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LABOR MARKET INTERDEPENDENCE

Edited by
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Preface

This volume is one of a continuing series published under the auspices of the U.S.-Mexico Relations Project, which was founded in 1980 in order to coordinate the efforts of U.S. and Mexican experts in the areas of political development, economic growth and trade, energy resources, agriculture and rural development, and employment and labor markets. Administrative coordination of the project is located at the Americas Program, Stanford University, and the Center for Economic Studies, El Colegio de México. All workshops, conferences, sponsored research, publication, and outreach are organized and funded jointly by the coordinating institutions in each country, on the basis of full binational support, to ensure that the goals and perspectives of participants from each country are part of the research agenda, and to give each participant an opportunity to be fully critiqued by members from the other partner country.

The overwhelming success of the U.S.-Mexico Project, which as early as 1979 sponsored policy research on the benefits and costs of closer Mexico-U.S. economic integration, and with the active encouragement of scholars from the University of Toronto, caused the Americas Program to expand its focus to include Canada by the mid-1980s. This led to the establishment of a North American Project coordinated by Stanford's Americas Program, El Colegio de México, and the Centre for International Studies of the University of Toronto. This unique trinational effort led to a number of publications including the most recent volume, *The Dynamics of North American Trade and Investment: Canada, Mexico, and the United States* (Stanford, 1991).

The Americas Program is designed to cooperate with institutions and scholars from Europe, Asia, and other regions to explore the political economy of increased economic interdependence in the Americas in global perspective. Hemisphere-wide economic and technological inte-

International Restructuring and Labor Market Interdependence: The Automobile Industry in Mexico and the United States

Raúl A. Hinojosa Ojeda and Rebecca Morales

As in previous periods of industrial transformation, automobile manufacturing is setting trends in international investment production, sourcing, and trade; development and use of technology; patterns of labor-management relations; and the formation and use of the labor force. Important changes in all of these areas are particularly evident across Mexico and the United States, the two countries with the most industrial and labor market interdependence across the North-South border. Since the early 1970s, the restructuring of the automobile industry has increased internationalization and production sharing, linking as never before the fate of many types of workers.

Much debate surrounds the future of this restructuring. Some suggest that a greater tendency toward offshore production in the South is taking place, while others stress that the introduction of new technologies is paving the way for reconcentrated production in the North. How this industrial restructuring evolves promises to affect the level and quality of employment and earnings within both countries, as well as the demand and supply of immigrant workers across countries. While policies of industrial restructuring and trade between Mexico and the United States

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are most recently being developed with emphasis on balance of trade and debt repayment considerations, our intent is to refocus attention to the labor-market dimensions and possible alternative binational approaches to this policy discussion.

In the first of three parts, we analyze the patterns of production and employment in the Mexican and U.S. auto industries that emerged in the mid-1920s, were later consolidated in the postwar decades, and saw their demise in the late 1970s. In the United States, this period was characterized by the rise of so-called Fordist mass-production techniques, institutionalized labor-market regulations, and mass-consumption patterns. In Mexico, import substituting industrialization (ISI), which tried to reproduce some elements of the Fordist model, arose. This period of ISI comprised various crucial stages, which resulted from bargaining encounters between multinational corporations (MNCs) in the auto industry, labor organizations, and the Mexican and U.S. states as they developed trade and industrial policies. The resulting patterns of international investment, production, trade, and employment in the assembly and auto-parts segments of the industry proved conducive to high rates of growth and labor-management stability both within the auto industry and in other industrial sectors. However, these patterns were also cause to and accompanied by persistent problems in the Mexican economy, including (1) chronic trade and balance-of-payments deficits, and (2) a relative price regime biased against agriculture and exports and in favor of capital-intensive manufacturing. Both of these problems contributed to the migration of labor into U.S. labor markets.

In the second part of the paper, we explain the crisis and transition of this relatively stable pattern of auto production, trade, and labor use beginning in the 1970s. We show that the crisis of Fordism in the United States stemmed from an inability to match productivity increases and per-unit labor costs of international competitors who were gaining U.S. market share through imports. In Mexico, the balance-of-payments interests of the import-substituting industrialization pattern were simply no longer sustainable. This dual crisis set forth an intense restructuring of the industry across the United States and Mexico, the nature and direction of which is the subject of much debate. Some analysts say that in order to cut costs and increase economies of scale, the industry will develop in the direction of the "world car," where similar car models and auto parts will be produced in a standardized fashion in different parts of the world, particularly at lower-wage assembly sites, to serve a global market. Others say that a reconcentration of production will occur within advanced industrial countries as the increased use of automation

and flexible technologies allow servicing of increasingly differentiated markets. A variety of data from the United States and Mexico show that neither postulate is accurate; rather, what characterizes the present restructuring is a continuum of strategies by firms that are adopting elements of both approaches.

In the final part of the paper, we present three scenarios of binational industrial restructuring and labor market evolution. We demonstrate that not only are the world-car and reconcentration patterns occurring simultaneously, but that each will have detrimental impacts on various labor markets in both countries, posing unprecedented challenges to corporations, worker organizations, and policymakers. In a third scenario, we examine the potentially positive growth and labor-market effects of a binational production-sharing and market-sharing approach to restructuring. The success of this international cooperative approach will necessitate a wide variety of new institutional arrangements between states, labor organizations, and corporations. The conditions for these arrangements must still be developed.

FORDIST AND IMPORT-SUBSTITUTING INDUSTRIALIZATION

The period from the mid-1920s until the late 1960s marked the rise of Fordist industrialization in the United States and of ISI in Mexico—a complementary international division of labor that was consolidated in the post-World War II decades. Fordism in northern countries was characterized by (1) high levels of productivity growth based on mass-production technology, which was complemented by the advent of mass-consumption markets sustained by rising real wages (assured through collective bargaining pacts), and (2) government commitments to policies for stimulating aggregate demand.[1] As long as wages generated demand for consumer goods and reinvested profits generated a demand for productivity-enhancing capital goods for mass production, the articulated industrial base of the United States enjoyed a virtuous growth cycle.

In developing countries like Mexico, industrialization involved setting tariffs on consumer goods and importing capital goods. Increased domestic production and employment were maintained through demand growth derived from rising incomes of urban middle classes and unionized workers. Urban/rural relative prices, set by the state, subsidized workers' food consumption at the expense of productivity-enhancing in-

[1] Michael Aglietta, *A Theory of Capitalist Regulation: The U.S. Experience* (London, 1976); Michael J. Piore and Charles F. Sabel, *The Second Industrial Divide* (New York, 1984).

vestment in the countryside, setting the stage for migrations to service and urban-manufacturing labor markets or to the United States. An over-valued exchange-rate regime reduced the relative price of imported capi-tal goods, contributing to a bias favoring capital-intensive manufacturing at the expense of traditional primary exports.[2] Despite growing sectoral and distributional imbalances, this pattern of growth could be sustained as long as lucrative, protected markets continued to grow and attract domestic and multinational investors, and as long as traditional exports, net foreign investment, and loans could finance the importation of capital and intermediate goods.

The auto industry was a leading sector in this international develop-ment pattern, not only in setting trends in technology, consumption, and labor-management relations, but in its direct and indirect contributions to growth in industrial activity and employment. While U.S. auto pro-duction rose and stabilized, representing a smaller percentage of global production, the rapid growth of the auto industry in Mexico resulted in its increased importance in the economy. In addition, related growth in assembly and auto-parts employment occurred, with auto-related em-ployment reaching 21.5 percent of total U.S. employment in 1977. Auto-related investment and trade also played an important role in the prob-lematic relations concerning the balance of payment between both coun-tries, with the Mexican automotive trade deficit reaching 57.7 percent of the total deficit in 1981.

The evolution of labor markets was an integral part of this interna-tional pattern of development. In the United States, union contracts ex-plicitly linking wage increases to productivity—the landmark provision of the 1950 General Motors-United Auto Workers "peace of Detroit" pact—bifurcated labor markets between organized workers in large, dy-namic manufactures and those in smaller, usually unorganized firms. Wages at multinational assemblers, particularly in the Detroit area, tra-ditionally led those other industrial sectors, while wages at smaller auto-parts establishments lagged.[3] In the 1970s, this less-renumerated auto-parts sector of the industry began to employ immigrant undocumented workers from Mexico.[4]

[1] Clark W. Reynolds, *The Mexican Economy: Twentieth-Century Structure and Growth* (New Haven, Conn., 1970).

[3] Wage data for the years 1958 to 1976 were taken from U.S. Department of Labor, *Employment and Earnings: United States, 1909–1978* (Washington, 1979); those data for 1977 to the present were derived from U.S. Department of Labor, *Employment and Earnings, Supplement Revised Establishment Data* (Washington, Nov. 1989).

