 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% to 10.7% 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% to 5.5% of gross value added in the economy.<sup>34</sup>

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33. (continued)

result approximates that of the 1960 input-output table. The 1960 input-output table understates total import requirements according to these calculations by approximately 18%. While an important consideration, this qualification does not seriously alter our conclusions about import substitution among intermediate goods, since most fronteriza imports are final goods.

34. In an interesting independent study by Timothy King, "Rationale and Limitations of the Mexican Import Substitution Policies," (draft), the proportion of intermediate imports to intermediate production of goods and services was calculated for twenty-one sectors of production. In this study the share fell from 13.2% to 10.4% which is almost identical to the figures presented above. The author's 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

Nine of the fifteen subdivisions of Mexican GDP showed a decline in the proportion of intermediate imports to total value of production over the decade. (Tables XI and XII). The most important were food products, commerce, and services which together accounted for over 42% of the value of production in 1950 and almost 50% 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 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. Textiles, wood and paper products, chemicals and plastics, and basic metals industries increased their share of imports in total value of production from 9.1% to 11.4% 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% 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.<sup>35</sup> The intermediate

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34. (continued)

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, since the relationship between final demand and intermediate demand has not changed sharply during the decade, the conclusions of the two studies are generally consistent.

35. Estimates of the Bank of Mexico indicate a fall and then rise in the internal production of machinery and equipment as a share of total demand for capital goods from 46% in 1940 to 43% in 1950 and 53% in 1960. Banco de México, Documento del Departamento de Estudios Económicos, "Alternativas de Estimación de la Inversión Bruta Fija en México, 1939-1962," May 8, 1965, Cuadro 14.

import requirements of manufacturing as a whole were 7.9% in 1950 and 7.7% 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 XII 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% in 1950 to 71.2% 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 remained the same as in 1950? If the economy had produced the actual volume of 1960 production with sectoral import requirements at 1950 levels, Table XII reveals that intermediate imports <sup>in 1960</sup> would have risen by 36% or from nine to over twelve 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 natural 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 six of the seven sectors which increased their share of the total value of production had declining intermediate import coefficients, this was not sufficient to offset their relatively higher average demand for imports. This is illustrated by comparing columns 3 and 7 in Table XII. 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, since the substitution gains within individual sectors may be offset by the fact that the average 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.

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, and the gradual substitution of domestic for imported intermediate goods 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.<sup>36</sup> Moreover the 37% reduction in import requirements

36. 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 related directly through public policy to overall balance of payments conditions. See Dwight Brothers and Leopoldo Solis, Mexican Financial Development, 1966, and John Kochler, "Information and Policy Making: Mexico," Yale Ph.D. dissertation (in preparation).

which did occur might have been as great as 41% 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.

IV. Evaluation of Contemporary Commercial Policy  
in Terms of the Demand for Scarce Resources

The three principal arms of Mexican commercial policy, import and export duties, 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, 1941-1947, 1947-1954, and 1954-present. By separating total domestic production into three general categories, export activities, import-competing industries, and industries producing non-traded (home) goods, the effect of commercial policy during the three periods on the allocation of resources among these sectors may be surmised.<sup>37</sup>

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 VIII), while import duties as a share of imports tended to decline throughout the period. (Table VII). 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

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37. Without attempting to minimize the serious identification problem involved in attempting to assess the effect 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 good becomes more inclusive as the gradual implementation of direct import controls places embargos on an increasing number of commodities.

actually tended to slow down the rate of expansion of import-competing activities relative to that of export industries.<sup>38</sup> Relative price changes had a similar effect since 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 XIV). What this suggests is that if one looks at actual changes in commercial policy from 1941 to 1947 the government did little to improve the climate for investment in import-competing activities aside from making loud encouraging noises.

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

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 being applied. As Tables VII and VIII reveal, the incidence of both export and import duties rose sharply accompanying the 40% devaluation of 1948. This increase in tariffs and quotas tended to favor the expansion of import-

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38. 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.

competing activities and the production of non-traded goods over that of exports. Devaluation, of course, favored both import-competing and exports activities but the terms of trade between 1948 and 1954 despite an upswing during the Korean War, failed to reinforce this favorable effect on exports. All of these policies combined to place additional pressure on prices. But a comparison of Table XIII with Table XIV reveals that even though domestic prices rose 63% faster than those abroad (U. S.), the devaluations of 1949 and 1954 were effective in causing domestic prices to decline 25% relative to import and 13% relative to export prices. (Table XIV, rows (1) and (2)).

