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Some Economic Effects of Closing the Economy
The Mexican Experience in the Mid-Twentieth Century

Gerardo Esquivel and Graciela Márquez

9.1 Introduction

As a result of the recent wave of trade liberalization that has spread around the world, there have recently been numerous attempts to study the implications of opening up an economy. As a consequence, we now have studies on the relationship between openness and growth, openness and productivity, openness and relative wages, openness and regional distribution of economic activity, and so on. Some of these studies have been used to test implications of basic trade theory models (Stolper-Samuelson theorem, the Rybczynski theorem, industrial concentration models, etc.), while others have tested more recently developed implications of geography and trade models (agglomeration effects, regional dispersion effects, etc.).[1]

An outcome of this growing branch of the economic literature is that we now have an important body of empirical evidence regarding these effects. Unfortunately, in many aspects of this literature we have contradictory empirical evidence. For example, on the one hand, there are results showing a positive effect of trade on growth (Sachs and Warner 1995). However, there are also other studies that have a more skeptical view about the robustness of such a relationship (i.e., Rodrik and Rodriguez 2000). Some-

1. A far-from-exhaustive list includes papers by Edwards (1998), Goldberg and Pavcnik (2004), Greenaway, Morgan, and Wright (2002), Hanson (1998b), and Fujita and Hu (2001).

thing similar occurs with the implications of the Stolper-Samuelson theorem.[2]

In this paper we take a different approach to study some of the economic implications of the commercial policy. Instead of focusing on a situation of opening up an economy, we focus on the opposite situation, namely, the closing of an economy. For that purpose, we focus on an economy that was recently opened and that has been the subject of many of the empirical studies mentioned previously: Mexico.

Mexico is an economy that substantially reduced its tariff and nontariff barriers, starting in the mid-eighties (Tornell and Esquivel 1997). Later on, in the early 1990s, Mexico joined NAFTA and effectively became a very open economy. However, despite the fact that we know that the Mexican economy was relatively closed in the early 1980s, it is not quite clear how long the Mexican economy had been closed. In this paper we argue that, even though the Mexican industry has been protected for a long period, which in some cases goes back to the late nineteenth century, the structure of protection that existed in the Mexican economy in the second half of the twentieth century comes from an important modification in the commercial policy that took place around 1947.

We then use this result to analyze two economic implications of closing an economy. First, we study the impact of closing the economy on the relative wages and employment levels of skilled and unskilled workers in the Mexican industry between 1945 and 1965. Second, we study the regional dispersion of economic activity that took place in Mexico between 1945 and 1965. For that matter, we apply recently developed methodologies to analyze the opening up of an economy in order to analyze the inverse situation: that is, the closing of an economy. In principle, we should expect that the effects of closing an economy should be exactly the opposite of opening up an economy.

The objective of this paper is twofold: on the one hand, we show how the Mexican economy got closed in the mid-twentieth century. In order to do that, we revisit the empirical evidence on tariff and nontariff protection in the first half of the century and we also document the structural change in the protection scheme for the Mexican industry that took place after 1947. On the other hand, we evaluate two economic implications of closing an economy. This evaluation may be seen as an additional test of whether the economy was indeed closed in those years, but could also be seen as an evaluation of some implications of standard international trade theory models.

Besides this introduction, the structure of this chapter is as follows: section 9.2 describes Mexico's commercial policy in the past century, with an

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2. See Esquivel and Rodriguez-Lopez (2003) and the references cited therein (see also Davis 2005).

emphasis on the change of the instrument being used by the Mexican authorities. Section 9.3 evaluates the implication of the protectionist policy on the wage and employment of skilled and unskilled workers. Section 9.4 evaluates the implications of the protectionist policy in the dispersion of regional economic activity in Mexico after the implementation of quantitative restrictions on foreign goods. Finally, in section 9.5 we present our conclusions.

9.2   Protectionism in Mexico: A Brief Historical Review

Recent scholarship on commercial policy has demonstrated that protectionism in Latin America had its origins in the nineteenth century.[3] On the one hand, fiscal and administrative goals fueled high tariffs and imparted an inertial component to tariff levels. On the other, deliberate efforts to promote manufacturing also drove tariff rates upward across the region.

In the case of Mexico, its commercial policy featured a strong fiscal component until the mid-1880s, when the Porfirian regime (1876–1911) used tariff rate changes to create a structure of protection conducive to import substitution, where finished goods generally held higher tariff rates than machinery and inputs. To protect the economy, the Mexican government established specific rates for a range of goods. However, these tariffs lost their protective power over time due to the continuous increases in import prices (in terms of silver pesos) between 1892 and 1902, as shown in figure 9.1.[4]

Besides tariff protection, Mexican manufacturers also benefited from the devaluation of the domestic currency (the silver peso). As a result of the continuous depreciation of the local currency in international markets, the exchange rate became an additional source of protection for domestic producers. Even though rising prices in pesos eroded protection conferred by specific tariffs during the 1890s, the exchange rate protection sheltered domestic industry from foreign competition. Once Mexico joined the gold standard in 1905, the exchange rate protection came to an end, and thus domestic producers had to increasingly rely on import duties as a source of protection. Indeed, between 1905 and 1911, textile, iron and steel, cement, and beer producers succeeded in negotiating protective tariffs for their manufactures in accordance with the industrial promotion goals of the Porfirian regime.

3. See Coatsworth and Williamson (2004) and Haber (2006).

4. We are aware that the measure of protection used in figure 9.1, the ratio of total tariff revenues to total value of imports, could be misleading, since extremely high tariffs may discourage imports. Yet, we lack any other measure of protection suitable for long-run comparisons. Nonetheless, there is evidence that this ratio approximates reasonably well the direction of protection and correlates well with more precise measures of protection. According to Bueno (1972), the rank correlation between nominal and effective protection for 1960 was 0.87 (see also Mexico, Nacional Financiera 1971, 141–42).
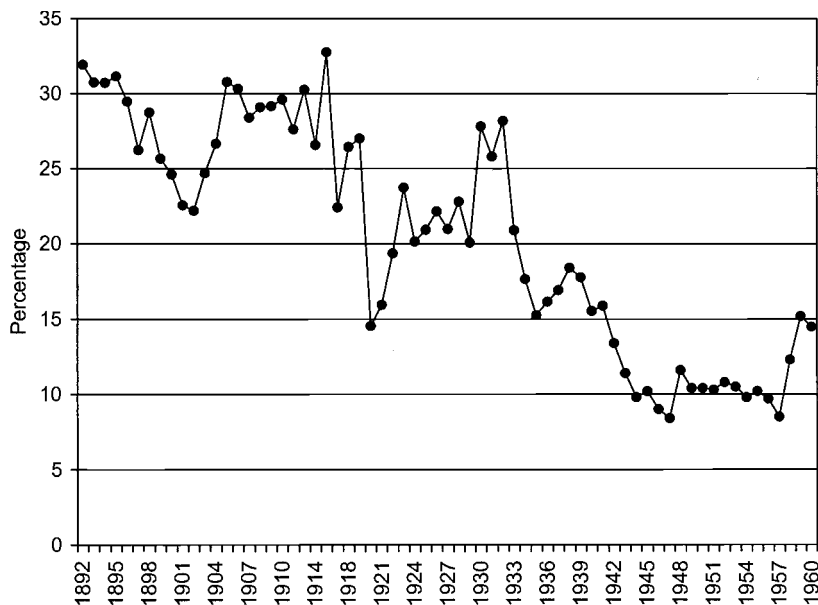
Fig. 9.1   Total duties as a percentage of total imports, 1892–1960

The Mexican Revolution, which started in 1910, brought about modifications in the design of Mexico's commercial policy. The new policy consisted of a simultaneous increase in protection levels for various sectors, therefore breaking the emphasis on industrial protection that was characteristic of the late Porfiriato. Indeed, fiscal deficits forced the federal government to decree tariff increases to all types of goods in the same percentage. Beginning in 1915, the government decreed tariff reductions aimed at curbing inflationary pressures, affecting consumption goods, particularly foodstuffs and coarse cotton textiles. Thus, in 1920 the average nominal tariff rate was significantly lower than in the Porfirian era (see figure 9.1).