[4] Rebecca Morales, "Transitional Labor: Undocumented Workers in the Los Angeles Automotive Industry," *International Migration Review* 17, 570–96.

In Mexico, manufacturing wages have historically exceeded average wages in other sectors, with unionized workers in those final-assembly auto plants run by MNCs offering among the highest manufacturing wages.[5] Auto assembly was relatively capital-intensive; its contribution to employment represented a much lower percentage than its contribution to output. Auto parts, on the other hand, contributed more to employ-ment than to its share of output.[6] Wages in assembly were far greater than those in auto parts, where firms were smaller and the organization of the work force weaker.[7] Thus, the auto-parts sector was more related to those labor markets in which the surplus labor derived from rural to urban migrations predominated.

At the height of the Fordist/ISI period, these different labor-market seg-ments evolved rather independently. Trade competition was not an em-ployment issue. As long as auto investments in the United States were sufficient to maintain employment and productivity growth, overseas in-vestments by MNCs were not detrimental and in fact could benefit work-ers in globally powerful corporations. This relatively complementary situation, however, changed dramatically in the 1970s.

Periodization

The development of relations between the U.S. and Mexican automo-bile industries can be divided into two major periods, each containing a number of specific phases. The first phase, the rise of Fordism/ISI, in-cludes the years leading up to 1925 and the important 1925–1969 pe-riod. The second phase, which involves crisis and tradition, encompasses the years 1969 to the present. These periods in the rise, crisis, and tran-sition of the international industry and labor-market structures are dis-tinguished by the development of specific relations between international and domestic firms, nation-states, and domestically organized and un-organized labor—interactions that took place within particular global environments of auto-industry competition and negotiations between de-veloped and developing countries.

Pre-1925. European automobile producers, the builders of the first commercially viable automobiles in 1885, dominated global car produc-tion as late as the turn of the century. Although U.S. producers initially suffered from high costs and poor quality, the nation's industry was

[5] SPP (Secretaria de Programación y Presupuesto), *Sistema de Cuentas Nacionales de Mexico* (Mexico City, various years); Comision Nacional de Salarios Minimos, *Salarios Minimos* (Mexico City, various years).

[6] SPP, *Sistema de Cuentas Nacionales de Mexico*, 1979–1981 vol. 1, no. 2.

[7] Secretaria de Industrai y Comercio, *Censo industrial de 1970* (Mexico City, 1975).

helped by the early imposition of a 45 percent ad valorem tariff, which was reduced to 25 percent in 1922.[8]

As their domestic market grew, U.S. automakers were better able to respond due to their early use of mass production for national markets (the European method involved low-volume, custom-built craft production). By 1907, U.S. auto exports exceeded imports, and with Ford's adoption of the moving assembly in 1914 and General Motors' annual model changes in the 1920s, mass producers quickly dominated several national markets. Production at Ford rose from 12,000 cars in 1909 to 2,000,000 in 1921. The Europeans responded by protecting their markets through high tariffs, a tactic that prompted Ford to lead the early internationalization of the U.S. industry by building plants in Canada in 1904 (behind a 35 percent tariff) and England in 1911.[9] In contrast, the Mexican market throughout this period consisted of automobiles manufactured abroad, either custom-built or assembled in the incipient mass-production lines of the United States.

1925–1961. With the 1924 Auto Decree, the Mexican state attempted to limit importation of completely assembled cars by imposing high tariffs while reducing tariffs on imported assembly components by 50 percent. The new situation was thus similar to that faced by U.S. auto producers in Europe. The strategic response of foreign carmakers was similar as well—they built local assembly plants for small production runs, using only parts imported in complete knockdown kits and assembling only with craft and primitive, mass-production techniques. Ford, the most powerful U.S. company at that time, was the first to open a Mexican assembly plant in 1925. It was followed by one U.S. firm after another before World War II and was joined after the war by European and Japanese producers. Between 1941 and 1945, four assemblers opened with Mexican equity participation, indicating the strength of local capital to become involved in the automotive sector (a phenomenon not found this early in other Latin American countries).[10] By 1961, twelve

[8] Mira Wilkins, "Multinational Automobile Enterprises and Regulation: An Historical Overview," in Douglas H. Ginsberg and William J. Abernathy, eds., *Government, Technology, and the Future of the Automobile* (New York, 1980), 221–58.

[9] Motor Vehicle Manufacturers Association, *Digest of Import Duties Levied by Selected Countries* (Detroit, 1974); Toyota Motor Sales Corporation, *The Motor Industry of Japan, 1981* (Tokyo, 1981); Daniel T. Jones, "Maturity and Crisis in the European Car Industry," research paper for the University of Sussex Science Policy Research Unit (Brighton, Eng., 1981); and tariff schedules in Alan Altshuler, et al., *The Future of the Automobile: The Report of MIT's International Automobile Program* (Cambridge, Mass., 1984), 17.

[10] Rhys Owen Jenkins, "Internationalization of Capital and the Semi-Industrialized Countries: The Case of the Motor Industry," *Review of Radical Political Economics* vol. 17, nos. 1 and 2 (1982), 59, 81.

firms were engaged in similar assembly operations and another seven firms imported assembled vehicles. Most of the early investments were made in the immediate vicinity of Mexico City, the major market during ISI.[11]

The first stages of ISI were thus initiated in lucrative protected markets where labor-intensive techniques could still be profitably employed. Assembly employment, however, remained relatively small, representing 1 percent of total employment and 3 percent of industrial production in 1940. Nevertheless, the census for that year already showed the beginnings of an employment multiplier effect with 115 repair shops employing 306 workers. During this period, no domestic auto parts were produced; 95 percent of primary assembly materials and 50 percent of repair materials were imported.[12]

The workers in these Mexican factories were primarily second-generation urban craft workers. The unionization structure was fractured from the outset as competing labor confederations each tried to gain a foothold in the industry. As a result, the level of strike activity in Mexico would rise only a generation later, during the postwar period.[13] In the United States, however, this period was characterized by intense labor strife. While there was some early strike activity among U.S. craft unions before World War I, broad union participation in the whole auto industry developed only in the mid-1930s. By 1941, with the signing of the Ford-United Auto Workers contract, all assembly workers in major firms in the United States and Canada were represented by a single bargaining agent. The uneven differences in union structure between the United States and Mexico have not changed up to the present time, severely complicating attempts at international union cooperation.[14]

1947–1961. The immediate post-war era saw a boom in Mexico auto consumption, with vehicle circulation increasing at a phenomenal rate through 1960 and domestic production still being regularly surpassed by imports.[15] In 1954, assembled auto imports constituted 14 percent of to-

[11] Douglas Bennett and Kenneth Sharpe, *Transnational Corporations versus the State: The Political Economy of the Mexican Automobile Industry* (Princeton, N.J., 1985).

[12] Secretaria de Comercio, *Census industrial de 1940* (Mexico City, 1945) and *Census industrial de 1945* (Mexico City, 1950).

[13] Ian Roxborough, "Labor in the Mexican Motor Vehicle Industry," in Rich Kronish and Kenneth Meride, eds., *The Political Economy of the Latin American Motor Vehicle Industry* (Cambridge, Mass., 1984); Kevin J. Middlebrook, "International Implications of Labor Change," in J. Dominquez, ed., *Mexico's Political Economy* (Beverly Hills, Calif., 1982).

[14] Middlebrook, "International Implications of Labor Change."

[15] Data are from Secretaria de Industria y Comercio-Dirreción General de Estadisticas reported by NAFINSA in *Economia Mexicana en cifras* (Mexico City, 1974); Dirreción

tal imports. Road construction, meanwhile, was increasing more than 10 percent annually and truck production began to assume a larger role. From 1950 to 1960, the automobile industry began to play a much more important position in manufacturing production. At the same time, however, the participation of the auto industry in domestic intermediate demand lagged as the ratio of imported parts to total imported inputs continued to rise. Foreign inputs represented 80 percent of total value compared to 12 percent domestic from auto parts and 8 percent from oils, lubricants, and other primary inputs. Exports made up only 4 percent of imports, generating a growing balance-of-payments constraint on the national economy to which the state was forced to respond.[16]

In 1947, the Mexican government prohibited the importation of tires and wheels. Quotas on auto imports were imposed for the first time, lifted in 1950, and then replaced by quotas on auto parts and assembly materials in 1954. During this phase, employment in nonassembly aspects of auto production began to take off. Total auto employment rose from 4 percent to 6.5 percent of employment.