The abrupt increase in tariffs and direct controls after 1947 was not sufficient to prevent serious balance of payments disequilibrium after Korean War markets collapsed in 1953. By 1954 the Mexican government undertook another severe devaluation. Once again internal prices rose but more moderately this time and the rate of increase declined steadily from 1954 through 1963 (with the exception of 1960). As a result of the 1954 devaluation export and import-competing activities were again favored over home goods production. Recently however the relative advantage gained from devaluation has tended to disappear as prices in Mexico have increased over those in the U. S. (Table XIII). The real question is whether the 1954 devaluation undervalued the peso sufficiently to offset subsequent price rises. The history of the 1954 devaluation is shrouded in debate. The government of Ruiz Cortines (1952-1958) consistently defended both the timing and magnitude of devaluation. Economists in other quarters including Celso Furtado and Juan Noyola who were at that time employed by the Mexico City office of ECLA, attacked the policy in a major study which was subsequently withheld from publication.<sup>39</sup>

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39. ECLA, External Disequilibrium in the Economic Development of Latin America: The Case of Mexico, Vols. 1 and 2, April 1, 1957, presented to the seventh session of the Economic Commission for Latin America, La Pas, Bolivia, May 15, 1957. This document has recently been obtainable in mimeograph form from the UN Documents Division, New York.

In dealing with the natural tendency of Mexican development to produce external disequilibrium, the Furtado-Noyola study considers devaluation among other policies which may be applied to correct these disequilibria. The conclusions they reached correspond closely with some of those in the present report by stressing that

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.

(and) ...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.<sup>40</sup>

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:

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.

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40. Ibid., p. 76.

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 towards external disequilibrium, without imperiling the free exchange regime prevailing in Mexico.<sup>41</sup>

While this study was suppressed and criticized at the time for implicitly suggesting that the peso had been undervalued, 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 principle assertions was that U. S. travel in Mexico was price inelastic. If this were true then the undervaluation argument followed, since exchange policy could be shown to have lowered potential tourism revenues after 1954. (Relative Mexican price increases since 1954 have tended to increase these revenues by the same logic).

The alleged undervaluation of the Mexican exchange rate after the 1954 devaluation is supported by a recent ECLA study of purchasing power parity in Latin America, which claims that as late as 1960 the legal rate was 36% below the parity rate for Mexico.<sup>42</sup> Since this measure includes a large share of

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41. Ibid., p. 77.

42. ECLA, A Measurement of Price Levels and the Purchasing Power of Currencies in Latin America in 1960-1962, E/CN.12/653, as quoted in ECLA, Process of Industrialization in Latin America, Statistical Annex, ST/ECLA/Conf.23/L.2E/CN.12/716/Add.2, January 19, 1966, Table 1-6. This study indicates that in terms of relative purchasing powers, the peso in 1960 would have been valued at eight to the dollar rather than twelve and a half according to the official exchange rate. This suggests a 36% undervaluation of the Mexican currency as of 1960, or by a much greater factor in 1954.

non-traded goods it by no means reflects a hypothetical "equilibrium" exchange rate. Still it does help to explain why Mexico has been able to survive for 13 years without another devaluation despite the large relative price increases recorded in Tables XIII and XIV. It would be useful to measure the opportunity cost of undervaluation in some future study of Mexican trade.

Since 1954 almost the entire burden of commercial policy for import substitution appears to have fallen on the licensing system. 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 VII and VIII). The allocative effects of these policies have tended to favor import-competing and home goods production at the expense of traditional exports though relative price changes have partly offset the advantage gained by import-competing industries from commercial policy. (See Table XIV).

Traditional economic theory tells us that under certain conditions (the most relevant being free competition, decreasing return to scale, and initially acceptable income distribution) the unfettered flow of international trade will maximize welfare. Obviously any assessment of Mexican commercial policy in general and import substitution in particular must come to grips with this basic issue: Were the "gains from trade" which were lost in the short run through 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. In view of the limited amount of time and data available for this study, only a few aspects of this question can be considered here. The following section examines the sectoral impact of import substitutions in the fifties on the demand for capital goods, capital goods imports, skilled labor, and direct plus indirect intermediate imports.