During the 1920s, negotiation among sectors was the driving force behind tariff rate changes. Most tariff modifications emerged as recommendations of the Tariff Commission, where representatives from industrialists, labor unions, merchants, and government officials deliberated over a wide range of demands for protection. In general, tariff levels increased for manufactured final goods. However, other sectors such as agricultural and intermediate products also benefited from tariff protection, thanks to pressures exerted by agricultural and industrial interests.

9.1.1   Tariff Policy, 1929–1946

In November 1929, the Executive decreed a new Trade Ordinance, the first since 1891. A substantial part of the Ordinance was the tariff sched-

ule, listing 2,771 categories and their corresponding specific duties. The Tariff Commission played an important role in drafting the new schedule. Over the years, the number of modifications had become a major obstacle to importers who needed to know an ever-changing classification and its rates.

The Tariff Commission not only compiled the long series of tariff rate modifications and updated classifications to avoid undertaxation of high-value products that fall into generic categories, but it also increased tariff rates. Most of the increases responded to the incorporation of consular fees and other surcharges formerly assessed on import duties.[5] As shown in figure 9.1, the average tariff rose to 28 percent in 1930, elevating this indicator above the averages reached in the 1920s and reaching a similar level to the one achieved at the end of the Porfirian era in 1910.[6]

Although the cascading structure of the late Porfirian regime had been blurred by generalized rate increases on intermediate goods that were approved during the 1920s, the structure of protection revealed that tariffs still served as a device to promote manufacturing activities.[7] In terms of the structure of the tariff, clothing and textiles bore the heaviest duties, ranging from 40 to 100 percent. Duties on agricultural products and foodstuffs competing with domestic production also increased to levels above 40 percent, showing an intention to cater to the demands of strong political supporters of the political regime that emerged after the Revolution of 1910. A third group, consisting of iron and steel products, alcoholic beverages, and other manufactures exhibited import duties above 25 percent. At the bottom end were duties on raw materials, machinery, and equipment.[8]

Currency devaluations in the 1930s and the early 1940s (1930–33, 1938–39, and 1941) eroded the protective power of specific tariffs because of the inverse relationship of specific rates and import prices in pesos. During the 1930s, relatively few tariff rate changes were specifically addressed to satisfy the demands for protection in import-competing industrial branches. In contrast, major tariff revisions occurred as a response to balance-of-payments problems and due to the need to curtail imports. This was the case in 1937 when the Executive decreed increases for 633 categories. Further

5. See U.S. Tariff Commission (1942).

6. Cárdenas (1987) argues that there exists a bias in the implicit tariff after 1929 because a higher level of nominal protection simply reflected the inclusion of consular fees and other surcharges (see Cárdenas 1987, 104).

7. For a more detailed discussion on the changes in the structure of the tariffs between 1905 and 1930 see Márquez (2001).

8. The general description of the structure of protection is drawn from Oficina de Estudios Especiales del Comité de Aforos y Subsidios al Comercio Exterior, 1946, 241–42. Other estimates of ad valorem rates by group of products or individual categories confirm the structure of protection just described: clothing (68.91 percent), textiles (59.39 percent), foodstuffs (31.57 percent), iron and steel products (33.94 percent), coarse unbleached cloth (76.4 percent), and fine unbleached cloth (84.5 percent). For group estimates of nominal protection see Márquez (2001); for cloth categories see Gómez-Galvarriato, in this volume.

increases in specific tariffs for 233 categories took place during the following year.

Figure 9.1 shows that in 1938, the average nominal rate of protection reached its highest level since 1934. Later, a revision in 1940 changed classifications but left rates practically unaltered (U.S. Tariff Commission 1942, 181). The few tariff rate changes that took place in Mexico between 1940 and 1947 coincided with the unavailability of imports associated with trade disturbances provoked by WWII. Furthermore, in an inflationary context, a passive commercial policy meant the erosion of existing tariff rates (average nominal protection in 1940 reached 15.55 percent, and declined to 8.40 percent in 1947). It is worth noting that a declining nominal protection did not hinder manufacturing growth: in fact, the Mexican economy grew at an annual average rate of 7.3 percent, whereas the manufacturing sector achieved an average growth rate above 10 percent in the period 1940–45.[9]

The flexibility in the design and management of commercial policy in the 1930s allowed the government to accommodate tariff rate changes to fiscal needs, balance-of-payment problems, or demands for protection. A yearly authorization from Congress allowed the Executive to decree tariff rate changes as it deemed necessary. Thus, the design of commercial policy responded to the behavior of revenues and the commercial deficit as well as to recommendations from the Tariff Commission. In the late 1930s and early 1940s, two forces from institutional changes limited the ability of the government to modify tariff policy. First, a Constitutional reform of August 1938 ruled that tariff legislation was an exclusive attribution of the Federal Congress. Therefore, the Executive no longer had the power to introduce changes in tariff rates in a discretional manner. The need of congressional approval limited the ability of the Executive to introduce tariff rate changes according to different economic policy goals.

Second, the commercial agreement between Mexico and the United States, in effect since 1943, also contributed to further reduce the flexibility of commercial policy. Among the provisions of the agreement was the obligation to maintain the level of duties for 120 tariff categories. A November 1943 decree increased tariff rates of nearly 600 categories, but it was later revoked before it went into effect. According to Sanford Mosk (1954, 70), Mexican officials ruled out duty increases after the U.S. government claimed that "tariff increases violated the spirit, if not the letter, of the Mexican-American trade agreement." A year later, Mexican authorities approved tariff increases again, but it only affected a small fraction of the categories projected in 1943. Protective and fiscal concerns continued driving duty increases in the following three years.

9. On the role of tariff protection and other policy instruments on the growth record in the period 1940–46 see King (1970, 22–32).

Table 9.1   **Average ad valorem tariffs by sector (%)**

Sector	1935–1939	1939–1944
Animal products	23	18
Vegetable products	40	28
Mineral products	20	14
Textiles and yarns	50	29
Textile manufactures	70	52
Chemicals	12	8
Sundry manufactures	32	23
Machinery and apparatus	5	3
Automobiles and its components	14	10

Source: Oficina de Estudios Especiales (1944), p. 252.

Because of the nature of the revisions in the late 1930s and early 1940s, the structure of the tariff changed little in terms of the stimulus that tariff protection provided to manufacturers. Finished products remained as the most heavily protected sector, whereas raw materials and machinery tariffs were significantly lower than the rest of the sectors. In table 9.1, the decline in nominal protection is apparent (measured as equivalent ad valorem rates) between 1935 and 1944, but it is also noticeable that the structure of protection remained practically unaltered.

