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Foreign Partners as Teachers

Recent Economic Trends

The garment industry is being hailed as the outstanding success of the North American Free Trade Agreement (NAFTA), at least from the Mexican point of view. Garment exports to the United States have expanded from less than \$500 million in 1991 to \$7.4 billion in 2001. Moreover, since 1994, when the agreement actually went into effect, that rate has continued to increase as more and more producers move facilities from other parts of North America and the Caribbean Basin to Mexico. But NAFTA is the culmination of the process of opening the Mexican economy to trade, a process that began in the mid-1980s, and the increase in imports from Mexico associated with that process has also been dramatic. As shown in Table 11.1, in the period leading up to NAFTA (1988–93) the annual increase in real imports averaged 42.9 percent. Tables 11.2–11.4 additionally reflect that maquiladora exports have been the driving force in Mexico's garment industry. Specifically, temporary imports to be reexported (i.e., imports that are transformed temporarily, without payment of tariffs or taxes and without value added, through programs such as the maquiladora

program) remain the core of garment exports (Alvarez Galván and Dussel Peters 2001).

Independent of the recession in Mexican exports since 2001, the import figures reflect in part that the Mexican garment industry is increasingly a subcontracting operation, an extension of the pattern of development initiated under the maquiladora program where access to U.S. markets is mediated by foreign companies that design the product, supply the materials (in garments, often in the form of cut pieces), specify the production process, and then take over the final output for sale abroad. The annual increase in imports for plants operating under this program in 1988–93 averaged 62 percent.

But the import figures also reflect a darker side of the structural changes occurring in the Mexican economy. The opening has had a devastating impact on traditional producers; the country has increasingly lost its domestic market to imported foreign goods. It is hard to identify this loss precisely, because figures for the industry as a whole mask the division between the expanding and contracting sectors, and so many of the losses have been in small firms in the informal sector that the official figures do not capture at all. The magnitude of

TABLE 11.1. General Data on Garment Industry, 1988-99^a

														Cumulative Change		
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	1988-99	1988-93	1994-99	
GDP (share over total)	0.86	0.75	0.71	0.70	0.69	0.64	0.61	0.60	0.65	0.70	0.69	0.70	0.68	0.70	0.67	
GDP growth (1988 = 100) ^b	100.0	103.6	114.5	120.0	124.2	121.4	124.3	116.6	136.2	147.2	153.9	162.9	4.5	4.0	6.1	
GDP growth (1988 = 100), total economy ^b	100.0	104.2	109.5	114.1	118.2	120.5	125.9	118.1	124.2	132.6	139.3	144.5	3.4	3.8	3.7	
Employment (share over total)	0.91	0.90	0.91	0.92	0.92	0.96	0.96	0.97	1.15	1.34	1.47	1.64	0.95	0.85	1.03	
Employment growth (1988 = 100) ^b	100.0	99.9	100.9	101.5	101.2	105.8	106.1	106.9	126.7	147.8	161.9	180.9	5.5	0.5	11.3	
Employment growth (1988 = 100), total economy ^b	100.0	102.9	107.8	111.0	112.8	114.1	117.0	113.6	117.5	121.9	127.3	130.5	3.6	0.8	6.2	
Productivity growth (1988 = 100) ^b	100.0	103.7	113.5	118.3	122.7	114.7	117.1	109.1	107.5	99.6	95.0	90.1	-0.9	2.8	-5.1	
Productivity growth (1988 = 100), total economy ^b	100.0	101.3	101.5	102.8	104.8	105.6	107.6	104.0	105.7	108.8	109.4	110.7	0.9	1.1	0.6	
Real wage growth (1988 = 100) ^b	100.0	101.0	99.5	103.0	107.9	108.1	108.5	88.0	80.5	83.6	85.4	90.2	-0.9	1.6	-3.6	
Real wage growth (1988 = 100), total economy ^b	100.0	100.7	101.1	107.0	116.3	123.2	127.5	109.1	103.5	109.8	113.0	116.8	1.4	4.3	-1.7	
Exports (share over total)	0.40	0.38	0.34	0.40	0.43	0.45	0.51	0.69	0.85	1.12	1.47	1.45	1.05	0.40	1.16	
Export growth (1988 = 100) ^b	100.0	117.7	124.5	141.8	130.0	140.4	180.2	339.2	468.1	571.1	754.1	842.3	21.4	7.0	36.1	
Export growth (1988 = 100), total economy ^b	100.0	101.5	106.3	114.2	115.6	124.7	142.1	197.5	233.8	252.7	267.2	290.1	10.2	4.5	15.4	
Imports (share over total)	0.61	1.11	1.20	1.23	1.51	1.53	1.11	0.72	0.61	0.76	1.01	0.93	0.94	1.31	0.87	
Import growth (1988 = 100) ^b	100.0	219.7	301.9	374.2	577.7	595.1	527.0	250.0	268.9	420.3	599.1	589.7	17.5	42.9	2.3	
Import growth (1988 = 100), total economy ^b	100.0	121.3	149.2	181.1	225.0	223.0	269.0	195.8	245.4	311.6	359.2	396.8	13.3	17.4	8.1	
Trade balance/GDP	-3.35	-13.60	-17.93	-19.07	-28.05	-27.44	-21.26	-0.99	6.17	5.64	2.30	5.12	-9.4	-18.2	-0.5	
Trade balance/GDP, total economy	-0.52	-2.02	-2.62	-4.64	-6.91	-5.76	-6.94	0.04	-0.87	-3.27	-5.88	-5.35	-3.7	-3.7	-3.7	

Source: Authors' estimates based on data obtained directly from INEGI (Instituto Nacional de Estadística, Geografía e Informática).

^aRefers to Branch 27 (Garments) in the Mexican National Accounting System; does not include the maquiladora industry.

^bThe periods 1988-99, 1988-93, and 1994-99 refer to the average annual growth rate.

TABLE 11.3. Mexico: Export Structure, 1998–2001^a

	1998	1999	2000	2001
U.S.\$ Millions				
Garments ^b				
Total	6,404	7,554	8,427	7,831
Temporary	6,090	7,318	8,196	7,625
Definitive	313	236	232	206
Total				
Total	117,442	136,703	166,424	158,547
Temporary	97,518	114,814	137,251	131,429
Definitive	19,924	21,889	29,173	27,118
Percentage (Garment Total = 100)				
Garments ^b				
Total	100.00	100.00	100.00	100.00
Temporary	95.11	96.87	97.25	97.37
Definitive	4.89	3.13	2.75	2.63
Percentage (Over Respective Total)				
Garments ^b				
Total	5.45	5.53	5.06	4.94
Temporary	6.25	6.37	5.97	5.80
Definitive	1.57	1.08	0.79	0.76

Source: Authors' estimates based on Bancomext (2002).