We have seen that nine out of fifteen major sectors of the Mexican economy reduced their average intermediate import requirements between 1950 and 1960 (Tables XI and XII). Six of the nine also proved to be relatively light users of capital as of 1960. (Table XV). Furthermore three of these six sectors (food processing, services, and commerce) which had substantially above average output-capital ratios accounted for most of the import substitution in the fifties. These results certainly suggest that import substitution is most likely to occur in activities which are not capital intensive. These conclusions may be extended to cover imported capital requirements as well. A ranking of sectoral imported capital coefficients (also available for 1960) places only three of the nine import-substituting sectors above average <sup>in</sup> imported capital output ratios (machinery and metal products, electricity, and chemical and rubber products).

Just the opposite is true of the relationship between human capital requirements and import substitution. A crude sectoral ranking shows five of the nine import-substituting sectors (Tables XI and XII) to have above average labor skill requirements. (The exceptions were food processing, commerce, construction, and mining).<sup>43</sup> The same results obtain from the examination of the fifteen manufacturing subsectors analyzed in the first part of Section III. It will be recalled that the growth of these sectors was investigated relative to that of a hypothetical international economy. Of the six manufacturing subsectors which

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43. This crude ranking of skill requirements by twelve major production sectors was prepared by the author with the advice of Donald Keesing using data from Morris A. Horowitz et. al., Manpower Requirements for Planning: An International Comparison Approach, Boston: Northeastern University, 1966. The indicators used refer to the number of professional and technical personnel per one thousand employed, using an unweighted average for eight countries (U. S., Canada, West Germany, England and Wales, France, Sweden, Netherlands, and Belgium).

did not show an increase in the ratio of actual to predicted output between 1950 and 1960 (Table X) five also had a below-average demand for skilled labor.<sup>44</sup> On the other hand all but one of the six sectors with above-average skill-requirements (the single exception being machinery manufacturing) also showed greater than expected rates of growth during the fifties. These results suggest a high elasticity of substitution between domestic skilled labor inputs and the importation of intermediate goods. The findings therefore tend to support arguments for including labor skills in theoretical explanations of the pattern of trade and development. They also serve to underscore the importance of formal education and on-the-job training in programs of import substitution.

Finally it has been possible to determine from the 1960 input-output table the effect on overall demand for intermediate imports which would arise from a change in the value of production of each of the fifteen sectors. As of 1960 six of the nine import-substituting sectors had below average direct plus indirect intermediate import coefficients. On the other hand the three sectors which were import-intensive (metal products manufacturing, chemicals, rubber and plastics, and petroleum extraction and refining) had direct plus indirect import requirements which were far above average. It might be added that in the Mexican case direct intermediate import requirements provide a good proxy for indirect requirements as well, since the rank correlating of direct and indirect import requirements with direct import requirements alone is a highly significant +.94.

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44. In view of its greater degree of disaggregation, a more precise estimate of skilled labor requirements was obtainable in this case. The indicator employed for this comparison relates to the percentage of professional, technical, administrative and clerical personnel in the labor force for each of the fifteen manufacturing subsectors. It was prepared by Donald Keesing from Horowitz, op. cit., based on the same sample as in footnote (43) plus Japan.

A number of tentative conclusions can be drawn from the foregoing. First, import substitution seems to have occurred most readily in less capital intensive sectors. To the extent that savings have limited Mexican development in the past, import substitution in most sectors seems to have permitted lower than expected capital-output ratios and therefore more rapid rates of growth. On the other hand, import substitution has almost certainly increased the total demand for skilled labor. This suggests that traditional import substitution policy models must be expanded to include investment in human resources. It is quite possible that this factor alone will offset the savings on physical capital 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 provide important lessons. Although Mexico was able to keep her intermediate imports in 1960 at a level 37% below that which would have obtained with the old 1950 structure of production, we have seen that commodity imports fell as a share of GDP by only two percentage points over the decade after rising during the forties.