9.1.2   From 1947 Onward: A New Form of Protectionism

By the end of WWII, Mexico promoted an inward-looking development strategy in which protectionist policies played a central role. Unlike early twentieth-century protectionism, the new instruments of commercial policy were mainly ad valorem rates and quantitative controls, both introduced in 1947. Whereas ad valorem rates isolated tariff protection from the eroding effect of inflation on specific rates, quantitative controls elevated protection beyond the level provided by tariffs. Thus, inward-looking policies adopted during the postwar era erected a new form of protectionism by redefining tariff protection and introducing quantitative controls.

In an attempt to avoid the erosion of the protective power of tariffs, the Mexican authorities shifted from specific to ad valorem tariffs in November 1947. The government set a list of official prices for the computation of ad valorem rates, but importers were required to use invoice prices in case these were higher. By setting ad valorem rates and official prices, policymakers controlled the level of nominal tariff protection conferred on domestic producers, thus eliminating the major disadvantage of specific rates. In addition, the government recovered a certain degree of flexibility by introducing the list of official prices, since increases in these prices require no more than an Executive decree, whereas tariff increases entailed cumbersome procedures including congressional authorization.

Between 1947 and 1960, changes in tariff rates and official prices affected individual categories, yet none of these modifications aimed at a particular group of imports (King 1970, 75). Similarly, when commercial policy was used to ameliorate balance-of-payments problems, the government implemented undifferentiated tariff increases. This was the case in 1954, when a decree elevated all tariff rates by 25 percent as a complementary measure to the devaluation of the peso. After this episode, ad valorem tariff rates changes occurred rarely, indicating that tariff policy was no longer the instrument for the promotion of industrial growth. In its place, nontariff devices occupied a central role in the industrialization strategy of the mid-twentieth century.

Rules for quantitative restrictions on imports were first announced in 1944, but they were actually applied until 1947. Import licenses were first used as a device to reduce imports in the face of balance of payments problems after the WWII. In an early stage, licenses applied only to luxury goods; in 1947 controlled imports represented 18 percent of total imports. But the number of categories subject to licenses soared in the following years. Table 9.2 shows the proportion of controlled imports in total from 1956 to 1964. In 1956, 27 percent of total imports were subject to licenses, whereas in 1964 the proportion grew to 65 percent. By groups, all imports in the beverages and tobacco industries required licenses in 1963, whereas manufactured goods and arms and munitions were the only groups in which controlled imports were less than 50 percent of the total (see table 9.2).

How did the license system work? The list of controlled imports depended on public and private initiatives. The government took an active

Table 9.2   Participation of controlled imports in total

Sector	1956	1957	1958	1959	1960	1961	1962	1963	1964	Average 1956–65
Total	27.7	35.1	42.5	43.2	37.8	53.6	52.5	63.3	65.4	46.8
Food	18.8	4.4	66.7	25.6	28.2	46.7	65.8	83.6	64.1	44.9
Drink and tobacco	45.2	47.6	34.2	20.0	33.1	23.2	99.9	100.0	99.9	55.9
Raw materials	23.4	27.5	39.6	36.1	36.6	41.1	71.1	68.3	62.9	45.2
Fuels and lubricants	40.0	40.0	39.5	95.5	91.8	87.6	92.0	86.2	83.6	73.0
Chemical products	76.2	71.3	57.1	83.2	73.7	93.5	67.0	72.7	76.6	74.6
Fats and oils	37.3	39.3	43.9	42.7	41.3	67.8	44.8	45.1	55.9	46.5
Manufactures, classified by	47.5	54.4	50.0	57.3	54.5	66.7	68.3	63.7	60.4	58.1
Machinery and equipment	25.3	36.1	39.5	42.3	33.4	50.1	48.6	66.7	71.0	45.9
Manufactured goods	8.5	12.8	16.8	17.6	15.7	21.5	28.3	27.4	30.4	19.9
Arms and munitions	44.0	45.1	36.9	51.3	52.8	79.0	18.4	56.4	36.1	46.7

Source: León Figueroa, 1966.

role in determining the list of imports subject to control in 1947 and 1954, both corresponding to episodes of balance-of-payments adjustments. Private interests channeled their demands for protection through applications filed in the Ministry of Industry and Trade. Applicants provided information on costs, prices, production, and distribution capacity. A committee consisting of representatives from industrial and importers' organizations, as well as officials from the Ministry of Industry and Trade, first reviewed applications and then submitted a recommendation to the ministry. In the early 1960s, more than thirty different committees reviewed the 3,000 applications filed, on average, each week. According to King (1970, 79), the committees had almost no influence on the decisions taken in the period 1955–58, when recommendations were rarely taken into account. Still, the participation of the private sector in the decision-making process offered manufacturers an opportunity to "learn something about the market for a number of products still imported."

Licenses for products on the list of controlled imports required another application, whose approval took between four to six weeks. Importers had to document why the product in question was needed. According to Gerardo Bueno (1971, 182), the Ministry of Industry and Trade approved only one third of the applications. An excessive administrative burden on industrialists and contraband were two side effects of licenses. In addition, lack of coordination between the Finance Ministry and the Ministry of Industry and Trade ensured that the license system as a device to face balance-of-payments problems was rarely implemented.[10]

Had the new type of protectionism any role in explaining patterns of growth for individual industries? Up tot his point we have only referred to average nominal protection. A better indicator of protection, known as the effective rate of protection, discounts the protection conferred on inputs from the tariff on the final product. It is also possible to compute the implicit rate of protection, by directly comparing price differentials between domestic products and potential competing imports. Unfortunately, these two measures of protection require detailed information that is not available for the years before 1960. Using some estimates of effective and implicit rates of protection for 1960, it is possible to infer some of the growth pattern shaped by protectionist policies after 1947.

Table 9.3 compares nominal and effective rates of tariff protection for ten economic sectors.[11] The effective rate of protection rose above nominal protection in industrial sectors, contrasting with the case of primary sectors (agriculture, mining, and energy), where nominal rates were higher than the effective rates of protection. This is typical of a policy that aims at

10. For a critical assessment of the license system see Bueno (1972, 151).
11. Note that industry classification in table 9.3 is different from that in table 9.2. Such discrepancy is due to the aggregation problems when using either trade data or production data. This problem persists throughout the paper. Unfortunately, this is an issue beyond this paper.

Table 9.3   Nominal and effective rates of protection, 1960 (%)

		Effective	
Sector	Nominal tariff	Tariff protection	Implicit protection
Agricultural production	6.7	1.7	3.7
Mining	4.6	1.8	13.0
Fuels and oils	3.0	1.2	9.7
Food products	55.9	108.3	47.7
Clothing, textiles, and shoes	55.2	83.1	26.5
Wood and paper	33.8	50.9	24.2
Chemical products	17.8	21.1	24.5
Nonmetallic mineral products	29.5	46.8	0.7
Basic metallic products	19.3	30.0	46.6
Machinery and miscellaneous	31.6	51.5	45.2

Source: King (1970, tables 6.1 and 6.3, 129–131).

promoting the development of manufactures. In particular, the gap between nominal and effective protection widened in consumer goods industries like food products, clothing, textiles, and shoes. As a response to tariff protection, the process of import substitution in these branches advanced swiftly and was almost complete by the late 1950s. However, a pattern of protection that was extended over time caused serious difficulties for long-term growth. Domestic producers did not achieve international competitive standards and their growth depended on the behavior of internal demand.[12] A study of Mexican industry conducted by the Finance Ministry and the Bank of Mexico concluded that consumer goods industries not only ranked among the less-dynamic areas, but also that they depended heavily on tariff protection. This study singled out food, beverages, tobacco shoes, clothing, and textiles as areas of slow growth during the 1950–65 period.[13]