^aIncludes maquiladora activities.

^bRefers to chapters 61 (articles of apparel and clothing accessories, knitted or crocheted) and 62 (articles of apparel and clothing accessories, not knitted or crocheted) of the Harmonized Tariff Schedule.

this effect is suggested by one estimate for 1991–93, when official imports in garments, not including maquiladoras, rose 59 percent; when used and contraband clothing are included, the increase was 175 percent (according to information provided by one firm interviewed for this study). In real terms the value of production in garments increased by only 0.6 percent over the period.

These figures changed dramatically after the devaluation of the peso in December 1994. In 1995 imports of garments, excluding maquiladoras, declined by a startling 53 percent. But a good part of that decline reflects the suppression of Mexican domestic demand and cannot

be sustained over the long run. In fact, in 1997 imports of garments began to rise again—by 56 percent—wiping out over 60 percent of the import decline in the previous two years. The losses in the domestic market to imports are particularly surprising given that Mexico's comparative advantage should lie precisely in these low-wage, labor-intensive industries. Considerable adjustment is to be expected in the face of newly emergent foreign competitors. It is not clear, however, why that adjustment should involve a loss of the domestic market. In principle, if Mexico can be competitive on the international front, it should be able to compete on the domestic front at least as well.

This chapter reports the findings of a study designed to explore why comparable competition on the international and domestic fronts has not been the case in Mexico. The findings are based on material gathered in the period from 1994 to 1996 as part of a larger project still continuing on the adjustment of Mexican firms to the opening of the economy to trade. While the focus here is on the clothing industry, the study on which it draws is focused on traditional industries more broadly, and material from shoes, furniture, and ceramics supplements that drawn directly from the clothing industry in developing the argument.

The findings moreover have potential implications extending beyond these industries to the Mexican manufacturing sector as a whole. The dichotomy we observe in the garment industry between the larger, more capital-intensive firms that are prospering under the new trading regime and the smaller, more labor-intensive firms that are not replicates a pattern reflected in the broader aggregates for Mexican manufacturing. Indeed, the most successful Mexican industries in recent years have not been those where one would have expected the country's comparative advantage to lie but rather capital- and skill-intensive industries associated with relatively advanced technologies

such as automobiles and electronics. Exports are furthermore concentrated in a relatively few large firms. Illustrative of this pattern, for 1993–99 the principal three hundred exporting firms and maquiladoras were responsible, on average, for 93 percent of Mexican exports.¹

The pattern creates two fundamental problems, one of macroeconomic management and the other of social cohesion. The problem of macroeconomic management results from the fact that as the country loses its domestic market, the propensity to import increases as a result of growth in the gross domestic product (GDP); expansion produces a growing deficit in the country's balance of trade that must be sustained by an inflow of foreign capital. This makes the country highly vulnerable to the threat of capital flight and periodic foreign-exchange crises of the kind that erupted most recently and dramatically in December 1994. These crises are managed by severe cutbacks in domestic demand and rising unemployment that, in turn, threaten social coherence.

The changing structure of industry also has a direct effect through its impact on opportunities for social mobility. This is particularly true in clothing. The traditional garment industry is a cascade of operations, each of which can be, and in practice is at one time or another, separated off and subcontracted, creating almost a continuum of firms arranged in a hierarchy of skill, power, and profitability. At the bottom of that hierarchy are firms that do simple sewing on the cheapest garments, often as home workers. Toward the top are a range of firms that actually design the garments and cut the material into pieces that are subcontracted for sewing, again arranged in a hierarchy of price and quality. At the peak are firms that wholesale and retail the garments, often in combination with design. In the United States the latter tend to be large companies of the kind that are now entering into maquiladora production in Mexico, but in Mexico, as

in France and Italy, many small producers own, or at least owned, a couple of retail outlets. When all the elements of the structure exist in close geographic proximity, it is possible to start at the bottom as an unskilled home worker sewing cheap garments and work one's way up the hierarchy, gradually acquiring more skills and business sense and contacts with progressively higher levels on the chain. In our interviews in Mexico City we encountered several family firms that were the products of this process: The proprietors had begun their working lives helping their mothers with piecework at home.

The new kinds of subcontracting relationships between Mexican producers and foreign buyers typically cut off the chain of subcontracting in Mexico at both ends: The span of control along the subcontracting chain is considered too long for the quality and reliability they are seeking, and they limit production to the Mexican partners' own facilities. At the same time, they absorb the design and marketing links of the chain. The result is to create a sharp divide between workers and contractors that can be bridged only by people with accumulations of capital and industrial expertise that a typical worker could never hope to acquire on the job. As Mexican firms lose design and marketing capability they also become increasingly dependent on foreign partners, and in that sense mobility, even for those with capital and expertise, is limited as well.

Methodology

The study is organized around the concept of a commodity chain (Gereffi 1994), or, as it is called by other authors, a production chain or supply chain (Fine and Whitney 1996). A commodity chain consists of a series of linkages stretching from raw-materials production at one end through manufacture and assembly to

wholesale and retail distribution at the other end, and it generally encompasses important segments of a limited number of interdependent industries. The process of industrial transformation can be understood in terms of the relationships along these chains. On any particular chain certain points constitute leadership positions, and organizations that occupy these positions formulate strategy and drive the transformation process. Leadership, however, varies over time and across industries. In automobiles, manufacturing has historically driven transformation. In recent years retailers have driven transformation in the traditional industries that are the focus of this study (Gereffi 1994). In this study we sought to map out the chains and the transformation process through open-ended interviews with key actors.

Because of their strategic importance in the garment industry, we began interviewing retail managers, particularly managers in the discount retail chains that have proliferated in Mexico at the turn of the twentieth century. We focused in these interviews on their experience with local sourcing. The discount chains are linked directly or indirectly to foreign companies that purchase in bulk throughout the world. They thus constitute superhighways for the entrance of foreign merchandise into the Mexican economy, but they could as well serve as export channels for Mexican goods going abroad. We then moved to interview American companies buying from Mexican producers; a range of the Mexican producers, including companies producing for exports as *maquiladoras* and on their own account as well as companies focused exclusively on the domestic market; government agencies and nongovernmental organizations (NGOs) concerned with the promotion of the Mexican garment industry; and various other individuals and firms offering ancillary services to the industry.