Meanwhile the allocative effects of commercial policy had a negative influence on the expansion of traditional exports, augmenting unfavorable conditions of foreign demand. As a result the share of commodity exports in GDP fell by three percentage points in the forties and by almost five percentage points in the fifties. Had it not been for a transformation in the pattern of exports from minerals toward cash crops and a few manufactures the decline would have been even sharper. The resulting commodity trade gap was partially offset by expanded exports of services and particularly tourism. Fortunately these activities were complementary to the promotion of import substitution so that public policy served to expand new exports even as it tended to discourage traditional export activities.

In the final analysis the effectiveness of import substitution policies may be measured by the maturation of domestic industry. 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 it will then become 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. 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 at the present exchange rate suggests that Mexico's cost of living is still below that of the U. S. despite recent price increases. It should be noted, however, that the net gain from tourism once Mexican border expenditures have been 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 certain product lines are beginning to be sold at competitive prices (e.g., black and white television receivers, shoes, some textiles, handicraft articles, plastics, glassware) with those abroad at the present exchange rate, along with border industry articles which are being produced only for export. There is every indication that the exportation of import-competing goods will rapidly expand both to Latin American and U. S. markets, provided they are not faced with increasingly restrictive policies abroad.

The ability to generalize 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 permissive role of tourism (itself a product of public policy), the absolute size of the market, the effect of the Revolution and subsequent Reforms on income distribution, entrepreneurship, and

perhaps most important a commitment of the government to social progress and national autonomy. Furthermore conclusions derived from the ability of one or a few countries to import-substitute successfully are subject to the fallacy of composition. Were all developing countries to pursue similar policies the results would almost certainly differ. In this respect the Mexican experience must be viewed as a partial and strictly national approach to a problem of international proportions which will demand more general solutions in years to come.

TABLE I

Growth of Mexican Gross Domestic Product, Population,  
and Foreign Trade 1900-1966

(Compound Annual Rates of Growth)

	Porfiriato	Period of Revolution and Reform		Period of Development		
	<u>1900-10</u>	<u>1910-25</u>	<u>1925-40</u>	<u>1940-50</u>	<u>1950-60</u>	<u>1960-66</u>
(1) Gross Domestic Product	4.2	2.5	1.6	6.7	5.8	6.2
(2) Population	1.1	0.1	1.8	2.8	3.1	3.2(est)
(3) Real Per Capita Product	3.1	2.3	-0.2	3.9	2.7	3.0
(4) Agricultural Production	2.6	1.8	1.9	8.2	4.3	
(5) Manufacturing Production	3.6	1.7	4.3	8.1	7.3	
(6) Mining and Petroleum Production	7.2	5.6	-1.9	2.5	5.3	
(7) Exports of Goods and Services <sup>1</sup>	4.5	(2.7-5.1)	-1.4	8.2	1.8	
(8) Imports of Goods and Services <sup>1</sup>	1.3	(1.9-4.3)	-3.5	9.4	4.3	

Note on Sources and Methods:

Rows (1) to (6) are taken from Reynolds, C. W., "The Structure and Growth of the Mexican Economy," Ch. I, Table I-2, mimeograph, 1967. 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 are presented in an appendix "Mexican National Economic Accounts and Historical Data", and information on precise sources 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) exports in real terms from El Colegio de Mexico, Comercio Exterior de México 1877-1911, Mex., p. 163. The data for "1900-1925" is really 1909-10 to 1926 from Sherwell, G. Butler, Mexico's Capacity to Pay, Washington, 1929, (typescript) in which the value of exports reflects only the share of export earnings retained in Mexico (returned value). The larger of each of the figures is the growth of the value of trade in dollars. The smaller of the figures is the value of trade in pesos deflated by the wholesale price index in Mexico City. The data from 1925 to 1940 are from the U.N. Economic Survey of Latin America, 1949 expressed in millions of 1937 pesos. The figures from 1940 onward are from the Banco de Mexico, Depto. de Estudios Economicos, and represent the "capacity to import" (7) and total imports of goods and services (8).

1. 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.