   In addition to tariffs, domestic producers enjoyed price margins derived from quantitative controls. Yet, a differentiated pattern in the use of this advantage was closely related to the levels of tariff protection. Table 9.3 shows that effective tariff rates were higher than those found in price differentials (effective implicit rates) in six sectors, which indicates that domestic producers in these areas did not fully exploit the margins provided by tariffs. Therefore, licensing and other quantitative controls became a redundant source of protection for sectors for which tariffs already provided a sufficient price margin over competing imports. Extreme cases of the redundancy of licenses were food products, clothing, textiles, and shoes,

12. Cárdenas argues that by the early 1950s, domestic firms supplied 95 percent of domestic demand in textiles, food products, beverages, tobacco products, shoes, soap, rubber, alcohol, and glass industries (see Cárdenas 2003, 257).
   13. See México, Secretaria de Hacienda y Crédito Público (1966, 8–9).

where the effective rates differed more than fifty percentage points. Costs reductions, the smuggling trade, price control policies, and a potential shift in the application of licenses might explain the behavior of price setting in the presence of excessive tariff protection. In sectors where domestic protection was required to fully exploit tariff protection and the licensing system, the effective rate of protection implicit in price differentials was higher than the effective rate of protection.

A closer look at the manufacturing sector demonstrates the effects of tariff levels and licenses. Table 9.4 shows that in fourteen manufacturing areas the effective rate was higher than the implicit tariff rate. This group consisted mostly of traditional industries where tariff protection dated as far back as the Porfirian era. Industrialists secured nominal tariff protection for their finished products and tariff reductions for their inputs over decades of lobbying and negotiations with the government. Beverages, textiles, shoes and clothing, soap, and metal manufactures are some examples

Table 9.4   **Effective tariff and implicit rates of protection, 1960 (%)**

Sector	Tariff rate	Implicit rate
Beverages	141.2	41.4
Leather	104.4	13.4
Tobacco	89.5	52.5
Soft textiles	83.1	35.5
Shoes and clothing	73.5	6.9
Soap and detergents	67.7	1.0
Pulp and paper	65.1	31.0
Metal manufactures	64.4	19.8
Other textiles	50.6	38.2
Printing	49.6	9.3
Other food products	48.6	44.9
Nonmetallic products	36.9	−0.2
Synthetic fibers	32.9	26.9
Wood and cork	32.8	26.8
Meat and dairy products	77.4	102.1
Motor vehicles	57.1	83.1
Other manufactures	45.6	50.3
Electrical machinery	44.2	49.4
Basic metals	43.4	48.6
Other chemicals	34.5	59.3
Rubber	31.3	49.1
Basic chemicals	22.7	41.4
Perfumes and cosmetics	20.8	25.6
Fertilizers and insecticides	8.2	11.1
Pharmaceutical products	6.5	11.2
Nonelectrical machinery	6.0	34.3
Transport equipment	4.6	29.8

Source: King (1970, 132).

of manufacturing areas for which import substitution relied primarily on tariff protection.

Another thirteen branches representing intermediate goods, consumer durables machinery, and transport equipment required quantitative controls in addition to tariff protection to close the gap between domestic and world prices. These sectors maintained lower tariffs for various reasons: users requested tariff reduction to control costs, and production of this type of product took off when policy instruments privileged the use of quantitative controls. In the chemical industry, the average proportion of controlled imports in the period 1956–64 was above any other industry (see table 9.1).

In sum, tariffs and quantitative controls, the two main components of the pattern of protectionism in the postwar era, produced a differentiated effect in the manufacturing sector. For traditional industries, quantitative controls became redundant in the presence of excessive levels of tariff protection, whereas the promotion of import substitution in branches producing intermediate and durable consumer goods depended heavily on an extensive system of import licenses. More importantly, however, is that starting in 1947 the combination of tariff and nontariff instruments gave rise to a generalized system of protection for domestic producers in Mexico, and with that, the Mexican economy became, de facto, a much more closed economy than it used to be. In the next two sections, we evaluate two likely implications of this commercial policy.

9.3   Effects of Closing the Economy on Skilled Labor Employment and Wages

By the mid-twentieth century, Mexico was clearly an unskilled, labor-abundant country: for example, in 1940, 54 percent of the population older than fifteen years was still illiterate, and even in 1950, only 5.4 percent of the population older than fifteen years had attained some postprimary education. Therefore, closing the economy, according to the standard international trade theory, should have had specific implications on the intensity of use of different types of labor, as well as on skilled-unskilled relative wages. The reasoning is as follows: when an economy is open to international trade, relative wages are only a function of technological parameters and relative prices, and they do not depend on supply and demand parameters. However, when the economy gets closed, supply and demand factors start affecting relative wages. Now, because the economy is closed, and it cannot longer specialize in the production of goods that intensively use its abundant factors, domestic production will shift from unskilled labor toward skilled labor-intensive sectors. This, in turn, will increase demand for skilled labor and reduce demand for unskilled workers, thus producing an increase in the relative wage of skilled workers.

For a given labor supply, this result would induce domestic producers to reduce the use intensity of the factor that has become relatively more expensive, that is, skilled labor, and to increase the demand for the factor that has become relatively less expensive, unskilled labor. As a result of these effects, the mix and the use intensity of labor factors in each sector should change and we should observe the following results: higher relative wages for skilled workers, an increase in the use intensity of unskilled workers across the economy, and an increase in the production and employment of skilled labor-intensive sectors. Of course, the composition of the labor supply is usually changing over time, and therefore we should take that into account when evaluating labor market effects of trade policies.

9.3.1 Methodology

In order to test whether this implication of standard international trade theory actually occurred when the Mexican economy closed, we will use a methodology that has been widely applied in studies of the labor market effects of recent trade liberalization policies.[14] The methodology provides a simple decomposition of changes in the skilled-labor employment and skilled-labor wage bill shares into two different components: *between*-industry and *within*-industry terms. The decomposition is the following:

(1) $$\Delta\left(\frac{L^S}{L^U + L^S}\right) = \sum_j s_j \Delta\left(\frac{L^S}{L^U + L^S}\right) + \sum_j \left(\frac{L^S}{L^U + L^S}\right)_j \Delta s_j$$

where subindex j refers to industry j,

$$L^S = \text{skilled labor}$$

$$L^U = \text{unskilled labor}$$

$$\text{and } s_j = \frac{(L^U + L^S)_j}{L^U + L^S},$$

so that s_j is the employment share of industry j.

Equation (1) decomposes the total change in the skilled-labor employment share of the economy (the left-hand side term) on two components: the first right-hand side term denotes the *within-industry* effect, which is the change in the skilled-labor employment share at the industry level for a given industry employment share (s_j), whereas the second right-hand side term is the *between-industry* effect, which captures the change in the industry employment shares for given skilled-labor employment shares at the industry level. An analogous procedure is used to decompose changes in the wage bill for skilled labor.

14. See, for example, Berman, Bound, and Machin (1998), Cañonero and Werner (2002), and Gonzaga, Menezes-Filho, and Terra (2002) and Meza (2003).