The sample is in no sense random. Respondents were selected because of the strategic

importance of the place they occupied along the supply chain. Where possible, we used personal contacts to obtain access. Although, as it turned out, that access was obtained in over half the cases through cold calls, respondents clearly agreed to talk to us in many cases because of our credentials and the belief that we had useful contacts with government officials or with potential customers. The closest our study came to a generally random selection process was in Mexico City, where we selected the tallest building in the garment district, took the elevator to the top floor, and systematically went from shop to shop seeking interviews. The reception there was mixed, ranging from a three-hour interview in one shop to a three-minute exchange in another. We offered all our respondents confidentiality and anonymity; few, however, seemed to put much credence in that offer.

Overall, in the period from 1994 to 1996, we interviewed managers in three discount retail chains that had recently opened in Mexico; three U.S. companies actively engaged in upgrading Mexican partners; nineteen Mexican clothing producers, five of which were operating as *maquiladoras* and two that designed for and sold directly to the international market; and one international consulting firm engaged in training personnel for “green-field” sites (i.e., investments in new plants, machinery, and equipment) in Mexico. In addition, we spent two days at a fair in Cancún organized by Bancomext (Banco Nacional de Comercio Exterior) to introduce U.S. buyers to Mexican garment producers. A total of thirty U.S. companies and thirteen Mexican producers attended this event. We talked with most of them informally and, in addition, observed one-on-one meetings between buyers and potential suppliers in which the former evaluated the latter’s collections. We also met with groups of local producers in Puebla and Aguascalientes, which were essentially group

interviews. We met with leaders of the industry associations and state economic-development officials in both Puebla and Aguascalientes, with federal officials in Mexico City, and with two NGOs working on upgrading small garment producers in different parts of the country. We also conducted, as explained below, a separate study of *empresas integradoras*. Material on garments is supplemented with material collected separately from other traditional industries.

Principal Findings

All the traditional industries, but especially clothing, are sensitive to fashion. This gives Mexico the particular advantage, relative to other low-wage developing countries, of proximity to the U.S. market. The advantage is even greater when producers are using U.S. materials that must be shipped into Mexico before the finished goods can be shipped out. (This advantage should be even greater still in the domestic market.) The magnitude of that advantage is suggested by one brand-name retailer who reported that shipment from Mexico to its Texas warehouse took four days, compared to thirty days from Korea. Another brand-name retailer, a U.S. shoe company, estimated total time to market, from initial order to receipt of the finished goods, at seven to eleven weeks in Mexico compared to fourteen to fifteen weeks in Hungary or Italy, eighteen in Portugal, and twenty-three to twenty-five weeks in Brazil, China, or Indonesia.

Against this advantage, the discount retail chains and American companies purchasing in Mexico all identified a common set of obstacles to sourcing in Mexico. Mexican producers were unable to meet quality standards; they could not produce in sufficient volume; their production cycle (or turnaround time) was too long; and they failed to meet promised deliv-

ery schedules. These were all viewed as production problems, the legacy of the sheltered markets in which Mexican producers have traditionally operated. They are distinct from the inexperience of Mexican companies with the commercial practices and procedures involved in selling internationally, which have been a problem for Mexican companies seeking to export for the first time. The American firms we interviewed were all prepared to handle the commercial problems for their Mexican suppliers, and commercialization was obviously not a problem in dealing with discount retail chains in Mexico itself. Therefore the central question to emerge from the interviews is: Why haven't Mexican producers been able to learn how to meet international production standards? Or, since some Mexican producers can meet these standards, how might Mexican producers be induced to learn faster or in larger numbers?

The Nature of the Learning Process

An answer to this question is suggested by the experience of American companies that have tried, with varying degrees of success, to develop Mexican sources. We interviewed several companies about this process. The companies were selected in an opportunistic fashion and not on the basis of a systematic survey. But we believe that companies actively engaged in upgrading their suppliers in Mexico are relatively unusual. Mexican firms do not typically engage in the practice of upgrading their suppliers themselves.

The impact of maquiladoras on the rest of the Mexican economy has been extremely limited.² The most extensively studied have been the automobile assembly plants (see, for example, Shaiken and Herzenberg 1987; Robinson 1988). The plants of U.S. companies import

virtually all the parts that they use. Japanese companies have encouraged their home suppliers to locate around them in Mexico; these suppliers have not developed a second tier of Mexican contractors. Recently, as the cost of production in Japan has increased, a special effort has been made to increase sourcing in Mexico, but it has consisted almost exclusively of enhanced efforts to identify *qualified* Mexican producers, not to upgrade them. Information on other industries is more limited but is consistent with the automobile findings: Neither foreign firms operating in Mexico nor Mexican firms themselves have been particularly active in upgrading their supplier networks. In this sense the discount retail chains are typical.

The companies we interviewed, which did make efforts to upgrade Mexican contractors, all managed brand names and all sourced worldwide, purchasing in the United States and in a number of different developing countries. They made it clear that in Mexico, as in most countries in the world, few producers can meet their standards initially. They thus made a substantial effort to develop new sources. In Mexico this typically involves, first, comparative shopping in Mexico itself to find producers whose products meet some minimum standards of quality at the outset. The U.S. company then visits the producer and interviews the management to see whether the company has interest in and is capable of upgrading its quality and producing in the volumes and time constraints that American purchasers typically require. This is a two-stage process that begins with an initial half-day visit. It is then followed by a whole-day evaluation that serves as a diagnostic tool as well as the basis for a business decision.

If the parties agree to go forward, the American partner then undertakes to teach the Mexican company how to meet its standards. This involves a series of exchanges in which Mexi-

can personnel are virtually tutored by their American counterparts—sometimes in the Mexican plants, sometimes at the facilities of the American customer in the United States, often in both places. One large shoe company, for example, when it began sourcing in Mexico, opened an office in Mexico City and has two engineers working out of that office permanently assigned to each sourcing plant. A large clothing retailer reported that it takes at least one and often one and a half years from the time it starts working with a potential Mexican partner to the time it receives its first order. To illustrate this, one retailer reviewed a typical case: The process began with several preliminary visits of its personnel to Mexico and of the potential partner to company headquarters in the United States. Once upgrading was begun in earnest, the process involved six trips of a three-person U.S. team to Mexico and eight visits of a similar team of Mexicans to the United States, then heavy involvement of U.S. personnel in the initial production runs in Mexico.