TABLE II

Estimates of the Trade Share of Gross  
Domestic Product 1910-1960

	<u>1910</u>	<u>1925</u>	<u>1930</u>	<u>1940</u>	<u>1950</u>	<u>1960</u>
(Million Pesos - Current Value)						
(1) Merchandise Exports	260 <sup>1</sup>	682 <sup>2</sup>	459	960	4,339	9,233
(2) Merchandise Imports	195 <sup>1</sup>	391 <sup>2</sup>	350	669	4,403	14,830
(3) Gross Domestic Product	2,330	4,902	3,960	7,108	41,060	155,867
(Percentages)						
(4) Merchandise Exports plus Imports ÷ GDP	19.5	21.8	20.4	22.9	21.3	15.4
(5) Merchandise Exports ÷ GDP	11.2	13.9	11.5	13.5	10.5	5.9
(6) Merchandise Imports ÷ GDP	8.3	7.9	8.8	9.4	10.7	9.5

Notes on Sources and Methods:

1. The value of merchandise exports and imports in 1910 is from Sherwell, op. cit.
2. The value of exports and imports <sup>since</sup> / 1925 is from Nacional Financiera, 50 Años de Revolución en Cifras, 1963, the value of which agrees with Sherwell's data for the same year.
3. GDP in current values before 1940 are based on ests in millions of 1950 pesos in Reynolds, op. cit.; 1910: 11,825; 1925: 17,081; 1930: 14,946, converted to current values using the wholesale price index for Mexico, D.F. 1910: 19.7; 1925: 28.7; 1930: 26.5; 1950: 100.

TABLE III

The Structure of Mexican Exports of Goods  
and Services 1910-1960

(Per Cent)

	<u>1909-10</u>	<u>1920</u>	<u>1940</u>	<u>1945</u>	<u>1950</u>	<u>1955</u>	<u>1960</u>
A.) <u>Goods</u>	<u>97</u>	<u>94</u>	<u>75</u>	<u>64</u>	<u>66</u>	<u>65</u>	<u>58</u>
(1) Commodity Exports	53	75	44	54	60	61	54
(2) Gold and Silver Exports	44	19	31	10	6	4	4
B.) <u>Services</u>	<u>3</u>	<u>6</u>	<u>25</u>	<u>36</u>	<u>34</u>	<u>35</u>	<u>42</u>
(3) Internal Tourism	N.A.	0	8	9	13	10	11
(4) Frontier Tourism and Other Border Transactions	N.A.	2	15	13	15	22	27
(5) Emigrant Remittances <sup>1</sup>	N.A.	4	N.A.	11	2	2	3
(6) Other Exports of Services	3 <sup>2</sup>	1	2	3	4	2	2
(7) Total	100	100	100	100	100	100	100

Notes on Sources and Methods:

1. After 1940 this figure represents bracero income returned to Mexico.
2. Rows (3) to (6) are included in this figure.

Source of data for years 1909-10 to 1926, Sherwell, op. cit., pp. 6, 7, 39, 49.  
Data for years 1940-1960 are from Grupo de Proyecciones op. cit., Cuadro VII-3.

Totals do not always agree due to rounding.

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TABLE IV

The Structure of Mexican Commodity Exports 1910-1960

(Per Cent)

	<u>1909-10</u>	<u>1926</u>	<u>1940</u>	<u>1945</u>	<u>1950</u>	<u>1955</u>	<u>1960</u>
(1) Agricultural and Forest Products	30	21	20	35	52	57	55
(2) Cattle and Fisheries	8	2	4	6	5	5	12
(3) Fuels and Lubricants	0	33	11	3	5	6	3
(4) Minerals	60	43	62	26	31	24	23
(5) Manufactures and Other Products	2	1	3	30	7	7	8
(6) Total	100	100	100	100	100	100	100

Notes on Sources and Methods:Data for years 1910 to 1926 from Sherwell op. cit.Data for years 1940 to 1960 from Grupo de Proyecciones op. cit., Cuadro X-1.

TABLE V

The Structure of Mexican Imports of Goods  
and Services 1910-1960

(Per Cent)

	<u>1909-10</u>	<u>1926</u>	<u>1940</u>	<u>1945</u>	<u>1950</u>	<u>1955</u>	<u>1960</u>
A.) <u>Goods</u>	<u>63</u>	<u>72</u>	<u>82</u>	<u>85</u>	<u>86</u>	<u>88</u>	<u>85</u>
(1) Registered Commodity Imports (including Imports to Free Zones)	N.A.	N.A.	71	75	77	76	72
(2) Frontier Imports <sup>1</sup>	N.A.	N.A.	11	10	10	13	13
B.) <u>Services</u>	<u>37</u>	<u>28</u>	<u>18</u>	<u>15</u>	<u>14</u>	<u>12</u>	<u>15</u>
(1) Tourism <sup>1</sup>	N.A.	3	4	2	1	1	2
(2) Service of Foreign Direct Investment	22	13	11	10	9	7	9
(3) Interest on Government Debt	9	5	N.A.	0.2	1.5	1	2
(4) Others	6	7	3	3	3	3	2
(7) Total	100	100	100	100	100	100	100

Notes on Sources and Methods:

Source of data for years 1910-11 to 1926, Sherwell op. cit.