In terms of employment, however, large differences began to appear in the 1950 census between assemblers (462) and tire (644), chassis (23), and accessories (9) manufacturers. The assemblers accounted for 43 percent of employment and 77 percent of the value of output despite the fact that by 1960 there were 150 auto parts establishments, mostly for the aftermarket.[17]

1962–1969. In response to the chronic external problems of the auto industry, Mexico began to shift its strategy toward developing greater backward linkages (engines, drive trains, and other parts) through import substitution. The objectives of the state were thus to (1) directly confront the balance-of-payments problem, (2) capture more value-added in domestic production and thus increase the basis for national accumulation via domestic consumption, and (3) expand its political base by increasing both Mexican capital in the industry and employment for some of the most powerful unions in the country. The 1962 Auto Decree was an attempt to reach these goals by imposing local-content requirements of 60 percent over ten years on autos produced in Mexico, thus stimulating development of a domestic auto-parts industry that was to be 60 percent

General de Estadisticas reported by Industrialisation and Trade Project, *Introduction to the Mexican Automobile Industry* (Paris, OECD Development Centre, 1986).

[16] "Mexico, El Comercio Exterior de la Industria Automovilistics en Mexico," *Comercio Exterior* (Dec. 1982).

[17] Census industriales de 1940, 1945, 1960 [Industrial data for 1940, 1945, 1960] (Mexico City, various years).

nationally owned. Yet as of 1950, and especially after 1960, indirect taxes minus subsidies continued to fall in relation to the value of intermediate input demand, wages, and profits.[18]

This shift in state thinking coincided with a new outward-oriented vision by large multinationals toward the growing auto markets in Latin America.[19] Provided with a change in price and cost structures—due to higher tariffs on final automobiles and lower tariffs on imported capital goods, as well as lower net taxes—multinationals could take advantage of the growing markets and adopt the import-substitution strategy proposed by the government. This coincidence of interests set off a second wave of mass investment, characterized by new integrated plants (foundry, engines, and assembly) built on the perimeter of Mexico City, where wages were lower and union control less developed.

Several underlying conditions in the world automobile industry at this time were crucial for multinationals' decision to embark on these investments: (1) Fordism in northern countries allowed for production to be absorbed at sufficiently high economies of scale, making auto and auto-parts exports unnecessary for the profit realization,[20] (2) The operation of the product cycle allowed MNCs to obtain high rents on technology packets obsolete for use in the North but which could still be profitably transferred to the South,[21] (3) The existence of "easy" ISI levels meant that auto-parts production could be profitably transferred to Mexico, while other more capital- and technology-intensive auto-parts production could be maintained in the United States (automatic transmissions, and so forth), thus establishing a new international division of labor,[22] and (4) An intense struggle occurred among U.S. and European MNCs competing to establish themselves within new growing markets in the developing economies under threat of being left out of a relative share of global auto profits.[23]

For organized labor, this period corresponded to an increased fracturing of auto unions at the regional and confederation levels.[24] The Confederación de Trabajadores Mexicanos' (CTM) support of the policies of this phase of auto industrialization and union fracturing reflected a strat-

[18] Asociación Mexicana de Distribuidores de Automoviles, *Diez Anos del Sector Automotiviz en Mexico, 1973–1982* (Mexico City, 1983).

[19] Motor Vehicle Manufacturers Association, *World Motor Vehicle Data* (Detroit, 1986).

[20] Krish Bhaskar, *The Future of the World Motor Industry* (London, 1980).

[21] Jenkins, "Internationalization of Capital and the Semi-Industrialized Countries."

[22] Mark Bennett, *Public Policy and Industrial Development: The Case of the Mexican Auto Parts Industry* (Boulder, Colo., 1986).

[23] Bennett and Sharpe, *Transnational Corporations versus the State.*

[24] Roxborough, "Labor in the Mexican Motor Vehicle Industry."

TABLE I

Percentage Wage Increases in Mexican Automobile Terminal Industry, 1968–1976

Firm	1968	1969	1970	1971	1972	1973	1974	1975	1976	Period average
Diesel Nacional (DINA)	15.4%	–	15.1%	–	17.2%	–	10.0%*	–	15.0%*	[illegible]
Nissan	17.3	–	16.1	–	17.1	–	22.0*	–	20.0*	[illegible]
Volkswagen	NA	–	16.0	–	20.0	–	24.0*	–	26.0*	[illegible]
General Motors	–	8.9	–	14.0	–	15.0	–	13.0	–	[illegible]
Ford	–	11.0	–	14.0	–	15.0	–	16.0*	–	[illegible]
Vehiculos Automotores Mexicanos (VAM)	14.7	–	16.7	–	14.1	–	NA	–	NA	[illegible]

SOURCE: With the exception of those values marked*, wage increases are calculated as the average increase over all wage categories, as reported in pay scales for each firm's collective contract for the year indicated. Nationwide "emergency" wage increases in 1973 (20%), 1974 (22%), and 1976 (23%) are not included in those percentage increases reported in this table. NA = Not Available. Values marked * are from Francisco Javier Aguilar Garcia, "El movimiento obrero automotriz en Mexico, 1965–1976," Universidad Nacional Autonoma de Mexico, Facultad de Ciencias Politicas, tesis de licenciatura, May 1978: DINA, 1974 (p. 167), 1976 (p. 170); Nissan, 1974 (p. 195), 1976 (p. 200); Volkswagen, 1974 (p. 215), 1976 (p. 230); Ford, 1975 (p. 173).

egy to divide their competition from other unions in order to increase their own influence in the industry and in the state. The 1965 Confederación Revolucionaria Obrera y Campesina (CROC) strike against General Motors, where the principal demand was maintenance of a national union clause in the new Toluca contract under CROC, is a case in point. After the strike was broken, CTM eventually got the new contract, thus splitting the General Motors work force into two unions.

Both a quantitative and qualitative change also occurred in the work force in terms of class background and region of origin: the new type of worker employed in the plants outside Mexico City came from a more rural area. This new generation of workers coincided with the introduction of new productive processes—foundry work and mechanization with machine tools—as well as new technologies in final assembly. More unskilled workers were also needed for maintenance. The result was a segmentation between highly specialized machine workers and the assembly workers deskilled via Taylorism.

Table 1 shows the new differences in wages across plants. Workers in MNCs were paid more than those employed by state and private national-assembly firms and auto-parts producers. Overall, renumerations for wage workers in 1970 was 60 percent higher than the industrial average, whereas the productivity was 73 percent higher. Per-unit costs of labor were thus 12 percent lower, explaining the lower level of salaries to value-added.[25]

CRISIS AND TRANSITION

Beginning in the late 1960s and accelerating through the 1970s, the North-South reciprocity in growth, investment, and trade began eroding as part of a global economic crisis. The causes of this crisis can be traced to factors affecting the exhaustion of traditional sources of productivity growth across countries, the rise of newly competitive trading blocks, and increasing international monetary, financial, and price instability—all of which were compounded by the oil shocks of 1973 and 1979. Meanwhile, accelerating balance-of-payments deficits of ISI were increasingly financed through northern lending of dangerously large amounts of commercial bank resources. As productivity among U.S. firms dropped, the engine supporting continued wage increases slowed down, resulting in a drive for give-backs by organized labor. As policies of Keynesian demand management became less sustainable, this slow-down was used by the government to justify dismantling social programs. In a circular fashion,

[25] Motor Vehicle Manufacturers Association, *World Motor Vehicle Data*.

the breakdown of the engines of productivity growth led to the dissolution of institutions supporting traditional consumption market patterns that supported the structure of production. With the slow-down of U.S. economic activity, exacerbated by a monetary shock policy, traditional patterns of growth, trade, and capital flows between North and South ground to a halt.