The learning process here involves what is known in the literature variously as practical, implicit, or tacit knowledge. Its essential characteristic is that it is difficult to transmit verbally or in written instructions and instead it is taught by demonstration on the job as production is carried out. The U.S. garment firm, for example, in a process reminiscent of what in England is called “sitting by Nellie,” has its own people work side by side with the inspectors and watch what they are doing, picking up the faults that the new inspectors miss and pointing out to them, case by case, what is wrong with the garment.

Historically, managerial theory and advanced management practice have paid little attention to knowledge of this kind. For American manufacturing in particular, a sharp distinction was made between formal and informal engineering, and management looked only

to the former for improvement. But since the mid-1980s, under the pressure of heightened competition, particularly from Japan, the priority accorded to formal knowledge has been abandoned. A number of the techniques borrowed from the Japanese or developed in response to the pressures of Japanese competition, such as total quality control and the *kanban* system of on-time delivery,³ are essentially ways of deliberately managing tacit knowledge, making it explicit, subjecting it to debate and discussion, and forcing progressive improvements in production processes (Nonaka 1995). Part of what Mexican firms are required to do is thus not so much to learn a standard set of practices as to catch up with a managerial revolution that has been occurring in industrialized countries only recently and even there is far from complete.

In other ways this new emphasis on tacit knowledge is a competitive advantage for Mexico. It places an enormous premium on experience in the industry. It values the knowledge that comes out of growing up within an industry. As a result the existing skill within the traditional industries of Mexico constitutes a considerable human capital. That skill is, however, an asset specific to the industries in which it resides; it will be lost if those industries fail to make the transition and the resources are dispersed elsewhere in the economy. Moreover, to make the transition and become competitive in world markets, this existing capital needs to be combined with modern managerial techniques. Finally, the process of introducing those techniques clearly involves a substantial commitment on the part of both the Mexican suppliers and their U.S. customers; it takes resources and it takes time to upgrade Mexican facilities. The latter seems to range from a year to a year and a half.

Because it takes time and resources, the process of upgrading is clearly an investment. But the investment is basically one of skill

transfer of a particular kind. The transfer must be made directly from the foreign client to the Mexican contractor. Once transferred, the skills are embedded in the ongoing practices of the organization; they reside in the contractor, and if the contractor walks away from the relationship, he or she takes the skills along. Unlike plant and equipment expenditures, there is no physical asset that can be used to secure the investment and reprocessed if the contractor reneges on any agreed-upon payments. To the extent that the skills are particular to a given client and of no use in other contracting relationships, there is little reason for the contractor to walk away. But most of the skills are quite general; there is inevitably a specific component, but typically the skills increase the capacity of the contractor to produce quality goods efficiently for any client or, for that matter, for sale directly on the market. Thus the Mexican firm, once upgraded by its foreign client, has every incentive to jump ship and sell its newly acquired skills to the highest bidder.

We encountered two cases in our interviews where the Mexican partner had apparently done this. One blue jeans contractor had been trained by an American company with whom he initially had an exclusive agreement, but when we interviewed him, he had abandoned that relationship to work for a number of different U.S. companies and was about to launch his own brand. In the second case a U.S. shoe company reported that it had acquired one of its Mexican contractors by persuading the firm to leave the company originally responsible for upgrading its facility. In several other plants we visited the company was obviously thinking about taking off on its own. Why, then, would clients ever make investments in upgrading contractors in Mexico?

One possible answer is that the contractor repays the client-tutor by charging prices below the market value for the goods that it provides during the learning period. This is

not generally true. In the cases we studied, no merchandise was exchanged until *after* the contractor had learned how to produce to the client's standards. But it is possible that some upgrading arrangements are financed in this way. The transactions here are so complex, however, that it is possible that they are secured in other ways. The upgrading is not necessarily limited to tutelage. The Mexican partner is sometimes required to make complementary investments in plant and equipment. In several cases the American customers required their contractors to set up physically separate facilities for the export portion of the business in order to segregate exports from the overhead associated with commercialization of manufacturing production in Mexico itself. The partnership generally includes access to material supplies at favorable credit terms and often to credit itself, which is a considerable advantage to Mexican producers given the high interest rates and general shortage of capital that have accompanied the opening of the Mexican economy. Indeed, at real interest rates ranging as high as 30 percent, this backdoor access to the U.S. short-term credit market may be the most valuable part of the relationship for the Mexican partner and the biggest deterrent to jumping ship.

If arrangements of these kinds were able to solve the investment problem, one would expect tutelage to be widespread, whereas it appears, as noted above, to be extremely limited. Whatever forms of security can be worked out in these ways, they are evidently not enough to diffuse the tutelage arrangements broadly. What is it about the companies we encountered that enabled them to overcome the problems that seem to deter other firms?

We offer several conjectures on this score.⁴ The most plausible is linked to the characteristic that appears to distinguish these companies from others engaged in outsourcing in Mexico. The American companies we inter-

viewed are all brand-name producers with a worldwide sourcing strategy. Brand identification enables them to sell their product at premium prices and thus generates an economic rent. That rent can be shared with contractors in the form of favorable fees, thereby binding the contractors long enough to enable the company that provides training to earn a return on its investment. A global sourcing strategy generates further returns. In these strategies Mexican sourcing serves to diversify risk. In addition, the short turnaround time relative to other foreign locations enables the U.S. company to balance its product line by including a high-fashion component that attracts customers who then purchase other parts of the collection. Without a nearby supplier the turnaround time would be too long to keep up with the market. These returns are also a kind of economic rent that can be shared to bind the contractors to the tutoring company.⁵

The second conjecture rests on the fact that the knowledge about how to upgrade producers in low-wage economies is a relatively recent innovation. The companies we interviewed in Mexico were all pioneers in global sourcing. Their strategy in this regard is new, developed over the last ten to fifteen years to take advantage of the low wages prevailing in developing nations in order to service the markets of advanced industrial countries without becoming hostage to the political and commercial risks of the extended supply chains this entails. Other companies sourcing in Mexico, to say nothing of Mexican companies that buy from local contractors, simply may not have the skills required to upgrade their supply networks, and the skills may not be generally available on the market. This, rather than the difficulties of securing the investment, may explain why particular companies and not others are engaged in upgrading contracting networks.