Data for years 1940-1960 from Grupo de Proyecciones op. cit. Cuadro VII-5.

1. 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.

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TABLE VI

The Structure of Mexican Commodity Imports  
1940 - 1963

(Per Cent)

	<u>1940</u>	<u>1945</u>	<u>1950</u>	<u>1955</u>	<u>1960</u>	<u>1963</u>
(1) Consumer Goods	23	21	15	14	11	15
(2) Fuels and Lubricants	3	3	4	8	4	3
(3) Primary Materials	39	35	36	34	41	40
(4) Capital Goods	35	41	44	43	44	42
(a) Construction Equip- ment	7	7	9	7	5	4
(b) Agricultural Equip- ment	5	4	5	6	4	3
(c) Industrial and Mining Equipment	14	25	24	23	25	29
(d) Transport Equipment	9	5	6	7	10	6
(5) Total	100	100	100	100	100	100
(6) Unclassified Frontier Imports as a Share of Total Commodity Imports (%)	13	11	10	14	16	18

Notes on Sources and Methods:

The data in rows (1) - (5) are from Grupo de Proyecciones, op. cit., Cuadro IX-2.

The figures for 1963 are provisional.

The percentages in row (6) are calculated from Ibid., Cuadro XII-11; it should be noted that for the years 1945 and 1950 the totals in the two tables for non-frontier commodity imports do not coincide. The percentage in row (6) is therefore taken from Cuadro VII-11; those in cols (1) to (5) from Cuadro IX-2.

TABLE VII

Proportion of Import Duties Collected to the Value  
of Imports 1939-1961

(million pesos)

<u>Year</u>	(1) <u>Collection of Import Duties<sup>1</sup></u>	(2) <u>Value of Imports</u>	(3) <u>(1) ÷ (2)</u>
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

1. Excluding subsidies.

Source: R. Santillán López and A. Rosas Figueroa, Teoría General de las Finanzas Públicas y el Caso de México, U.N.A.M., 1962, Anexo 10, p. 225 from Annual Reports of Banco de México, S. A.

TABLE VIII

Proportion of Export Duties Collected To The Value  
of Exports 1939-1961

(million pesos)

<u>Year</u>	(1) <u>Collection of<sup>1</sup> Export Duties</u>	(2) <u>Value of Exports</u>	(3) <u>(1) ÷ (2)</u>
1939	47.7	914.4	5.2
1940	43.1	950.0	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	116.2	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	4 359.4	10.8
1951	669.8	5 446.9	12.3
1952	677.7	5 125.8	13.2
1953	558.5	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

1. Excluding subsidies.

Source: Santillán, op. cit., Anexo 11, p. 236.

TABLE IX

Actual and Predicted Per Capita Output in Fifteen  
Mexican Manufacturing Industries<sup>1/</sup>

Industry Group	1950			1960		
	Actual Output	Predicted Output	A-P <sup>2/</sup>	Actual Output	Predicted Output	A-P <sup>2/</sup>
1. Food & Beverages	11.86	11.23	+	28.00	13.60	+
2. Tobacco				2.12	1.93	+
3. Textiles	6.02	4.81	+	7.80	8.33	-
4. Clothing	3.89	2.13	+	6.71	3.60	+
5. Wood, etc.	2.41	1.61	+	2.54	2.66	-
6. Paper	.83	.60	+	2.12	1.40	+
7. Printing	.99	1.53	-	2.04	2.69	-
8. Leather	1.16	.37	+	1.06	.55	+
9. Rubber	.68	.47	+	1.68	.98	+
10. Chemicals	3.50	2.54	+	7.60	4.48	+
11. Petroleum	4.57	.17	+	14.56	.44	+
12. Nonmetallic Minerals	6.85	1.72	+	3.40	2.92	+
13. Metals	3.05	1.43	+	8.04	6.36	+
14. Machinery	1.69	1.22	+	4.07	3.09	+
15. Transport Equipment	1.25	1.55	-	3.40	3.35	+

<sup>1/</sup> Data represent value added per capita.