9.3.2   Data and Results

To implement equation (1) for the Mexican case during the period when the economy was closed, we compiled statistical information from the Mexican Industrial Census of 1935, 1945, 1955, and 1965.[15] We have data on the number of blue collar and white collar workers at the industry level as well as data on the wage bill of each type of labor for a subset of 64 industries. These industries represent close to 70 percent of total output and total employment in every census year. We have not made use of information from all industries due to comparability problems and because information about certain industries could not be found at all.

As it is standard in the literature, we will associate blue collar (production) workers with unskilled workers and white collar (nonproduction) workers with skilled workers. Of course, we acknowledge that such a simple classification is far from ideal, but we have no other information available at the individual level that could help us to overcome this problem (i.e., we do not have data on type of employment or on educational level).[16]

The results of our decomposition are shown in table 9.5. Before commenting on this table, it is worth discussing the role of a changing labor supply, which could also be affecting our results. If the labor supply of skilled people was growing relative to that of unskilled workers (as surely it was during the period when the economy was closed) and if commercial policy had played no role at all in the labor market, then this situation would be reflected through a reduction in the relative wages of skilled workers and through an expansion of the industries which use the skilled labor factor more intensively. That is, it would generate a positive between-industry effect. In addition to that, the reduction in skilled-labor relative wages would induce a generalized increase in the use of skilled labor in the economy, and therefore would generate an increase in the employment of this type of labor in all industries, i.e., a positive within-industry effect. However, it should be noted that these results should necessarily be accompanied by a reduction in the relative wage of skilled labor.

On the contrary, if labor supply were unchanged, and all the effects on the labor markets were only the result of commercial policy, we should expect to observe an increase in the relative wages of skilled workers and an increase in the relative price of skill-intensive sectors. This, in turn, should be reflected into a positive between-industry effect and a negative within-

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15. We did not use information from the first Mexican Industrial Census of 1930 due to data comparability problems.

16. Results in Krueger (1997) and Slaughter (2000) suggest that using either education or production status information produce similar results for the case of the United States. However, note that in some cases classification decisions could be relevant (see Gonzaga, Menezes-Filho, and Terra 2002).

Table 9.5   **Changes in employment and wage bill shares for skilled labor in Mexico's industry**

Period	Total	Within	Between
Decomposition of changes in skilled labor			
1935–45	0.044	0.024	0.020
1945–55	0.060	0.036	0.023
1955–65	–0.027	–0.023	–0.004
1935–55	0.104	0.066	0.038
1945–65	0.032	0.012	0.021
1935–65	0.076	0.038	0.038
Decomposition of changes in skilled labor wage bill			
1935–45	0.015	0.001	0.015
1945–55	0.124	0.079	0.045
1955–65	0.036	0.018	0.018
1935–55	0.140	0.093	0.047
1945–65	0.160	0.096	0.064
1935–65	0.175	0.089	0.086

industry effect. The last result would follow from the natural reaction of industries to the increase in the relative wages of skilled workers.

Table 9.5 shows the results of our decomposition for both the employment and the wage bill share of skilled labor in Mexico for different subperiods between 1935 and 1965. There are several interesting results: first, the share of skilled labor employment increased in the Mexican industry between 1935 and 1955. However, between 1955 and 1965, the share of skilled labor employment decreased. Note that in all cases both effects go in the same direction, thus reinforcing each other. In fact, between 1935 and 1965 the share of skilled labor in Mexico increased by 7.6 percentage points, with half of this increase explained by between-industry adjustments and the other half by within-industry changes.

In terms of the wage bill for skilled labor, the bottom panel of table 9.2 shows that it increased substantially and continuously since 1935. Indeed, between 1935 and 1965 the wage bill share of skilled labor increased by more than 17 percentage points, with most of the increase taking place after 1945. Note that, as with the employment effects, almost half of the increase in the wage bill came as a result of between-industry movements and the other half from within-industry adjustments.

More importantly, however, is the fact that the increase in the wage bill for skilled workers in all subperiods, with the exception of the 1935–1945 period, was greater than the increase in the share of skilled labor employment. This means that not only were there more skilled workers being employed in the Mexican industry, but also that the remuneration they were receiving was growing relative to that of unskilled workers.

The pattern of employment, wage bill, and relative wages for skilled la-

bor in Mexico between 1945 and 1965 is not compatible with a pure labor supply story. Instead, it is perfectly compatible with a labor supply story combined with the effects of a commercial policy that protected domestic industries and therefore shifted resources from the production of unskilled labor-intensive sectors toward skilled labor-intensive production.[17] Moreover, the reduction in the share of skilled-labor employment that took place between 1955 and 1965 is also compatible with the substantial rise in the wage premium for skilled labor that occurred between 1945 and 1965. In that sense, we may conclude that the behavior of employment, wage bill, and relative wages for skilled labor in Mexico after 1945 is compatible with the implications of standard trade policy models when an economy gets closed. In that regard, these results provide a strong and unequivocal support in favor of the labor market implications of standard trade theory models. This conclusion stands in sharp contrast to the ambiguous results that have been typically obtained in studies analyzing the opening of an economy. This suggests that studying cases of closing an economy in more detail could help to shed light on debates about the labor market implications of commercial policy.

9.4   Effects of Closing the Economy on the Regional Dispersion of Economic Activity in Mexico

There are several recent papers that relate trade to geographic aspects. One line of study analyzes whether trade policy affects the regional dispersion of economic activity. For example, there is a line of research that combines elements from trade, agglomeration economies, and geography. A far-from-exhaustive list of papers along these lines includes Krugman and Hanson (1996), Krugman and Livas-Elizondo (1996) and Krugman and Venables (1996). These papers argue that as a result of greater economic integration, there may be a shift in the relevant market for domestic producers, who may want to reallocate their economic activities in order to attend the enlarged market, not only the domestic market. If this occurs and there are agglomeration economies, this may prompt a circular cumulative process of increases in demand and economic activity in a completely different region from the one that predominated before the economic integration. Not surprisingly, most of these papers were somehow inspired by NAFTA and their likely implications for the Mexican economy. Indeed,

17. This result seems, at first sight, incompatible with empirical evidence presented in Hanson and Harrison (1999), wherein they argue that the structure of protection in Mexico was designed to protect unskilled labor-intensive sectors. However, they are not necessarily incompatible for at least two reasons: first, because they focused on the structure of production in the 1980s, which was obviously different from that in the 1940s or 1950s, and second, because what they actually showed is that the reduction in trade barriers in Mexico in the 1980s was more dramatic in low-skill industries—not that they were the only sectors being protected.

Krugman and Livas Elizondo (1995) even suggested that the inward-looking policy followed in Mexico could have produced a pattern of industrial concentration in and around Mexico City.

Hanson (1996b) has emphasized the role of regional production networks to attempt to identify the pattern of production in a country that moves from an import-substitution strategy to a more open regime. His model has location economies arising from the provision of specialized inputs and congestion costs created by agglomeration. The model emphasizes the fact that for a developing country, trade openness involves moving from a vertically integrated industry towards a more specialized pattern of production, probably through subcontracting with developed-country firms. He concluded that NAFTA would not only shift relatively unskilled jobs to Mexico, but also that there would be a substantial reallocation of jobs within Mexico, since these would move from Mexico City to the U.S. border region.