Still another possible explanation is that what those companies offer to their suppliers

is not a single set of techniques but rather continuous access to state-of-the-art manufacturing production as it evolves over time. Again, their global sourcing strategy should put them in a unique position to do this. It enables them systematically to benchmark and compare practices across a wide variety of producers, to orchestrate a competition among them, to select the best practices, and to diffuse these rapidly across their contracting network. Such techniques for the management of supply networks are part of the repertoire of techniques for the management of tacit knowledge that have developed toward the end of the twentieth century and that are now widely applied in advanced industrial countries. But they are not universal even in the United States and Western Europe, let alone in relationships that span borders and countries at very different levels of economic development. Some of the practitioners of these new techniques encourage their contractors to work with several clients, even competitors, thereby stretching the contractors' capacities and generating a wider range of approaches to feed into the fund of alternatives that the mother company is able systematically to compare in order to generate continual improvements over time. Thus the approach does not necessarily require Mexican contractors to work exclusively for the clients who initially upgraded their facilities, and one of those clients whom we interviewed confirmed that it did not seek exclusive relationships.

If this is what is going on in the companies upgrading Mexican facilities, however, the capacity of a Mexican firm to compete internationally once it does jump ship must deteriorate progressively over time unless it manages quickly to hook up with a new foreign partner. The practices observed in the one contractor that had become cut off from his original American partner suggested that this might be the case. This is also suggested by the fact that the American partners whom we

interviewed continue to station their own personnel in the Mexican partners' facilities even after the initial training period and regularly send additional personnel for random quality inspections at the production site.

Minimum Order Size

In principle the problem of quality and efficiency within productive establishments can be separated from the issue of minimum order size, which many clients and particularly the large discount retail chains cited as reasons why they did not source locally. To solve the second problem, many of our respondents suggested association arrangements in which a number of producers pooled their resources to take on a large order.

The government has recently created a new institutional structure, *empresa integradora*, designed to house such arrangements and facilitate their development. This seems a promising approach to the problem of minimum order size, but this organizational form has been slow to take off, and few such *integradoras* actually exist in Mexican manufacturing. To find out why, we conducted an in-depth study of twelve *empresas integradoras* in Cuernavaca, Puebla, Jalisco, Mexico City, and Tijuana. Regional cultural factors, the education and training of the entrepreneur, and the availability of financial resources were all found to be critical to *integradora* success. Established cooperative relationships between manufacturers and the decentralized division of labor among manufacturers also appeared to facilitate success. One *integradora* grew out of an association that for years had worked together at trade fairs and bought fabric together. The division of labor among manufacturers involving marketing, inspection, and other tasks serves to decentralize authority and to enhance trust among members of the *integradora*.

Although some small producers have formed *empresas integradoras*, these efforts have faced many obstacles and relatively few such associations exist in Mexico. Among the most important challenges faced by *integradoras* are building a culture of trust, gaining access to credit, and overcoming bureaucratic barriers. Many small producers are reluctant to enter into such associations and generally share little information about their sources of fabric and other production issues. Accountability is also an important issue. A particularly dramatic example of this problem was one large *integradora* outside Puebla. As one home-based manufacturer explained, each producer paid the salary of a coordinator who later ran off with all the money.

Empresas integradoras also encounter difficulty in gaining access to credit and find bureaucratic obstacles when they seek to export. Like other garment manufacturers, *integradoras* face extraordinary interest rates and payment cycles that lag behind loan schedules. The *integradoras* often compound rather than simplify credit problems because of the reluctance of financial institutions to lend to such associations. As one manufacturer explained, "There were complications in lending to five long-standing businesses. Someone would have to put up their house and become the leader, which we didn't want." Finally, *integradoras* have experienced delays in getting export authorization because of the lack of coordination of government programs.

In the garment industry, however, the focus on the limits of the government's *integradora* program may be misplaced. It is after all standard practice, not only in Mexico but throughout the world, for a "jobber" to meet large orders through a network of subcontractors. The jobber is, in other words, already functioning as a kind of *integradora*. Thus the jobber could upgrade its suppliers in the same way that some foreign retailers work with larger

suppliers. If it is possible to upgrade these jobbers' networks and maintain standards within them, it may not be necessary to develop new contracting institutions. In this sense any set of policies that manages to diffuse the tutelage arrangements that exist between foreign clients and Mexican contractors would also resolve the problem of minimum order size.

Consultants

This leads to the question of why Mexican garment firms have been so reliant on these foreign partnerships at all. Why can they not hire consultants to help upgrade themselves? Indeed, not all foreign firms rely on their own personnel to develop production facilities or contractors abroad; a number use consulting services. We identified and interviewed one such firm in the garment industry. Among its other services it offered training in both production and management for shops in the developing world seeking to export. The firm will staff and train the personnel of a new production facility from scratch. Its program for doing so has strong parallels to the in-house programs we encountered. It first hires a cadre of managers. In Mexico, interestingly, it draws for this purpose primarily on people who started but, often for financial reasons, were unable to finish a technical education. The consulting firm uses its own personnel to train the managers in production techniques and then hires the production workers for the new facilities. The managerial candidates under the supervision of the consultant's personnel then train the production workers. At the same time the managers in the new facility receive special functional training, including a classroom component. All production training is on-the-job, using a variant of the tutelage we described earlier. Our respondent estimated the total time needed to launch a new factory

in Mexico at six months to one year, which is somewhat shorter than the in-house programs discussed above. Although the source of the discrepancy is not clear, the standards of efficiency and quality may not be identical; the type of product may also vary. Most of our respondent's clients seem to be multinational companies in the United States producing relatively standardized products with limited fashion content, but they claimed to offer the same services to Mexican producers for any type of clothing. We did not, however, find Mexican firms using this type of service.

We were more successful in the furniture industry, where we found an association of firms in Ciudad Hidalgo, a relatively remote city in Michoacán that had hired a consultant to help upgrade the quality and efficiency of their operations. We visited the city some time after the consultant, who had provided extensive advice on how to upgrade the quality of the product line and the efficiency of the production facilities, and we interviewed in-shop the proprietors of several of the enterprises about what they had learned. It was clear in these interviews that the people in these shops had changed their practices at the consultant's behest, but they had essentially learned the new practices by rote. They had no idea of the underlying principles from which the consultant was working. This, in turn, reflected the fact that they had never seen the kinds of products with which they were competing in the international marketplace, which the consultant was using as a template to improve their own. Nor had they seen the foreign shops whose practices the consultant was trying to get them to adopt. Thus one shop has redesigned the work flow on the consultant's advice, but aisles were clogged with work in progress that completely undermined the rationale for the streamlined plant layout it had introduced. In another shop, the proprietor showed us how the consultant had suggested

they turn the knots on the wood to the interior of the cabinet to improve the outside finish, but he then indifferently forced the lock and bent the key on his model piece when he opened it up so that we could feel the knots on the inside pieces of wood.