Within the United States, the automobile industry suffered particularly during this period. From a 75 percent share of world auto production in 1950, the portion attributed to U.S. firms dropped to 28 percent by 1970 and continued to fall to 20 percent by 1980.[26] U.S. manufacturers were unable to match the productivity rates and per-unit labor costs of production of the increasingly more efficient Japanese and Germans. Though U.S. firms realized an increase from 5.16 to 8.36 automobiles per thousand man-hours from 1953 to 1977, Japanese manufacturers underwent a meteoric rise from 0.32 to 8.57 during the same period.[27] U.S. sales of domestically made cars shrunk by one-third between 1978 and 1982.[28] Assembly plants in the United States closed, in some cases to shift production to lower-cost, foreign sites, and in other cases to reorganize production more efficiently within the United States through new technology or coproduction agreements. In two of the worst years, 1979 and 1980, twenty plants closed or announced closure, which affected directly the employment of over 50,000 workers, and indirectly an additional 350,000 to 650,000.[29] The number of employees working in auto assembly dropped from nearly 470,000 in 1978 to 317,500 in 1982, and unemployment among workers in motor vehicles and parts production rose from 3.9 percent in 1977 to 20.4 percent in 1980.[30] Nonetheless, average hourly wages increased from $10.52 in 1979 to $15.33 by 1984.[31]

The collapse of productivity growth and the rise in per-unit labor costs in the North affected conditions for trade and investment in the South as well. From a period of stable relations during the early 1960s, through the breakdown of Fordism into the 1970s, North-South development patterns grew increasingly linked. During the 1960s, technological advances in the North's consumer durable-goods industry were complemented by the transfer of older technology to the South for an extended life. Within Latin America, ISI policies progressively shifted the composition of imports from final goods toward capital goods and intermediate inputs. Though the trade relation generated national deficits, these were offset by the increasing inflows of foreign capital—first as direct foreign investment in manufacturing, and later as commercial bank loans. The U.S. share of total direct foreign investment in Latin America grew to 59 percent by 1969, with over 60 percent of that allocated to manufacturing in rapidly industrializing countries such as Mexico.[32] Despite a relatively stable North-South division of production, an apparent denationalization was also taking place. U.S. productive capacity was gradually shifting to developing nations, while domestic firms in these countries failed to realize significant growth due to direct takeovers and competition.

As a target of national industrial policy, the automobile industry in Mexico was greatly affected by these transformations. With the 1962 Auto Decree, Mexico pushed forward import-substitution strategies of stimulating backward linkages by establishing a 60 percent local-content requirement on the value of automobiles for final market, including the engine and other major parts of the drive train. Furthermore, Mexico insisted that parts suppliers could not be directly owned by the assemblers and had to have 60 percent Mexican participation. Local suppliers, even though many were subsidiaries of U.S. firms, proved unable to provide parts at internationally competitive prices and quality. Local-content requirements were thus not being met, a situation that exacerbated balance-of-payments deficits. This was to be expected; the Mexican auto-parts industry was still technically inexperienced and was operating from a weak financial base while it produced at low economies of scale for the many auto lines. Ultimately, a mere 36 percent local content was achieved by 1970. Consequently, in 1969 and 1972, while still sustaining its import-substitution goals, the Mexican government adopted an auto-parts export policy in an effort to address the balance-of-payments problem and increase the competitiveness of auto-parts producers.

The 1969 and 1972 Auto Decrees reiterated the 60 percent local-content requirement and declared that the industry had to balance imports with their exports of auto parts. Although the goals of the decrees were not

[26] U.S. Department of Commerce, *Census of Manufactures* (Washington, various issues).

[27] Japanese Ministry of International Trade and Industry (Tokyo, various issues).

[28] Secretaria de Industria y Commercio, *Trabajo y Salarios Industriales* (various issues).

[29] Carol MacLennan and John O'Donnell, "The Effects of the Automotive Transition on Employment: A Plant and Community Study," report to the Transportation System Center, U.S. Department of Transportation, Dec. 1980.

[30] Bureau of Labor Statistics, *Employment and Earnings* (Washington, 1971–1986); Motor Vehicle Manufacturers Association, "Economic Indicators: The Motor Vehicle's Role in the U.S. Economy," *MUMA Bulletin* (31 July 1986), 10.

[31] *Ibid.*

[32] Rhys Owen Jenkins, *Dependent Industrialization in Latin America: The Automotive Industry in Argentina, Chile, and Mexico* (New York, 1977).

TABLE 2

Value of Mexican Automobile Production

(Millions of pesos)

	Baja Calif.	Coahuila	Chihuahua	Nuevo Leon	Sonora	Tamaulipas	Total
1965							
Fabrication/assembly of vehicles	—	—	—	—	—	—	4,417,411
Fabrication of chassis	—	—	—	57,377	—	—	32,909
Fabrication of motors	—	—	—	—	—	—	363,419
Fabrication of access., parts	—	103,589	—	118,367	—	2,398	1,299,135
Repair of vehicles	23,202	12,795	15,996	40,229	22,556	20,389	684,147
1970							
Fabrication/assem. of veh. & truck cabs	—	—	—	370,125	—	—	8,966,717
Fab. of chassis	—	9,458	1,588	125,360	—	—	359,621
Fab./assem. of motors & motor parts	—	—	—	—	—	—	1,121,035
Fab. of access., parts	12,191	199,795	4,200	381,544	1,293	24,755	3,452,898
1975							
Fabrication/assembly of vehicles	—	—	—	294,187	—	—	25,447,195
Fab./assem. of chassis & drive trains	5,527	8,407	1,281	536,596	—	3,704	[illegible]
Fab./assem. of motors & motor parts	—	471,846	—	89,348	—	—	2,396,017
Fab. of transmission parts	—	—	—	—	—	—	[illegible]
Fab. of suspension parts	133,056	—	—	36,890	—	—	[illegible]
Fab. of brake system parts	—	—	—	35,396	—	—	782,336
Fab. of access., parts for elect. system	—	—	—	88,487	—	—	1,069,325
Fab. of other parts & access.	91,374	44,505	46,141	1,182,110	19,923	33,610	[illegible]

SOURCE: Secretaria de Comercio y Fomento Industrial, Mexico City.

fully met, trade in auto parts did begin to grow exponentially. While in 1965 the ratio of auto-parts exports to the export of passenger cars was 3:2, by 1970 it had increased to 4:1, and by 1980 had reached 50:1.[13] In addition, a geographical shift was taking place; northern Mexico was rising in prominence. Compared to national auto output, there was a significant increase in auto production in every northern state from 1970 to 1975. This was particularly true for Baja California, which saw an increase of SIC category 3815 (Fabrication of Parts for Auto Suspension System) from under 1 percent to 12.5 percent of national production; Coahuila, which realized an increase of SIC 3813 (Fabrication of Motors and Their Parts) from 0 to 16.3 percent of national production; and Nuevo Leon, where SIC 3812 (Fabrication and Assembly of Chassis and Drive Train) grew to 27.7 percent of the national total. Across all northern states, SIC 3819 (Fabrication of Other Parts and Accessories for Autos) rose to 35.8 percent of national production by 1975 (Table 2).

Being Mexico's primary foreign market, U.S. imports of auto parts from Mexico grew rapidly, increasing from $100,000 in trade during 1965 to $18 million in 1970, to $131 million by 1975, and again to $242 million by 1980. With the steady expansion of the auto sector in Mexico, exports from the United States also grew. From $126 million in 1970, auto parts exported to Mexico increased to $937 million by 1980.[14]

Fueling the move toward internationalization by U.S. automakers and the growth of the auto-parts industry in northern Mexico was the Border Industrialization Program. Begun in 1965, it established duty-free export processing and assembly zones within a twelve-mile strip along the U.S.-Mexican border—a designation that was later extended to include the entire country. The *maquiladoras* became significant contributors to industrial growth in the region. Initially dominated by garment and electronics assemblers, as of 1979 there were 38 plants nationwide involved in auto-parts production, largely located in the North, and in all, employing 5,035 persons.[15]

This was also a period of qualitative change in the composition of the work force within the Mexican automobile industry. On the one hand, there was the emergence of the largely nonunionized *maquiladora* labor force in those parts-producing plants oriented toward export. On the other, a relative homogenization was occurring among the autoworkers

[13] Bureau of Labor Statistics, *Employment and Earnings*; Motor Vehicle Manufacturers Association, "Economic Indicators: The Motor Vehicle's Role in the U.S. Economy," 10.
[14] *Ibid.*
[15] Secretariat of Programming and Budget, *Estadistica de la Industria Maquiladora de Exportación* (Mexico City, various issues).

situated in Mexico City's plants and those in the outlying areas in terms of wage demands and labor militancy. Thus, with the unfolding of the crisis surfaced a new international division of labor—a profile distinguished by the disassociation of the unionized work force of the automobile assemblies and major parts manufacturers operating within the U.S. or Mexican domestic markets from the disenfranchised, Taylorized workers of the export-processing zones.

As the intensity of international competition accelerated throughout the late 1970s and early 1980s, U.S. automakers picked up the pace of industrial restructuring and labor-market change. From the near bankruptcy of Chrysler in 1979 to the demise of auto and related production in branch plant locations such as Los Angeles, the impact was widely felt. Parts manufacturers at the branch-plant sites often could not hold on to the original equipment market, and many were forced to close, shift location or product, or redirect their product line to the replacement or aftermarket. In Los Angeles, which had been the second largest auto-producing region after Detroit during the 1950s with a wide-ranging though not fully developed parts industry, and which was a major point of destination for immigrants to the United States, some parts producers attempted to control production costs by employing undocumented workers. Employers gained by paying lower wages and benefits, undermining union organization and bargaining efforts, and by having access to an easily releasable work force at a time when the extent of labor demand seemed highly unpredictable. Though this strategy was initially developed by economic pressures of the time and the availability of a unique labor force, it became an enduring part of the regional industry. Immigrant workers provided an alternative to relocation or retooling. With undocumented workers' penetration into the auto industries of industrialized countries, the circuit of the new international division of labor appeared to close.