In one of the few empirical applications of this line of research, Hanson (2001) studied whether integration between Mexico and the United States has contributed to the expansion of economic activity at the border. The intuition is that if transport costs are the main nontrade policy barrier to trade, the elimination of all trade policy barriers should provide a geographical advantage to the border cities. His results tend to support the hypothesis that integration produces an expansion of economic activity at the border. He finds that an increase in exports from Mexican cities to the United States increases labor demand in the neighboring U.S. city.

In sum, this line of analysis suggests that, as a result of greater trade openness, port and border cities will tend to attract higher levels of economic activity. In the remaining parts of this section, we discuss the possibility that closing the economy could have affected the dispersion of economic activity in Mexico in the opposite way—that is, provoking a greater concentration in the main domestic markets and reducing the dispersion of economic activity.

9.4.1   Methodology

We will compute two different measures of regional dispersion of economic activity. On the one hand, we will compute Krugman's index of regional specialization. On the other, we will compute Hoover's coefficient of localization.[18]

Krugman's index of regional specialization (SI) is defined as follows:

$$SI_{jk} = \sum_{i=1}^{n} \left| \frac{E_{ij}}{E_j} - \frac{E_{jk}}{E_k} \right|$$

where

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18. Both indexes have been used, amongst others, by Kim (1995).

E_{ij} is the level of employment in industry $i = 1, \ldots, n$ and region j, and E_j is the total industrial employment for region j and similarly for region k.

On the other hand, Hoover's coefficient of localization is based on the location quotient, which is defined as

$$L_{ij} = \frac{E_{ij}}{E_{imex}} \bigg/ \frac{E_j}{E_{mex}}$$

where E_{ij} and E_j are defined as before, E_{imex} is total employment in industry i in Mexico, and E_{mex} is total industry employment in Mexico. Note that if the location quotient is greater (smaller) than one, region j has a higher (smaller) share of employment in industry i relative to its share of total industry employment.

With the location quotient estimates we then proceed to construct the *localization curve* for each industry. This curve is built in a similar fashion to a Lorenz curve. That is, first we rank the regions by their L_{ij} estimates for a given i in descending order, then we plot the cumulative percentage of total industry employment over the regions in the *x*-axis and the cumulative percentage of employment in industry i over the regions in the *y*-axis. Of course, both cumulative series add up to 100 percent. Note that if employment in industry i is distributed in the same pattern as total employment, then location quotients for each region would be all equal to one and the localization curve would be a 45-degree line. However, if that were not the case, then the localization curve would be always above the 45-degree line. Therefore, we may compute the *coefficient of localization* as the area between the 45-degree line and the localization curve divided by the entire upper triangular area. Note that the coefficient of localization is analogous to the Gini coefficient.

9.4.2   Results

Table 9.6 shows the results of calculating the specialization index for seven Mexican regions for specific years between 1940 and 1965. Data come from the industrial census of the corresponding years. A map of Mexico and the definition of Mexican regions are included in the appendix.

Results in table 9.6 show several interesting aspects of regional development in Mexico. For example, it shows that the industrial composition (as defined by industry employment characteristics) in the capital region of Mexico is indeed relatively different from that of the rest of the country. This can be inferred from the fact that the value of the index for all region pairs that include the capital region are almost always above unity, with the largest differences being those between the capital and the southern and

Table 9.6   **Mexico's regions: Specialization Index (Krugman), 1940–1965**

	Capital	Center	Center-North	Gulf	North	Pacific	South
			1940				
Capital	0.0						
Center	1.295	0.0					
Center-North	1.201	0.870	0.0				
Gulf	1.298	1.265	1.474	0.0			
North	1.018	1.092	0.755	1.321	0.0		
Pacific	1.060	0.843	0.842	0.957	0.919	0.0	
South	1.436	0.897	0.621	1.289	0.852	0.877	0.0
			1945				
Capital	0.0						
Center	1.267	0.0					
Center-North	1.042	0.944	0.0				
Gulf	1.293	1.274	1.349	0.0			
North	1.008	1.078	0.822	1.217	0.0		
Pacific	0.991	0.862	0.987	1.054	1.029	0.0	
South	1.273	1.025	0.449	1.334	0.960	1.028	0.0
			1955				
Capital	0.0						
Center	1.542	0.0					
Center-North	1.387	1.220	0.0				
Gulf	1.620	1.280	1.181	0.0			
North	1.321	1.356	0.887	1.185	0.0		
Pacific	1.269	1.153	0.854	0.949	0.945	0.0	
South	1.336	1.219	0.875	0.999	1.029	0.739	0.0
			1965				
Capital	0.0						
Center	1.251	0.0					
Center-North	1.096	0.952	0.0				
Gulf	1.406	1.241	1.217	0.0			
North	1.028	1.125	0.805	1.204	0.0		
Pacific	0.991	0.991	0.674	0.995	0.826	0.0	
South	1.257	0.932	0.839	1.167	0.976	0.706	0.0

Gulf regions. On the opposite side, the most similar region to the capital throughout this period was the northern region of Mexico. Table 9.6 also shows that the most similar regions in Mexico during this period were the South and the center-North before 1955 and the South and the Pacific after 1955.

Interestingly, table 9.6 does not show any specific trend in terms of regional specialization throughout the period. In fact, the only significant pattern is a generalized increase in all coefficients related to the capital and center regions between 1945 and 1955. Such increases, however, were re-

verted in the next decade. In most cases (13 out of 21 region pairs), the index of specialization in 1965 was indeed lower than in 1945. These results suggest that regional specialization in Mexico was not substantially affected by the change in commercial policy implemented since 1947 or, in any case, the effects were short-lived, and they did not have permanent effects on regional specialization in Mexico.

Table 9.7 shows the results of computing the Hoover's coefficient of localization for Mexican industries for selected years between 1940 and 1965. We have grouped industries according to their pattern of geographic concentration between 1945 and 1965. A few industries showed an erratic pattern in their index and therefore they are not included in this table. Table 9.7 is divided into three panels. The top panel includes industries that show a relatively stable pattern throughout the period, while the panel in the middle includes industries that show a declining trend in the value of their index. Finally, the bottom panel includes those industries that present an upward trend in the value of their index. The first interesting result to notice is the relatively large value of the localization index for Mexican industry. For example, in 1945 the unweighted average value of the index was 0.652, while in 1965 it had diminished to 0.596. These values stand in sharp contrast with analogous measures for the U.S. industry reported in Kim (1995), where the unweighted average of the localization index was 0.327 and 0.284 in 1947a and 1967, respectively.

The top panel of table 9.7 shows that the geographical dispersion of twelve Mexican industries remained practically stable between 1945 and 1965. Most of these industries already had relatively high values of their coefficient of localization (with only one exception, all industries had an initial index above 0.67, and their index average in 1940 was 0.846), which means that they were already very highly concentrated within relatively few states in Mexico. This is mainly the case of industries associated to a certain type of raw material that can only be found in specific states (this is the case of the hackled sisal, coke, coal mining, and oil and gas industries). However, there are other highly concentrated industries that seem to be associated with the existence of a certain knowledge or skill, or even by a certain inertia in their degree of localization. This seems to be the case of the pharmaceutical and perfumes and cosmetics industries.