These experiences with the consultant in the furniture industry led us to believe that a key ingredient in upgrading partnerships in the garment industry is the visit of Mexican personnel to the partners' facilities in the United States that *precedes* the visits of the partners' personnel to the Mexican facilities. It seemed that the consultant would have been much more successful if he had first put his clients on a plane and flown them to the United States, or even to Mexico City, to see and discuss the products with which they were competing and to visit production facilities on which his advice was modeled. Indeed, he might then have been able to teach his clients not only how to do what the foreigners were doing but how actually to think through and critique their own practices themselves. This approach might be attractive not simply for the traditional firms that have been left out of the export boom but even for Mexican producers that have found foreign partners. This would be especially true if, as some of our conjectures about the tutelage process suggest, what Mexican producers are getting from their foreign partners is simply the most up-to-date production practices, not the skills of their foreign partners that the economy really needs to survive in international competition on its own—that is, the capacity for continuous improvement in practice over time and to assume the tutelary role vis-à-vis their own subcontractors.

The other factor that is involved in the dependence on foreign partners for learning, as opposed to hired consultants, is credit. The difficulties of securing investment in tacit knowledge that limit the willingness of foreign partners to invest in upgrading Mexican facilities

also make it difficult for the Mexicans to obtain capital to invest in themselves. This problem has been greatly aggravated by the general shortage of working capital and the extremely high interest rates that have accompanied the opening to trade, even before the peso crisis in December 1994 and much more so afterward. At the same time the credit crisis increases the advantages of a foreign partner enormously, if you can find one, because one then has access to the partner's suppliers in the United States on favorable credit terms. Indeed, several of our interview respondents suggested that they could obtain working capital through foreign partnerships on relatively favorable terms at times when such capital would not be available on any terms in Mexico. The extreme example of what the capital shortage was doing was one small producer who was reduced to buying just enough material in the morning so that he could produce a day's output, sell it in the evening, and have enough money to buy material for another day's production. Such practices foreclose economies of scale in purchasing and production altogether.

In principle, these credit problems call for an "investment subsidy" or a specialized loan program. But such a program would not be easy to administer, especially in Mexico. Applicants would have to be screened for eligibility and then monitored afterward. The general scarcity of credit promotes a strong incentive to divert funds to other purposes, and without collateral it is difficult to penalize such diversions. The difficulties here are compounded by the nature of small firms in the garment industry and the Mexican banking system. The garment industry is populated by family firms in which the household and business accounts are often intermingled and confused. It requires a strong local banking system with roots in the community to distinguish the viable firms and judge the integrity of the enterprise. But the Mexican banking system has passed through a

process of nationalization and reprivatization that has left the industry centralized in Mexico City, without locally oriented branches.

Bootstrapping

Given what an investment subsidy designed to diffuse foreign practices appears to entail, it is worth considering a much more broadly conceived policy to actually develop the requisite capacities within the Mexican economy, without foreign intermediaries, by what one analyst has termed "bootstrapping" (Sabel 1995). Could a developing country such as Mexico actually discover or invent world-class management practices for itself? The reason to think it might be able to do so is that development of the skills at stake here has not historically taken place through tutelage arrangements. Rather, these skills emerged first in the efforts of the Japanese economy to catch up with the West in the aftermath of the Second World War. Japan entered the postwar period with a reputation for cheap, second-rate manufactured goods, not unlike that of Mexico's traditional industries today. It managed in the 1950s to set a course of development that by the 1970s had made it preeminent in the efficient production of high-quality mass-produced goods, rapidly gaining share in the home markets of its erstwhile competitors in the United States and Western Europe. In the 1980s these Western competitors then sought to meet the Japanese challenge by appropriating the techniques the Japanese had invented in order to catch up and use them to recapture their original lead. In both episodes of competitive transformation, foreign practices played an important role, but in neither case was the process essentially one of direct transfer of foreign practice.

The latest round of transformation in the United States and Western Europe has had

three key ingredients. First, companies developed a set of standards and benchmarks to identify concretely where their performance was deficient. Second, they sought to identify the precise institutions and practices that differentiated the benchmark procedures and practices from their own. In the attempt to do so, they occasionally went as far as to establish joint ventures with Japanese partners in order to get firsthand exposure to their ways of doing business. But they did not ever slavishly imitate the Japanese. Instead, and this is the third of the key ingredients, they initiated a series of internal debates and discussions about what the critical elements of Japanese practices were, whether these could be adopted whole, and, if not, how they might be altered to fit into their own organizational practices. When it was not possible to identify precise procedures used elsewhere, they nevertheless sought to invent approaches that might produce the desired result. The new practices and procedures that constituted the revolution in Western management in the 1980s were not those actually borrowed from Japan but the practices and procedures invented to facilitate the borrowing, namely, discussion and debate structured by a set of benchmarks and standards on the one hand and a set of alternative institutions and practices on the other. These are what constitute the new techniques for managing tacit knowledge. They are basically the techniques foreign retailers are applying to develop and maintain the global sourcing networks that their Mexican partners are being drawn into.

U.S. manufacturers in the 1980s generally sought to catch up with their Japanese competitors as rapidly as possible, in a single spate of institutional reform. It was only relatively recently, after they had bridged the initial gap, that they began to think in terms of continuous improvement, using the same procedures and benchmarks or, when they are already in the vanguard, standards and targets to stay

ahead of the game. By contrast, the Japanese in the postwar period had recognized that they could not catch up in one sudden transformation and sought instead to raise their performance gradually over time. For these purposes it is important not simply to have not simply a single standard or set of benchmarks but rather to think in terms of a hierarchy of standards that the practice can ascend gradually over time. This hierarchy of standards needs to be matched to a typology that divides the market into segments that the firm can move across as its standards rise. Mexico's position in international competition is closer to Japan's in the 1950s than to that of the United States and Western Europe in the 1970s, and this idea of a hierarchy of standards and markets would seem an important addendum to the North American approach. A number of people with whom we talked were already thinking in these terms: A Japanese government official working to increase the backward linkages of the Japanese automobile assembly plants used a three-tier system to rate potential Mexican suppliers; U.S. companies looking for contractors in Mexico use a similar system. But in such a system, it does not appear that a policy designed to stimulate a bootstrapping process would be much more difficult to initiate than one more narrowly focused on investment subsidies.