The complexity of the 1970s was further evident in the responses of organized labor in the United States and Mexico, of the governments of the respective countries, and of the automakers themselves. Watching its ranks shrink, United Auto Workers' employment in the five largest auto companies decreased by 26 percent from a peak in 1978 to January 1986.[16] The United Auto Workers' call for local-content legislation, which became the hallmark of organized labor, established a formula for imposing requirements, a phase-in period, and a ceiling of 90 percent

[16] United Automobile Workers of America, *Research Bulletin*, special convention issue (Detroit, 1986).

among high-volume sellers.[17] Wanting to retain free trade, yet needing to address the concerns of labor, the U.S. government turned instead to voluntary trade restrictions with the Japanese in 1981.

Within Mexico, the response to the economic pressures of the 1970s took the form of two successive auto decrees in 1977 and 1983 that firmly redirected national industrial policy away from import substitution and toward export promotion. The 1977 Auto Decree lowered the local-content requirement to 50 percent for the auto assembly, but extended the requirement to auto parts with the provision that exports could be included in parts manufacturers' calculations of local content. Mexico's intent was to combine export-led industrialization via parts (including engines) with backward linkages. Due to the consumer boom (precipitated by oil revenues) that made Mexico the fastest-growing market in the world, as well as the willingness of multinationals to shift production toward export to the United States, the auto industry was geared for growth. Investments in Mexico continued to decentralize, as investors realized that production was aimed at both the domestic and export markets.

This optimistic scenario, however, was clouded by other factors. Labor unrest continued in Mexico; in 1980, a 106-day strike by the CROC occurred, the longest ever in the auto industry, and organized labor was consistently unable to create a national union. From 1977 to 1981, while exports increased 14 percent, imports surged to 21 percent, making the deficit jump from 20 to 57.7 percent. In 1982, Mexico suffered its worst economic crisis since the 1930s. Collapse of the domestic market led to a 40 percent drop in auto production and a 41 percent drop in auto sales. In the face of mounting problems financing Mexico's international debt, the 1983 Auto Decree liberalized the backward linkage provisions of the 1977 Auto Decree by waiving local-content requirements on cars for export. It further allowed exceptions to requirements limiting the number of lines and models if exports balanced imports used in production.

Among the automakers, the options available for addressing the crisis were also far more mixed than initially realized. As firms began internationalizing production, it appeared that a strategy would be found that could simultaneously meet local-content requirements and respond to the need to restructure. This hope lay in the "world car" concept, an idea that consisted of a base car from which several models of similar specifications for different countries would be built using standardized produc-

[17] Douglas Fraser, "Domestic Content of U.S. Automobile Imports: A UAW Proposal," *Columbia Journal of World Business* (Winter 1981), 57–61.

tion processes and interchangeable parts. In contrast to Fordism-style manufacturing, in which production is characterized by mechanized assembly lines, local inventory sourcing, and vertical integration and is sustained by mass national markets, this world-car approach was characterized by vertical disintegration/global reintegration, multiple sourcing, parallel production, increased automation, and the capturing of economies of scale in global markets, with industrializing countries clearly integral to the process. Although the Ford Fiesta, introduced in 1976, was intended to illustrate this strategy, wholesale adoption of the idea was slow to materialize. Many observers suggested that it was never a viable concept, especially since the auto-parts industry did not seem to be taking off in industrializing nations that had adopted import-substitution policies.[18] In addition, the dedication to specific technology, which facilitated mass production, also lacked the ability to respond easily to rapid model changes, while the extensive decentralization of production required expensive inventories to guarantee a sufficient number of high-quality parts.[19]

Yet another alternative for automakers began to surface in the 1980s. With the United States still the most significant new-car market in the world, direct foreign investment in autos increased. As of 1982, Honda became the first Japanese firm to establish assembly operations in the United States, with Toyota and Nissan following its lead. The incentive to remain in the United States and produce for the domestic market was strong even though the market was becoming crowded and extremely fragmented. The heterogeneity in demand suggested a need for product variability; consequently, as advances in production technology lowered the cost of small production runs and model changes, another form of industrial organization emerged.

Described as "flexible specialization," this method employed flexible manufacturing technology, "just-in-time" inventory sourcing (or *kanban*), and Japanese methods of labor-management relations. To institute *kanban*, which required establishing close supplier ties, and to facilitate technological development, this strategy reconcentrated production in the United States, particularly in the Midwest. Furthermore, to capture what have been called "external economies of scope" (in reference to

[18]U.S. International Trade Commission, *The Internationalization of the Automobile Industry and Its Effects on the U.S. Automobile Industry*, USITC Pub. 1712 (Washington, 1985).

[19]Harry C. Katz and Charles F. Sabel, "Industrial Relations and Industrial Adjustment: The World Car Industry," paper presented at the Conference on the Future of Industrial Relations, 22–23 Feb. 1985, Berkeley, Calif.

flexibility in batch size and product variability), firms committed to this route also began a process of vertical disintegration with the intent of increasing versatility, not standardization. Examples of this move include the 1979 joint venture of Toyota and General Motors (NUMMI) and General Motors' 1990 Saturn project. When fully in place, the role of industrializing countries under this scheme was reduced to supplying only the most labor-intensive, minor products. Although the alternative between standardization/internationalization and industrial strategies using flexible specialization was more conceptual than absolute because the actual practice of automakers reflected a mixture of both approaches, these strategies became the subject of intense debate. Projected into the future, the way each strategy would affect labor markets within the United States and abroad and their implications for the future role of industrializing nations were quite distinct. Furthermore, because conditions in the U.S. auto industry changed considerably since 1979—through the closure of older plants, a reduction in work force, lower inventory costs, increased outsourcing, and improved efficiency and quality control—the breakeven point for each company dropped substantially. This made a U.S. location even more attractive and the flexible specialization strategy increasingly viable. For General Motors, the breakeven point dropped from 8.4 million units in 1980 to 5.6 million units in 1984, based on worldwide vehicle sales; among Ford's North American operations, the fall was from 3.6 million units to 2.1 million units in the same period; while for Chrysler, the reduction was from 2.3 million units to 1.1 million units.[40]

These developments seemed to support the flexible-specialization concept, and those who interpreted the trends this way were specific about what they saw as Mexico's future. One OECD report listed four reasons why developing countries would face an inherent bias: "Some of the theoretical advantages of low-cost production in newly industrialized countries have been offset by (1) much lower productivity, (2) a lower degree of system efficiency, (3) higher component costs resulting from local-content requirements, and (4) macroeconomic disturbances such as rapid exchange-rate changes."[41] Thus, with critical advancements occurring in the structure of production, developing countries seemed to have a very low-level niche. A recent study by the Massachusetts Institute of

[40]U.S. International Trade Commission, *The Internationalization of the Automobile Industry and Its Effects on the U.S. Automobile Industry*.

[41]Organization for Economic Cooperation and Development (OECD), *Long Term Outlook for the World Automobile Industry* (Paris, 1983).

Technology categorized auto parts into three types: major mechanicals (for example, engines and transmissions); finish parts (such as body stampings, trim, seats, and instrument panels); and minor mechanicals (for example, starters, radiators, springs, and wiring harnesses), each with production-specific requirements. Major mechanicals necessitate high initial capital investments for their highly automated production and technically skilled labor; finish parts are bulky to ship and must fit precisely, thereby requiring strict quality control; while minor mechanicals with their low technology, labor-intensive production methods are seen as best suited for low-wage sourcing.[42]

Despite this minimal area of relative advantage, a trend toward modular-component assembly, coupled with increasingly automated machining and manufacture and the projected introduction of new technology into critical product lines (for example, fiber optics replacing wire harness methodology), suggests that certain manufacturers of minor mechanical parts may soon find the United States a preferred site of production, and in the process, abandon their developing-nation sites.[43] Where extensive production is taking place in industrializing countries (such as Mexico), the MIT study states quite clearly,

> The need to achieve scale economies in developing countries with high local-content requirements, coupled with the feasibility of building highly automated plants in those countries which can produce at an adequate standard of quality, means that [while] some OECD production is being transferred [there] . . . the main aim of such transfers is not to produce cost savings for multinational producers in the OECD markets; rather it is to gain access to developing and developed markets.[44]

Despite opinions that the world-car strategy never materialized and that the flexible-specialization approach offered few opportunities for significantly integrating industrializing countries into the international automobile industry, developments in Mexico suggested that the situation was actually more complex. In its sectors engaged in parts production and assembly of autos for export, Mexico displays trends that contradict and go beyond the predictions of recent studies. Seen in overview, these important export developments are immediately apparent.