Table 9.7 also shows that relatively more industries present a declining trend in their index of localization than otherwise. The average index of these industries decreased from 0.767 in 1940 to 0.482 in 1965. Interestingly, the industries that present this pattern come from the whole range of the initial distribution of the localization index. For example, in this case we have industries that were completely concentrated in 1940, like tanks and metallic structures and metal furniture, but also industries like pastries and bakeries, which were already very dispersed by 1940. All of these industries present an important reduction in their localization index, which

Table 9.7   Hoover's coefficient of localization for Mexican industries

Industry	1940	1945	1955	1965
Coal mining	1.000	1.000	1.000	1.000
Coke and other mineral coal products	1.000	1.000	1.000	0.974
Hackled sisal	0.961	0.986	0.985	0.942
Inks of all kinds	0.861	0.974	0.983	0.932
Pharmaceutical products of all kinds	0.933	0.939	0.915	0.947
Gin and packing cotton plants	0.920	0.920	0.968	0.887
Perfumes and cosmetics	0.935	0.907	0.931	0.963
Coffee	0.861	0.831	0.886	0.813
Oil and gas	0.760	0.797	0.666	0.790
Paints and varnishes	0.799	0.779	0.846	0.823
Wood conservation and preparation	0.670	0.733	0.698	n.a.
Cotton textiles and manufactures thereof	0.451	0.398	0.483	0.464
Average	**0.846**	**0.855**	**0.863**	**0.867**
Tanks and metallic structures	1.00	1.000	0.442	0.600
Paper manufactures of all kinds	0.916	0.972	0.921	0.724
Metal furniture	1.000	0.971	0.894	0.790
Rubber manufactures of all kinds	0.960	0.955	0.942	0.837
Iron and steel	0.824	0.889	0.554	0.589
Hats and caps	0.908	0.873	0.379	0.482
Basic chemicals	0.907	0.839	0.883	0.430
Baking powder, hops and maize products	0.870	0.829	0.426	0.356
Cardboard manufactures of all kinds	0.817	0.814	0.779	0.686
Clothing	0.772	0.759	0.728	0.425
Cardboard, and cardboard in sheets	0.866	0.747	0.381	0.637
Glass	0.840	0.746	0.705	0.590
Agave beverages excepting pulque	0.757	0.662	0.646	0.635
Nonelectrical machinery and equipment	0.564	0.658	0.431	0.302
Woolen textiles	0.678	0.652	0.473	0.568
Workers Uniforms	0.769	0.645	0.582	n.a.
Metallurgical plants and metallic mining	0.641	0.605	0.312	n.a.
Cement	0.725	0.560	0.327	0.243
Coffee mills and roasting shops	0.634	0.559	0.548	0.315
Repairing shops for nonelectrical machinery and equipment	0.591	0.311	0.358	0.364
Pastries and alimentary pastes of flour	0.652	0.306	0.332	0.310
Metallurgical plants and metallic mining	0.377	0.287	0.331	0.148
Bakeries	0.568	0.239	0.089	0.098
Average	**0.767**	**0.690**	**0.542**	**0.482**
Metallic beds	0.772	0.837	0.863	n.a.
Sugar	0.609	0.668	0.748	0.680
Wire manufactures, wire fences, and wire sheets	0.861	0.662	0.960	0.883
Beer	0.623	0.495	0.574	0.586
Metallic mining	0.499	0.467	0.679	0.674
Sawmills	0.430	0.440	0.579	0.583
Wheat mills	0.476	0.326	0.392	0.385
Soap of all kinds	0.477	0.321	0.469	0.754
Ice	0.411	0.217	0.396	0.414
Nixtamal (maize) mills	0.136	0.165	0.278	0.373
Average	**0.529**	**0.4597**	**0.5938**	**0.5925**

Note: n.a. = not available.

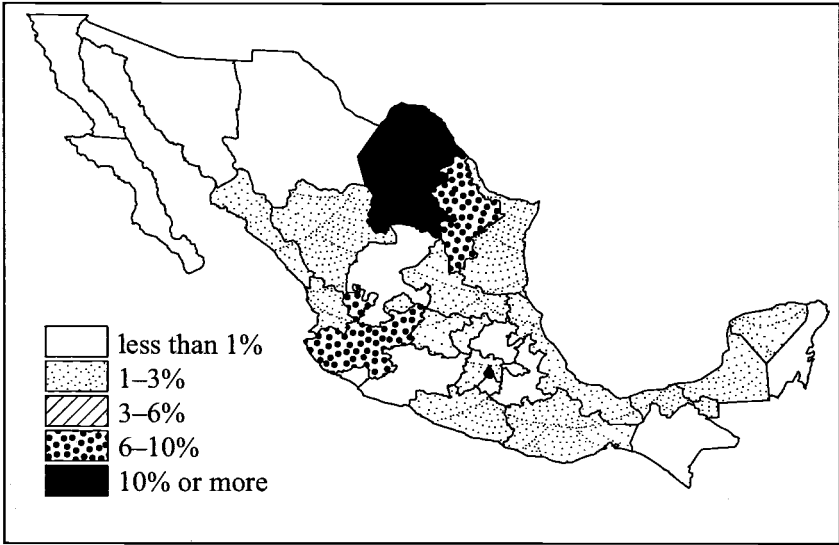means that they tended to become more dispersed throughout the country between 1945 and 1965.

The bottom panel of table 9.7 shows that there are ten industries with an increase in their index of localization after 1945. This group includes some industries where the increase was only observed between 1945 and 1955, but most cases show an increase between 1945 and 1965. All in all, increases in the index of localization were moderate: the unweighted index for these industries increased only from 0.46 to 0.59 between 1945 and 1965. The most noticeable case is the soap industry, which increased from 0.32 in 1945 to 0.75 in 1965. This case is interesting because it is one of those industries that had a relatively large tariff protection, and therefore we could think that it is probably the only industry that seems to fit the predicted pattern of regional concentration after being protected. However, not even this case may fit the prediction of the geography and trade literature, for at least two reasons: first, this industry had benefited from tariff protection well before the 1940s (therefore, it is not clear why it should become more concentrated now), and second, the implicit protection level for this industry was nil (1 percent; see table 9.4).

Figures 9.2 and 9.3 illustrate the patterns of regional dispersion of economic activity that took place in two Mexican industries after 1945. These are the cases of the soap industry, which is the only one that somehow fits the predictions of models of geography and trade, and the cement industry, which is one of the industries that was widely dispersed throughout the country, despite the fact that it was also a heavily protected industry. As mentioned before, most industries behaved in a similar fashion to the cement industry, and therefore their patterns of dispersion of regional activity closely resemble the one shown in figure 9.3.

In conclusion, the empirical evidence based on the specialization and localization indexes does not provide strong support for the implications of the geography and trade literature for the case of a closing economy. The evidence from the specialization index shows that if there was any effect, it was short-lived. On the other hand, the evidence from the localization index shows that there was no pattern of further regional concentration for most industries. Furthermore, the only industry that seems to have become more concentrated (the soap industry) does not necessarily fit the case of a recently protected industry.