<sup>2/</sup> (+) means that A-P exceeds zero; (-) means that A-P is less than zero.

Source: Trejo, S., "A Model of Import Substitution and the Changes in Industrial Output in Mexico 1950-1960" and appendix, prepared for the author at Yale, Summer, 1967. Actual output is based upon the 1950 and 1960 input-output tables prepared by the Depto. de Estudios Economicos, Banco de Mexico, converted to 1953 prices by the wholesale price index. Predicted output is based upon Chenery, H., "Patterns of Industrial Growth," American Economic Review, September, 1960.

TABLE X

The Ratio of Actual to Predicted Output in Manufacturing

<u>Industry Group</u>	<u>1950</u>	<u>1950</u>	<u>Change</u>
1. Food & Beverages	1.05	2.06	+
2. Tobacco		1.10	+
3. Textiles	1.25	.94	-
4. Clothing	1.82	1.87	+
5. Wood, etc.	1.50	.96	-
6. Paper	1.38	1.51	+
7. Printing	.65	.76	+
8. Leather	3.17	1.93	-
9. Rubber	1.45	1.71	+
10. Chemicals	1.38	1.70	+
11. Petroleum	25.9	33.1	+
12. Nonmetallic Minerals	3.98	1.16	-
13. Metals	2.13	1.26	-
14. Machinery	1.38	1.33	-
15. Transport Equipment	.81	1.01	+

Source: Table IX.

TABLE XI  
STRUCTURE OF MEXICAN PRODUCTION AND IMPORTS: 1950

	Value of Production (million pesos)		Value of Intermediate Imports (million pesos)	Intermediate Imports as % of Total Value of Production by Sector
	(1)	(2)		
1. Agriculture, Cattle, Forestry & Fisheries	11 357	19.5	113	1.0
2. Mining & Quarrying	1 682	2.9	87	5.2
3. Petroleum Extraction & Refining	1 680	2.9	191	11.4
4. Food Products, Beverages, & Tobacco	7 131	12.2	424	5.9
5. Textile, Clothing & Leather Goods	5 083	8.7	209	4.1
6. Wood Products & Furniture, Paper, Printing, & Publishing	1 750	3.0	130	7.4
7. Chemicals, Rubber & Plastics	1 962	3.4	375	19.1
8. Nonmetallic Minerals Mfg.	648	1.1	30	4.6
9. Basic Metals Industries	1 265	2.2	78	6.2
10. Metal Products Mfg. & 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	10 693	18.4	112	1.0
14. Transportation	2 941	5.1	139	4.7
15. Services	6 885	11.8	223	3.3
Total	58 229	100.0	2863	
Share of Intermediate Imports in Total Value of Production			(4.92%)	

Source of Tables XI and XII: "The Structure of Production and Imports 1950-1960," revised working paper prepared by C. W. Reynolds assisted by Ibrahim Samater, Summer, 1967. The data is obtained from 1950 and 1960 input-output tables, Banco de Mexico, op. cit.

TABLE XII  
STRUCTURE OF MEXICAN PRODUCTION AND IMPORTS: 1960

	Value of Production (million pesos)		Value of Intermediate Imports (million pesos)	Direct Intermediate Imports as % of Total Value of Production by Sector		Imports with 1950 Coefficient and 1960 Structure (million pesos)	Imports with 1950 Coefficient and 1960 Structure (million pesos)
	(1)	(2)		(3)	(4)		
1. Agriculture, Cattle, Forestry & Fisheries	32 166	14.0	542	1.7	2.6	522	760
2. Mining & Quarrying	4 311	1.9	61	1.4	3.6	224	93
3. Petroleum Extraction & Refining	9 586	4.2	700	7.3	14.0	1 093	465
4. Food Products, Beverages, & Tobacco	29 455	12.8	567	1.9	4.0	1 738	131
5. Textile, Clothing & Leather Goods	12 957	5.7	599	4.6	9.1	531	917
6. Wood Products & Furniture, Paper, Printing, & Publishing	5 603	2.4	440	7.8	10.0	415	536
7. Chemicals, Rubber & Plastics	8 781	3.8	1 664	18.9	18.4	1 677	1 473
8. Nonmetallic Minerals Mfg.	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 Mfg. & Repair	10 502	4.6	1 934	18.4	21.1	1 953	1 109
11. Construction	13 936	6.1	921	6.6	8.7	1 951	766
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	229 295	100.0	9 093			12 395	6 564
Share of Intermediate Imports in Total Value of Production			(3.97%)			(5.41%)	(3.73%)