In response to Mexico's auto decree stipulations, certain products such as engine manufacture have become well-developed. In addition, due to the Border Industrialization Program, other labor-intensive parts for ex-

[42] Altshuler, *The Future of the Automobile*.
[43] *Ibid.*
[44] *Ibid.*, 83.

port have similarly grown in importance. Although these policies were crucial in defining the possible range of the auto industry in Mexico, the strategies of individual firms created the broad diversity of automobile and auto-parts production now visible. With Ford essentially adopting a world-car strategy and General Motors largely committed to flexible specialization, with its reconcentration of production in the United States, the sourcing and assembly policies of these companies are both significantly different and suggestive of the viability, as well as distortions, of the two industrial strategies. Looking first at the parts profile, these points will be examined in detail.

Approximately 80 percent of Mexico's parts exports are for the U.S. market, and of all exports, only 20 percent go to the aftermarket.[45] While Mexican parts still constitute a small share of the parts imported into the United States, that number is growing and is expected to continue increasing in the near future.[46] Of these, the rise of engine exports is most clearly identified with the auto decrees. In the United States, the production of engines, along with transmissions and transaxles, reached their highest level in 1979 and then declined. A major trend has been for U.S. firms to import their engines from either wholly owned subsidiaries or foreign joint ventures. From 1980 to 1983, U.S. imports of engines grew by 300 percent, from 544,020 to 2,183,842 units.[47] Most of this increase was attributed to offshore purchasing from Mexico, Brazil, and France or joint-venture operations from Japan.[48] The contribution attributed to Mexico grew from $68,866 in gasoline engine exports to the United States in 1980 to $422,813 in 1983, and again to $531,932 in 1984.[49] In 1983, virtually all of the engines were imported under TSUS item 807.00.[50] When surveyed as to why firms were purchasing from Mexico and Brazil, the most important considerations were net price, local-content requirements, and product quality, while the least important con-

[45] Douglas C. Bennett, "Regional Consequences of Industrial Policy: Mexico and the United States in a Changing World Auto Industry," in Ina Rosenthal-Urey, ed., *Regional Impacts of U.S.-Mexican Relations*, monograph 16 (La Jolla, Calif., Center for U.S.-Mexican Studies, 1986).
[46] U.S. International Trade Commission, *Internationalization of the Automobile Industry*.
[47] U.S. International Trade Commission, *Internationalization of the Automobile Industry*.
[48] U.S. International Trade Commission, *Imports under Items 806.30 and 807.00 of Tariff Schedules of the United States, 1980–1983*.
[49] TSUS statistics of the U.S. Department of Commerce as contained in U.S. International Trade Commission, *Internationalization of the Automobile Industry*.
[50] Compiled from official statistics of the U.S. Department of Commerce, as contained in USITC Publication 1688, *Imports under Items 806.30 and 807.00 of the Tariff Schedules of the United States, 1980–1983* (Washington, Apr. 1985).

sideration was proximity of supplier.[51] Since the Massachusetts Institute of Technology study used data through 1980, they neglected to include Mexico as a significant supplier of engines and in turn, made an incorrect conclusion about the importance of Mexican major mechanicals.[52] As of 1982, the following plants in Mexico were making engines for export: Ford, with 400,000 units, Chrysler, making 220,000 units; General Motors, at 360,000; American Motors/Renault, with 300,000; Volkswagen, manufacturing 140,000; and Nissan, with 120,000 units.

Ford's state-of-the-art plant in Chihuahua demonstrates the direction in which engine production is going. This plant uses the most advanced technology available and as of 1984 used 600 robots, from small polishers to the most sophisticated pieces. In 1985, the relatively skilled work force consisted of 47 supervisors, 253 administrators, and 468 technicians and workers, of whom 350 were direct production workers. These workers received 40,000 pesos a month (approximately $1 per hour) in 1984 and produced 750 engines every eight-hour shift.[53] On average, the Chihuahua plant is expected to provide 1,500 direct, and 1,000 indirect, jobs. The four-cylinder 2.2 liter engines manufactured here had the same design as those manufactured at the Lima, Ohio, plant.

While engines provide significant insight into the growth of Mexican auto-parts exports to the United States—constituting between one-third and one-fourth of the value of auto-parts imports from Mexico in 1982 and between one-half and one-third of imports in 1983—other parts were also important. In order of significance, other prominent parts were radios; electrical starting and ignition equipment; motor-vehicle stampings; furniture designed for autos; brakes; springs; and glass products.[54] As this list demonstrates, finish parts (stampings) is another item that the MIT project did not attribute to Mexico. Altogether, the United States imported over $1.2 billion in auto parts from Mexico in 1983, creating a trade deficit of over $440 million.[55]

Growth of the *maquiladoras* explained much of the increase. From 1979 to 1985, the number of border *maquiladoras* involved in producing transport equipment grew from 38 to 49.[56] These products generally en-

[51]U.S. International Trade Commission, *Internationalization of the Automobile Industry*.

[52]Altshuler et al., *The Future of the Automobile*, 178.

[53]Graciela Martinez, "Sistemas Productivos en la Planta Ford de Chihuahua," paper prepared at Colegio de la Frontera Norte (Tijuana, 1984).

[54]U.S. Department of Commerce, *Motor Vehicles, Motor Vehicle Parts, and Accessories: U.S. Trade with Mexico 1982 and 1983* (Washington, 1985).

[55]*Ibid.*

[56]Secretariat of Programming and Budget, *Estadistica de la Industria Maquiladora de Exportación*.

tered the United States under TSUS items 806.3 and 807.0. In 1983, $179,918,000 worth of motor-vehicle parts entered under 807.0, or nearly one-tenth of the total value of goods, while $11,807,000 entered through 806.3. (From 1980 to 1983, Mexico moved from third to first place as the largest importer of goods to the United States under item 807.0). The rise of the *maquiladoras* has resulted in a significant increase in employment. In 1979, the number of persons employed in transport equipment along the border was 5,035 and had grown to 34,484 by 1985. Given respective increases of value-added per million pesos from 859 to 20,215, this sector resulted in the highest value-added per employee. This finding confirms the relative capital intensity associated with auto-parts production compared to other *maquiladora* sectors, such as textiles at .29 in 1985, or electronic materials at .30 for the same year.[57] Geographically, most *maquiladoras* are concentrated around Cd. Juarez, which is largely geared toward the original equipment market (most of these plants assemble electrical parts), and Tijuana, which is oriented toward the minor-mechanical aftermarket. By far the largest employer among the *maquiladoras* is General Motors, which uses the *maquilas* mostly to manufacture wire harnesses. General Motors had ten in-bond plants by 1985, had grown to sixteen by 1986, and was expected to double by 1987.

Over the years, employment in auto parts for export became increasingly significant relative to employment in the terminal sector. In 1979, 107,874 people were employed in the automotive industry; 116,500 were employed by 1984. While 49,738 persons were employed in the terminal sector in 1979 and 48,200 by 1984, in auto parts the respective increases were 58,136 to 68,300.

These numbers, of course, do not illustrate how employment is divided between the two main strategies of industrial organization. Despite attempts to disassociate itself with the term "world car," Ford maintains a policy that any new car design be easily adapted for any market in the world.[58] At the same time, Ford's Alfa project seems to be moving toward greater efficiency faster than similar endeavors by General Motors or Chrysler—progress attributed more to changes in management and shop-floor practices (85 percent) than to new technologies (15 percent).

These policies suggest that Ford is moving to combine the world-car and flexible-specialization strategies.[59] When operations are fully underway in the Ford Hermosillo plant opened in 1988, it is expected that

[57]*Ibid.*

[58]*BusinessWeek*, 11 Feb. 1985.

[59]*Fortune*, Dec. 1985.

90 percent of the auto parts it needs will be imported from around the Pacific, and 90 percent of its output will be shipped to the United States. Mazda Motor Corp., which is 25 percent owned by Ford, will provide the basic design and major components. When the cars are coming off the line, 3,000 workers will be employed making 100,000 cars annually, and the product will replace the Mercury Lynx compact, now made in the United States.[60] Thus, by retaining a primary commitment to the basic world-car concept, Ford, at least in this plant, is not helping to build the supplier linkages in Mexico but is rather using Mexico as an export-processing zone, a strategy made all the more possible after the 1983 Auto Decree.