Of course, there are some caveats to this conclusion. It could be the case that some industries tended to concentrate around a few domestic markets and that they may still show a tendency toward decentralization. This may be the case in those industries producing final goods and that could have increased their presence in some states associated to large cities (which could be the case of the states of Nuevo Leon and Jalisco, where the important cities of Monterrey and Guadalajara are located). However, we consider that the bulk of the empirical evidence is against the idea that
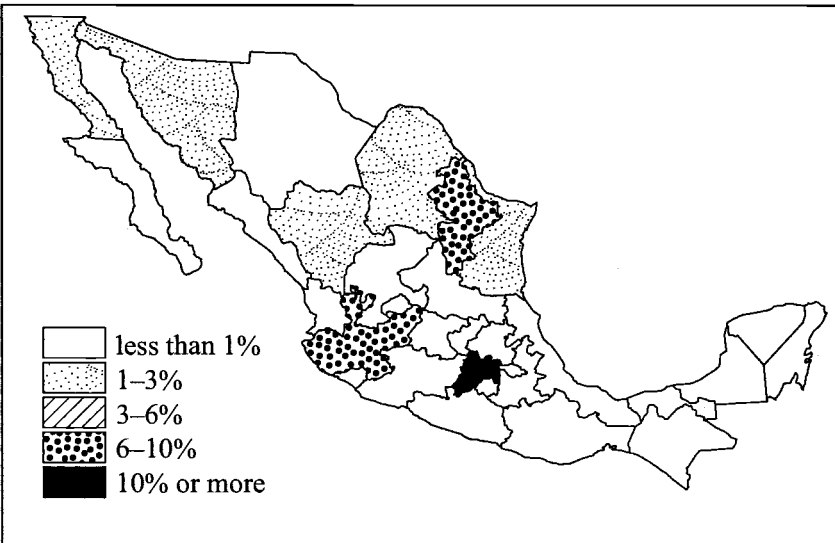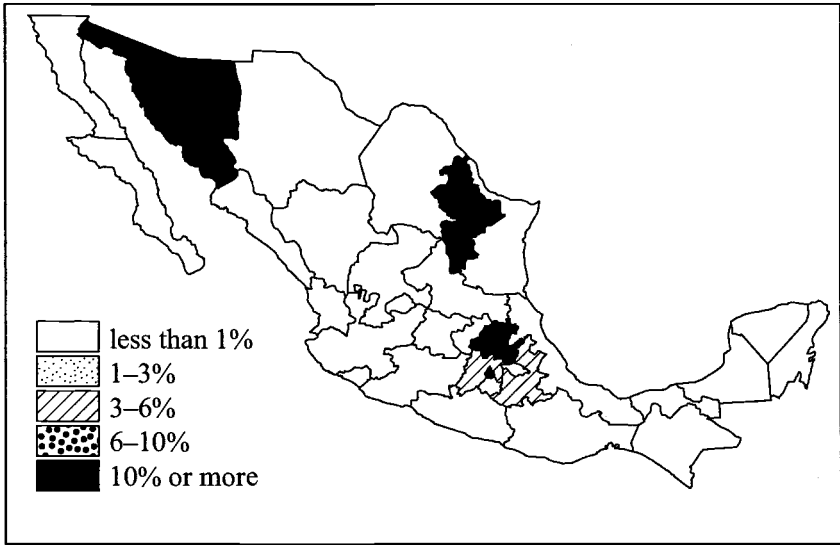
1940

less than 1%
1–3%
3–6%
6–10%
10% or more

1965

less than 1%
1–3%
3–6%
6–10%
10% or more

Fig. 9.2   Soap industry: Regional dispersion of industry employment, 1940–1965

1940

less than 1%
1–3%
3–6%
6–10%
10% or more

1965

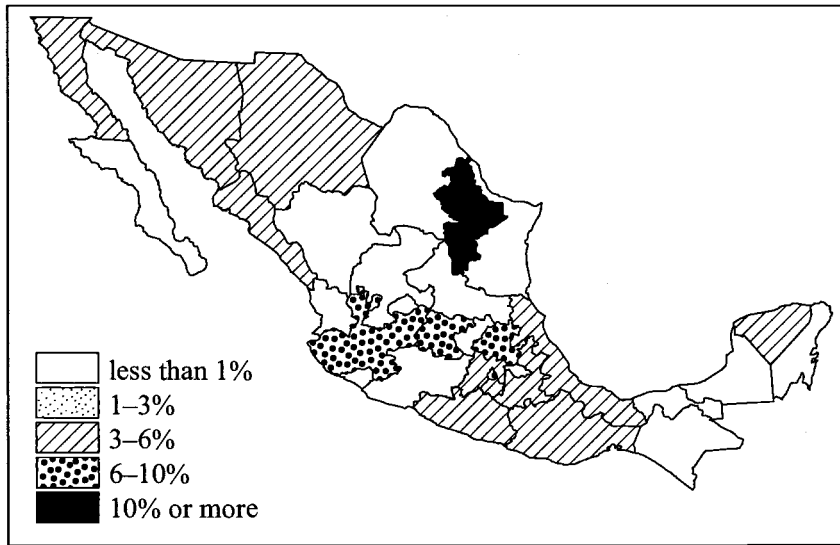less than 1%
1–3%
3–6%
6–10%
10% or more

Fig. 9.3   Cement industry: Regional dispersion of industry employment, 1940–1965

closing the economy led to a higher regional concentration of economic activity in the Mexican economy.

9.5   Conclusions

In this paper we have argued that the Mexican economy started to become a closed economy in 1947. In that year, commercial policy in Mexico shifted from a traditional, industry-specific protectionist scheme based on tariffs toward a generalized protectionist policy based on nontariff instruments (quotas and import licenses). This scheme of protection is the one that prevailed until the mid-eighties, when the economy began to open up to trade with the rest of the world.

We have evaluated two economic implications of closing the economy that were derived from standard international trade models or from more recent trade and geography literature. Our results show that the behavior of employment, wage bill, and relative wages for skilled labor in Mexico after 1945 strongly support the labor market implications of standard trade theory models, and are in line with predictions based on the Stolper-Samuelson theorem. As mentioned before, this conclusion differs from the ambiguous results that have typically been obtained in studies analyzing the opening up of an economy and that have led some authors to declare the Stolper-Samuelson theorem dead (Davis 2005). This result suggests that studying cases of closing an economy in more detail could help to shed light on debates about the labor market implications of commercial policy.

On the other hand, the empirical evidence on the dispersion of regional economic activity in Mexico after 1945 does not provide strong support for the implications of the geography and trade literature for the case of a closing economy. The evidence from the specialization index shows that if there was any effect, it was short lived. On the other hand, the evidence from the localization index shows that there was no pattern of further regional concentration for most industries.

In general, we believe that moving away from the typical case of studying a liberalized economy in order to evaluate the implications of trade theory models, toward the study of the reverse implications for an economy that is being closed, can help us shed light on the validity of some implications of standard trade models, this could be an interesting line of analysis to pursue in the future.

Appendix

State	No.	Region	State	No.	Region
Baja California	2	North	Distrito Federal	9	Capital
Chihuahua	6	North	México	15	Capital
Coahuila de Zaragoza	7	North			
Nuevo León	19	North	Hidalgo	13	Center
Sonora	26	North	Morelos	17	Center
Tamaulipas	28	North	Puebla	21	Center
			Tlaxcala	29	Center
Baja California Sur	3	Pacific			
Colima	8	Pacific	Campeche	4	Gulf
Jalisco	14	Pacific	Quintana Roo	23	Gulf
Nayarit	18	Pacific	Tabasco	27	Gulf
Sinaloa	25	Pacific	Veracruz	30	Gulf
			Yucatán	31	Gulf
Aguascalientes	1	Center-North			
Durango	10	Center-North	Chiapas	5	South
Guanajuato	11	Center-North	Guerrero	12	South
Querétaro	22	Center-North	Michoacán	16	South
San Luis Potosi	24	Center-North	Oaxaca	20	South
Zacatecas	32	Center-North			

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