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TABLE XIII

Relative Price Changes Between Mexico and the U. S.  
and Exchange Devaluation

(%)

	<u>1941<sup>*</sup>/48</u>	<u>1948/54<sup>**</sup></u>	<u>1954/63</u>
(1) Change in the Mexican Price Level	+ 149	+ 63	+ 60
(2) Change in the U. S. Price Level	+ 64	+ 13	+ 20
(3) Change in the Peso-Dollar Exchange Rate	+ 40	+ 46	0
(4) Rise in Relative Prices: Mexico ÷ U. S. Adjusted for Exchange Devaluation	+ 9	- 1	+ 33

## Source:

Row (1): GDP deflator, Banco de México.

Row (2): GNP deflator, U. S. Department of Commerce Office of Business Economics.

Row (3): Nacional Financiera, 50 Años de Revolución en Cifras, 1963, p. 115. Exchange devaluations were only in 1948/49 and 1954.Row (4): 
$$\left[ \frac{(\text{Col. (1)} + 100) \div (\text{Col. (2)} + 100)}{\text{Col. (3)} + 100} \right] - 100$$

\* 1941 is used as a base since the somewhat higher 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 between 1940 and 1941 fell by 12%. This column only includes the 40% devaluation in 1948.

\*\* This period includes the devaluations of 21% in 1949 and of 31% in 1954, which placed the dollar value of the peso 46% below that of 1948.

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TABLE XIV

Relative Changes in the Price of Home Goods versus  
Exportables and Importables and the Terms of Trade

(%)

	<u>1941/48</u>	<u>1948/54</u>	<u>1954/63</u>
(1) Change in Relative Prices of Mexican Home Goods ÷ Internal Price of Exports	- 4	- 13	+ 36
(2) Change in Relative Price of Home Goods ÷ Internal Price of Imports	+ 27	- 25	+ 16
(3) Change in Mexican Terms of Trade	+ 52	- 14	- 15

## Source:

Row (1): Mexican GDP deflator (Table XIII row (1) ÷ index of implicit prices of exports (peso value of imports ÷ volume index) from Grupo Sec. de Hac., Banco de Mexico, Estudios Sobre Proyecciones, 1964, "Manual de Estad." Cuadro I-8.

Row (2): Mexican GDP deflator ÷ index of implicit prices of imports, Ibid.

Row (3): Index of implicit unit value of exports in pesos ÷ implicit unit value of imports in pesos, Ibid.

TABLE XV

Output Capital Ratios by Sector 1960

(million pesos)

	<u>Gross Value of Production</u> (1)	<u>Stock of Fixed Reproducible Assets</u> (2)	<u>(1) ÷ (2) = (3)</u> (3)
1. Agriculture, Cattle, Forestry & Fisheries	32 166	53 258	.604
2. Mining & Quarrying	4 311	5 524	.781
3. Petroleum Extraction & Refining	9 586	16 127	.594
4. Food Products, Beverages, & Tobacco	29 455	21 180	1.391
5. Textile, Clothing & Leather Goods	12 957	8 318	1.558
6. Wood Products & Furniture, Paper, Printing, & Publishing	5 603	6 046	.927
7. Chemicals, Rubber & Plastics	8 781	8 836	.994
8. Nonmetallic Minerals Mfg.	2 528	4 187	.604
9. Basic Metals Industries	4 690	8 485	.553
10. Metal Products Mfg. & 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
	<u>229 295</u>	<u>288 772</u>	<u>.764</u>

## Source:

Col. (1) from 1960 I-O Table consolidated in paper by Ibrahim Samater (Summer 1967).

Col. (2) from Solis, "A Projection of the Development of the Mexican Economy in the Coming Decade," Cornell, 1966, Table III p. 16.

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