International Matchmaking: An Illustration

The limits of government policy are illustrated by one particular program we were invited to examine closely, a program managed by Mexico's Foreign Trade Bank (Bancomext) in partnership with the Ministry of Commerce (Secretaría de Comercio y Fomento Industrial, or SECOFI) to link Mexican producers with outside clients. The program was conceived as a

matchmaking operation, in which buyers from major U.S. and European department stores were invited to Mexico to meet with potential suppliers. This program was run for several different industries. In the garment industry, the first meeting was held in 1994. The Mexican producers brought samples of their merchandise, and the buyers set up booths where they met with the producers individually to examine and criticize their products. Enormous effort was put into the organization of the meetings; the then secretary of commerce, who was also the chief Mexican negotiator for NAFTA, actually called the chief executive officers in the United States to urge them to send representatives. But virtually no effort was put into evaluation and follow-up. No one really knows whether Mexican companies managed to obtain any business from this exercise and, if not, why they failed to do so. It is completely unclear whether the meetings were a successful policy initiative and, if not, what precisely could be modified to make them more successful.

The program was nonetheless administered again, in October 1995, in essentially the same way in which it was administered in 1994. This time, however, there was considerably more discussion and evaluation of the results. Several of the conclusions that emerged are worth emphasizing, partly to illustrate what was lost by failing to reflect on the experience the first time around but also because they feed into the specific policy recommendation we are about to put forward. The first conclusion is that the large U.S. chains that were the focus of the first two meetings are the wrong targets. Their standards of quality and minimum order sizes are too far out of reach of the bulk of Mexican producers. The Mexican industry can do better by targeting buyers from other Latin American countries, whose levels of income and taste are closer to its own, and smaller (but somewhat obscure) retail chains in

the U.S. that order in lesser quantities. The second conclusion is that the promotion of Mexican products should focus on areas with a distinct national style, such as Mexican handicraft styles or formal garments for children (baptismal and communion dresses, for example). The third conclusion is that the kind of Mexican producers most likely to benefit from programs of this kind are unable to meet the new orders without access to working capital and hence that, to be effective, these matchmaking operations need to be supplemented by programs providing short-term credit to small enterprises. Bancomext developed a pilot credit program for a group of producers that obtained orders at the 1995 meetings from a Colombian department store.

The Bancomext example suggests that the first step toward an effective policy is a new approach to thinking about policy itself. In a sense, what is required is to introduce into the management of government programs those techniques for managing and systematically upgrading practical knowledge that have emerged in manufacturing production. But a prior task is to create a wider space for a principled approach to industrial policy, to articulate a philosophy of government that, while more active and interventionist than the framework that currently dominates government thinking, cannot be reduced to traditional clientelistic actions.

Toward a New Philosophy of Industrial Policy

Our examination of the problems of the clothing industry suggests that a principled approach to industrial policy might be built around three basic suppositions. The first of these would preserve the basic insight of neoliberal thought by recognizing that the market is a powerful instrument both for motivating

economic activity and for coordinating and directing the allocation of scarce resources, and that economic science provides a way for understanding how the market works toward these ends. Second, it must be recognized that, whatever the ideological attractions of a market economy, the scientific case for its effectiveness in no way precludes the interventions of the Mexican state. This is because the unregulated operation of the market leads to a particular distribution of income and power in the society that is not inherently just or necessarily compatible with long-term social and political stability. This important caveat to the neoliberal argument for market-oriented economic policies must be distinguished from the third point: A separate and distinct rationale for state action lies in the considerable difficulty in fully understanding how a market economy operates (in theory, let alone in practice).

What we do understand implies that an effective market economy must be supported by a set of supplementary institutions and that even when those institutions are in place there can be significant instances of market failure, as appears to be the case, for example, in the transfer of practical knowledge that we have been examining. These principles suggest an approach to policy that is guided by the market and instructed by developments in the private sector without being completely dependent on the market to produce desirable results or necessarily acquiescing to market developments. They imply as well that, in public policy no less than in the production and commercialization of goods and services, constant discussion and reevaluation of practice must supplement theoretical economic knowledge.

Toward an Alternative Policy

What might an alternative policy look like? First, it should be conceived as an effort to

extend the process of adjustment already taking place in the private sector. Second, it must build on mechanisms for evaluation and learning as well as pressures and processes designed to produce continual improvement over time. Third, it should build on the experience of and borrow mechanisms developed for this purpose since the mid-1980s in the laggard sectors of advanced industrial countries that have been trying to catch up with their competitors in the international marketplace.

These general principles, when applied to a policy designed to bootstrap traditional industries in Mexico, suggest an approach that focuses less on specific sets of government policy initiatives and more on the role of government in catalyzing discussion and debate. The basic goal, in other words, is to develop a heightened public awareness of the need to upgrade the productive apparatus and commercial practices throughout Mexican society. More than any particular policy measure, the idea is to orchestrate a national discourse; to draw as many people as possible from a broad spectrum of the society—from the worker on the plant floor to the politician in the legislature—into the enterprise of making Mexico more competitive at home and in the international marketplace; to generate a critical perspective on productive and commercial practices in the business and political community. The aim should be to focus discussion and debate as much as possible on practice and away from ideology and abstraction. Models of how to do this include the case method used in business and legal education, grand rounds in medical education, and the design studio in art and architecture, in which students are assigned a particular problem and their solutions are then criticized by a jury of faculty. A particular example of how this might be done, one that might serve to initiate the process, is to invite state development agencies to a seminar in which each agency presents for discussion

and debate two case studies, one of a major development success and one of a development failure. Industry chambers, particularly in traditional industries, could be encouraged to sponsor similar seminars in which each local chamber is asked to work up and present one case of a rapidly developing enterprise (or contracting network) and one case of a declining enterprise or network.

As part of the effort to focus and direct the debate, the government should encourage the development of standards and benchmarks. These provide both a target for policy and the criteria for judging its success. The federal government might do this by requiring that any project it funds build in a set of standards to serve as a threshold for admission to the project, as well as a second set of standards that serve both as a program target and a set of criteria for evaluating the outcome. The standards might in principle focus on outcomes—for example, delivery time, quality, efficiency, and the like. But standards should also focus on processes, such as inspection, inventory control, quality control, quality circles, and so on.