Alternatively, General Motors is applying its reconcentration/ flexible-specialization strategy in Mexico two ways. At the Ramos Arizpe plant near Saltillo, it has implemented just-in-time inventory sourcing, even though most of the parts come from the United States as temporary imports. In addition, it has shifted production of many of its low-value-added parts into Mexico for integration into modular pieces to be assembled in the United States. While many parts are manufactured in the *maquiladoras*, including electrical parts, control devices, solenoids, switches, trim, bumpers, and brake hoses, wire harnesses remain the main product. This fact is important, because many future car design improvements will come from electronic components. Thus, while a general trend toward vertical disintegration is taking place in the industry, General Motors remains the most vertically integrated, and by retaining capacity among electronics, it can better control the design and cost.[61] General Motors' dual strategy, then, is to couple vertical integration with a relocation of subsidiary facilities to low-wage areas, which would thereby define the outer boundaries of reconcentration. Over the long term, this strategy could have a similar outcome to the world-car strategy; while employment is lost in the United States, only minimal employment is gained in Mexico because supplier networks will not be strengthened.

Overall, the automobile industry in Mexico has undergone several unexpected developments. Traditional trade theory, which assumes a relative immobility of factors, argues that trade reflects each country's comparative advantage. The North would specialize in capital-intensive production, while the South would specialize in labor-intensive production. However, according to this theory, once capital became mobile, the parameters defining comparative advantage would change because the

[60] *Ibid.*; *BusinessWeek*, 14 Apr. 1986.
[61] OECD, *Long Term Outlook for the World Automobile Industry*.

cost of all factors would have to be taken into account. Thus, capital-intensive production could occur in locations like Mexico if the technology was standardized, and if savings in transportation and labor warranted the move. With the transformation from Fordism to post-Fordism, this process, in fact, began to take place.

In part, Mexico's ability to capture a variety of products reflected its relatively strong market potential for growth and its established experience with the industry. The stages through which a country goes as it proceeds from importing finished vehicles to manufacturing a complete car consists of (1) the supply of a few replacement parts, distribution, and services, (2) local assembly of semi-knocked-down and knocked-down cars, (3) development of backward linkages evolving out of the replacement market, and (4) further integration until even the most advanced parts are made domestically.[62] As the industry matures, the tendency for production to become technologically complex and capital intensive increases.[63] This tendency is clearly exemplified by Mexico, where capital intensity more than doubled from 1960 to 1965 when capital per-unit output grew from 440 to 1,101; the capital/output ratio rose from .17 to .33; and the capital/value-added ratio jumped from .38 to .86.[64]

This descriptive stage theory, however, can offer only a limited explanation of how the transitions actually occurred. Within Mexico, the 1969 Auto Decree specified local-engine sourcing as a term of production that, when coupled with recent trends toward internationalization by U.S. manufacturers, pushed production to greater capital intensity. While the various auto decrees guided Mexico's economic structure, trends in the industry determined which parts and technology would locate in Mexico for export abroad.

ALTERNATIVE SCENARIOS

In what direction can we expect international industrial, trade, and labor-market relations to evolve across the United States and Mexico? As shown in the last section, a variety of strategies are being attempted in response to the crisis of the previous international development pattern. What factors will determine which strategy will prevail? What are the implications of each strategy for labor groups on both sides of the border? Will either of these approaches address the fundamental problems

[62] Jenkins, *Dependent Industrialization in Latin America*, 91–98; George Mexcy, *The Multinational Automobile Industry* (New York, 1981).
[63] Jenkins, *Dependent Industrialization in Latin America*, 88; Jack Baranson, *Automotive Industries in Developing Countries* (Baltimore, Md., 1969), 14.
[64] Asociación Mexican de la Industria Automotriz, A.C., *La Industria Automotriz de Mexico en Cifras* (Mexico City, 1972).

now facing the United States and Mexico in their effort to construct a new pattern of international development that assures both productivity growth and increased social participation in these gains?

Each strategy has significantly different long-term consequences for industrial organization, as pointed out by the OECD.[65] The two strategies imply different approaches to productivity enhancement; the world-car strategy stressing greater standardization with plants of higher economies of scale (400,000 units), and the reconcentration strategy emphasizing technology that allows greater flexibility for changing design in plants with lower economies of scale (250,000 units).[66] For the United States and Mexico, both strategies also promise very difficult strains on the nature of employment and earnings across the two countries.

The implications of an expanded world-car strategy include increased model standardization, larger scales of production in key countries, global sourcing of auto parts, the favoring of replacement components over the trade-in of cars, and market concentration by large integrated producers at the expense of specialist producers. The labor-market effects in assembly include a tendency to transfer employment in final assembly of cheaper, more standard models away from the United States toward export platforms in Mexico, as in the Hermosillo case, while the United States assembles high-priced cars for specific regional markets. In both countries, these effects imply a move toward greater technological intensity in standardized production.

The net employment effect for U.S. final assembly would probably be negative, especially for lower-skilled assembly workers. The incremental effect on Mexican employment, however, would be small, as in the Hermosillo case. Global sourcing of auto-parts production would probably result in a net loss of employment in the United States, except for some sophisticated specialty parts specific to U.S. markets, which could be produced profitably in the United States with flexible technology. Mexico could increase production of some auto components like motors and other heavy parts for North American markets, in tandem with other sourcing countries, but would probably lose some of its market share for lighter low-tech auto parts to cheaper assembly sites in Asia or elsewhere.

Projected consequences of the technological divergence and specialization strategy include increased model differentiation with advanced flexible technology; reconcentration of production in major market countries; emphasis on model trade-in over component replacement; and market penetration by smaller "specialist" producers, which would entail a loss of market share by large integrated producers. The strategy would have different employment effects among assemblers and parts manufacturers. While the United States would retain a greater share of assembly production, employment levels would still suffer due to the greater use of automation, as the projected investment-per-employment levels of the high-tech Saturn project suggest. Since production would be for the local market, employment growth would be limited to the rate of the slowly growing U.S. market.[67] Growth in Mexican assembly employment would also be a function of the size of the local market rather than of export markets.

Parts production, on the other hand, is projected to evolve into a tiering system, with the flexible-technology production of more advanced parts being a first tier and those parts produced with more traditional technologies constituting a second tier. The first tier would be organized in just-in-time *kanbans* around final assemblers in the United States, and would require lower rates of employment per unit of investment. The second tier would face the choice of using offshore labor or competitive domestic labor markets, including the continued use of immigrants. Mexico would probably continue to attract second-tier offshore auto-parts assembly as long as these parts do not change substantially due to innovations in process or product technologies. The introduction of fiber optics, for instance, would reduce the production of wire harnesses in Mexico. If growth in exports slowed, the rate of Mexican auto-parts employment would be limited by the growth of demand from Mexico's final assembly.

Tradeoff Factors

Which of these tendencies will grow in prominence depends on global competitive trends, of which relative prices between the United States and Mexico will play an important part. A crucial factor for this process is the relative evolution of Mexican wage costs compared to U.S. technology costs. Available data from 1985 suggest that the amortization and operation cost of robots doing assembly work similar to that at the new General Motors plant in Ramos Arizpe is $4.80 an hour, compared to local wages of $.82 an hour (in Davila, Comercio Exterior). United Auto

[65] Organization for Economic Cooperation and Development, *Long-Term Outlook for the World Automobile Industry* (Paris, 1983).

[66] Organization for Economic Cooperation and Development, *Industrial Robots: Their Role in Manufacturing Industry* (Paris, 1983).

[67] Instituto Mexicano de Comercio Exterior/Comision Economica para America Latina (INCE/CEPAL), based on figures from the Chase Manhattan Bank.

Workers estimates that every robot displaces an average of four workers and creates 0.3 jobs for maintenance and control.[68] Given these relative costs, it may be profitable to displace U.S. assembly workers with robots, but it appears to be more profitable to operate the assembly of some products offshore.

The recent decision by Ford to build an engine plant in Mexico for export to the United States illustrates the actual pattern of relative costs and the role of policy. When only production and freight costs are taken into account, the landed cost in Detroit of Mexican-produced engines is only marginally cheaper than the two alternatives considered: producing in the United States or purchasing Japanese engines. Despite lower wages in Mexico, this is not surprising, because engines made in Japan require only 3.5 hours of labor, at a cost of $40 (equivalent to less than 5 percent of total costs). Nevertheless, Ford estimated that because increased exports from Mexico allowed for additional imports, earnings were raised by 37 cents per dollar exported. This compares to a direct export subsidy, in the form of tax reductions, of only 8 cents per dollar exported.

In a recent study on the tradeoffs between production in the United States versus Mexico and Singapore, Walsh Sanderson concluded that there appears to be little incentive to make large investments in automated plant and equipment in Mexico.[69] The choice is more clearly between continued manual assembly in Mexico and automated assembly in the United States. Mexican wage rates are still low enough to attract U.S. firms, and the pressure toward a yet lower value of the peso could tend to support the status quo. Reductions in the capital cost of automating assembly processes, however, with other potential gains from increased quality and coordination, may entice firms to automate plants in the United States at the expense of Mexican manual assembly.[70]

The alternatives appear grim indeed. Mexico will have to maintain reduced wages to attract greater investment and increase productivity. The United States will face greater pressures to automate given its present wage and productivity structure. The potential for displacement of workers in the United States, either through automation or offshore assembly, will continue, because labor costs in the United States represent 35 percent of total costs and 32 percent of labor is employed in assembly.[71] OECD projects a 50 percent displacement of manual labor in the 1980s

[68] United Automobile Workers of America, *Research Bulletin.*

[69] Walsh Sanderson, *Impacts of Automated Manufacturing Technology on Offshore Assembly* (Pittsburgh, 1985).

[70] *Ibid.*, 97.

[71] Organization for Economic Cooperation and Development, *Industrial Robots*, 72.

in the auto industries of advanced countries, because workers on both sides of the border are, in effect, competing to reduce their contribution to costs.[72] The lack of international organizational capacity among workers allows different groups of workers to play off against one another.

Many problems also exist concerning the long-term macroeconomic viability of these two trends. Global markets make the wages in a particular nation appear merely as production costs. Resulting reductions in industrial employment and union givebacks tend to lower and distort the level of aggregate demand in the United States. The Mexican debt crisis exacerbates this reduction in global demand, because the capacity for domestic expansion and imports is limited by austerity policies designed to create a trade surplus for net capital outflow. As it stands, the austerity measures imposed due to the debt crisis are causing a larger drop in U.S. employment through lost export markets in auto parts than the employment displacement effects of the increased Mexican exports to the United States. From 1921 to 1984, the drop in U.S. exports in more labor-intensive auto-parts exports was $520 million compared to an increase in Mexican exports of $235 million—most of which was engines, which use less labor than U.S. exports.[73] It is ironic that the Mexican industrial policies in the 1970s are responsible for the recent surge in Mexican auto exports (auto exports represent 40 percent of the growth of non-oil manufactured exports), which have allowed Mexico to pay back foreign creditors in the 1980s.

As the old Fordist order degenerates, the emerging alternative patterns of restructuring do not appear to be able to fill the role of an international growth mechanism. To deal effectively with the crisis, a much more comprehensive policy and institutional approach is needed. The goals of such an approach would have to include reestablishing an international virtuous growth dynamic—a type of global Fordism capable of generating growth in productivity, output, employment, and markets across North and South. The new approach would have to include the following components:

- International production-sharing as a means of more efficiently distributing the production process and the growth of employment;
- Distribution of value-added-per-worker gains in both regions such that effective demand is allowed to expand internationally;

[72] Organization for Economic Cooperation and Development, *World Automobile Industry*, 100.

[73] TSUS statistics of the U.S. Department of Commerce as contained in U.S. International Trade Commission, *The Internationalization of the Automobile Industry.*

- Sharing of market growth across both regions;
- Movement toward balance trade equilibrium;
- New regime of capital flows that does not burden the South with net outward-resource transfers;
- New state/state and capital/labor institutional arrangements to regulate and assure the operation of this approach (such as the 1965 Auto Pact between Canada and the United States).

Such an approach would obviously have to be organized multisectorally. Nevertheless, important insights can be obtained from understanding how this approach could be implemented in the auto sector. For the U.S.-Mexico automobile sector, the important question is how to redirect and build on current trends in order to distribute employment and earnings gains, thus expanding markets while increasing productivity across North America. This growth will require a series of difficult institutional rearrangements, which will not occur without a concerted binational effort.

This approach would also imply a new international division of production whereby Mexico would concentrate on assembling smaller, medium-priced cars and trucks using more standardized technologies. The United States would concentrate on the flexible-technology assembly of more specialized, higher-priced markets. This international sharing of assembly production could induce sharing of auto-parts production according to a two-tiered specialization. The United States would develop ***kanban*** production systems for the more technologically advanced auto parts, while Mexico would concentrate on mass producing second-tier parts. Over the long term, Mexico may attempt to develop expertise in specific advanced product and process technologies.

In order to assure a broadening distribution of the gains from this new international division of production, the two basic strategies currently being experimented with would have to be restructured simultaneously in the following manner: (1) The world-car strategy would have to evolve so that production sharing in final assembly is maintained while North American local content and value-added are increased, particularly through auto-parts production, and where final assembly services both markets; and (2) The flexible-specialization and *kanban/maquila* approach would need to develop in a number of ways: the lower-tier *kanbans* that employ immigrant workers in the United States would have to be transferred to border production; meanwhile, this *maquila* production would need to graduate to sourcing inputs from Mexico as well as to selling their products within Mexico, integrating these operations with

the Mexican economy and thus increasing domestic value-added and distributing efficiency gains within Mexico.

Labor Market Effects

The transfer of lower-tier auto-parts production to Mexico would result in an increase in employment demand in Mexico as well as a reduced demand for the competitive U.S. labor market. Both results would lessen the pressures for labor migration to the United States. In Mexico, the multiplier effects of value-added retention and employment creation would allow for increased domestic demand for both domestic production and imports from the United States, and thus for greater employment in both countries.

For the United States, this international division of production would create a dynamic source of auto parts that are globally competitive in terms of quality and costs, which would improve the international competitive position of U.S. auto manufacturing. The development of this competitive sourcing reserve would also make the United States more attractive for Japanese and European foreign investment. Production sharing could deter a large-scale departure of auto manufacturing as corporations opt for coproductive pacts with Mexico. U.S./Mexico market sharing in automobiles would also be potentially very important to global producers, given the predicted market saturation in the United States of 2 percent future growth, while much higher growth potentials exist in Mexico and developing countries.[74]

Operation of this new international division of labor would entail important new institutional arrangements with respect to both international public policy and international capital-labor relations. To some extent, this trade and industrial policy pact can be seen as a variation of the U.S.-Canadian Auto Pact, although the situation for the United States and Canada in 1965 was very different than for the United States and Mexico today. As recently as 1982–83, attempts to develop sectoral trade pacts between the United States and Mexico collapsed for lack of a cohesive position among producer groups in both countries and lack of priority in the binational agenda-setting process. The opportunity for such pacts is arising again, however, as the United States and Mexico prepare to develop a trade and investment agreement as a result of the August 1986 Presidential meetings. Recent discussion with Department of Commerce and USTR officials, however, indicate that for antiregula-

[74] Organization for Economic Cooperation and Development, *World Automobile Industry*, 100.

tionist reasons and because of problems in coordinating producer groups, the prospects are not promising. Yet as the interdependence between economies and the demands for increased participation in the gains from international industrial restructuring continue to grow, the viability of this approach should once again become the object of serious discussion.

Immigrants and Labor Standards: The Case of California Janitors

Richard Mines and Jeffrey Avina

IN THE UNITED STATES, there are over half a million janitors, and janitorial service firms clear over $8 billion in sales each year. Two-thirds of all janitors are part-time workers and earn little better than the minimum wage without benefits. In the major metropolitan centers, however, about half of the janitors are covered by union contracts and as a result enjoy better wages and benefits. The proportion of part-time to full-time janitors varies immensely from city to city; only 10 percent of San Francisco's janitors are part-time compared to 90 percent in Memphis.

The demand for janitors is increasing rapidly; the Bureau of Labor Statistics has predicted growth of half a million jobs during the 1980s. The Service Employees International Union (SEIU), the janitors' main representative, however, has not kept pace. Between 1977 and 1981, for example, the representation of SEIU workers in the major metropolitan areas of the United States fell from an average of 62 percent to 52 percent.[1] Our research suggests that the SEIU's downward slide in California has occurred at a substantially more rapid rate.

The SEIU's main problem in California has been spiraling competition from nonunion contractors, whose reliance on low-wage immigrant labor allows them to easily underbid unionized firms. Nonunion pressure has prompted unionized firms to adopt various strategies to try to reduce their own labor costs. They have asked for and have obtained two-tier and three-tier agreements with lower wages for suburban areas; some

[1] Bureau of Labor Statistics, *Industry Wage Survey: Contract Cleaning Services* (Washington, July 1981).