The process of generating these standards, the debate about what appropriate standards and benchmarks are, is at least as important as the standards and benchmarks themselves. An example of the kind of standard-setting process that needs to be encouraged is Guanajuato 2000, which the footwear chamber in that state created as a threshold that firms had to achieve to gain access to a set of state-run development programs. There is now a debate at the national level as to whether this standard should be extended to the shoe industry as a whole or whether other states should be encouraged to develop their own standards. A third alternative would be to use as a national standard the International Organization for Standardization (ISO) 9000 of the European Economic Community.⁶

The kind of debate that is emerging around Guanajuato 2000 is the key to the policy we are proposing. The debate is actually more important than the particular way in which the issue is resolved. If properly orchestrated, it will force the participants to reflect on practice. Nevertheless, the outcome of the debate may not be irrelevant; there is a lesson here too. We tend to think, as suggested earlier, that it is important to avoid a single set of absolute standards. The relevant standard depends very much on which segment of the market the industry is targeting at any moment. The standard should shift upward over time as the country develops or with technological advances. Standards should thus be a moving target. And a variety of standards at any moment will help to pick out benchmarks and call attention to alternative practices. The fact that Guanajuato has set a standard different from ISO 9000 means that ISO 9000 firms can serve as a source of ideas for where the industry might move next. Were Guadalajara to develop a higher standard than León, practice in Guadalajara could become a benchmark for further upgrading. The León standard, the Guanajuato standard, and the ISO 9000 standard would then constitute a hierarchy across which firms or contracting networks might think of moving over time.

The development of standards needs to be accompanied by a parallel effort to develop a typology of market segments that can then be set alongside the hierarchy of standards to guide industrial strategy. This is the broader lesson embodied in the Bancomext insight that Mexican producers are more likely to find markets at this time in Latin America or among smaller retail chains in the United States than in the prestigious New York department stores at which their development program was originally directed. Divorced from this broader lesson, the Bancomext policy is likely to trap the industry in a low level

of development. But linked to a typology of markets and a hierarchy of standards, it becomes a way station in a strategy for the gradual upgrading of the productive system over time. The development of market typologies can be fostered, like the development of standards, by requiring that a market analysis be built into any development project that the federal government funds. Such an analysis should identify the segment of the market to which the targeted enterprises are currently catering and the segment toward which the project is designed to help them move.

Conclusions

It is useful to return in conclusion to the central theme of the paper: There is a growing division within the Mexican economy between, on the one hand, a relatively small group of producers that have managed to adjust to the opening of the economy to trade and are prospering in the newly created North American market and, on the other, a large group of smaller producers that have been unable to meet international standards of quality and reliability and are floundering even in their own national marketplace. The garment industry is thus in many ways symptomatic of the Mexican manufacturing sector: The rapidly expanding subcontracting industry dominates the aggregate statistics and makes the industry the outstanding success, at least from the Mexican point of view, of the NAFTA strategy, but it masks the stagnation and decline of the smaller, traditional producers and the progressive loss of the domestic market to imports. In an economy with significant excess labor reserves, there seems no reason why the second development pattern should follow from the first, especially in a traditional sector such as garments, which is extremely labor-intensive and has a fund of tacit knowl-

edge embodied in a skilled labor force and a cadre of managerial and technical experience. In garments at least Mexico should be able to expand its exports through subcontracting relationships and retain its domestic market. It became apparent early in this study that its inability to do so is associated with problems of quality and reliability within the traditional sector, and we looked for clues among firms that had successfully overcome these problems—largely with the help of an American partner—as to how the lagging firms in the industry might do so.

Ultimately we arrive at two rather different solutions. One is to take the upgrading process in the successful firms as a model and to try to transfer or extend it to the lagging sector. The model seems to have two salient characteristics. One is how the foreign partner works as a tutor to its Mexican contractors. An extension of this model would presumably look for consultants to play this role. The other characteristic is the investment in intangible assets and the difficulties of securing such investments when they are made by parties other than those in which the newly transferred knowledge resides. The importance of the credit implicit in these arrangements has been augmented by the general shortage and high interest cost of working capital in Mexico and by how maquiladora-type arrangements facilitate access to working capital in the United States. A direct attempt to extend this model through, for example, a government development program would thus concentrate on the provision of consulting services as a substitute for the role of the foreign partner and on special loan programs to overcome the capital constraints that small producers appear to face. The difficulties with implementing such a program and the limitations of upgrading through consultants lead us to consider a second strategy of bootstrapping, in which the laggard firms are encouraged to upgrade themselves through

a process of self-criticism and self-examination in light of visits to best-practice facilities and benchmarks that measure the gap between best and prevailing practices.

The bootstrapping strategy might actually be better suited to the traditional garment sector than the tutorial approach in maquiladora firms. The traditional sector, as noted, consists of a long chain of subcontracting relationships that stretch from the design and cutting rooms backward to progressively smaller shops and, ultimately, to home workers. Historically there has been considerable mobility along this chain, with pools of people at each stage thinking strategically about how to gather the knowledge and contacts required to move up to the next level. People are, in other words, already involved in a process that looks very much like bootstrapping, and in this sense the strategy we are proposing in many ways simply formalizes, codifies, and, hopefully, improves on a process already in progress.

In any case, it does not appear necessary to choose between the two approaches to upgrading, any more than it seems necessary to choose between exports and the domestic market. The benchmarking and broader debate around which the bootstrapping strategy is built should serve to facilitate the learning arrangements associated with either the foreign partnerships or consultants. And in the case of foreign partnerships, it might allow the maquiladoras to create or maintain the skills in design and marketing downstream and management in a subcontracting chain upstream that they now seem to give up when they enter into a relationship with a foreign partner for upgrading.

Notes

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1. Own calculations based on an *Expansión* survey of the 500 largest firms in Mexico. The exact number of firms varies from 1993 to 1999; it goes from 264 firms in 1993 that accounted for 92.3 percent of total Mexican exports, including maquiladoras, to 286 firms in 1999 that accounted for 89.0 percent of total exports (*Expansión* 1993–99).

2. This finding is pervasive in the literature (see, for example, Gonzales-Aréchiga and Ramírez 1990a, 1990b, 1990c; Wilson 1992). On linkages within Mexican industry itself, see Rabellotti (1995). It is not clear, however, whether the apparent weakness of these interindustry linkages is a peculiarly Mexican phenomenon. Only the last of the studies cited in this note compares Mexico to other countries, and this is a comparison with Italy, where the interfirm linkages are believed to be unusually strong.

3. The *kanban* system is a complex administrative and production organization that includes a just-in-time supplier-client system to manage tool changes, product changes, material purchasing, and planning. It thereby reduces stocks and work in progress.

4. Formal models that capture elements of this process have been developed by Caballero and Hammour (1996) and by Hansen (1992; 1995). The problem of inducing investments in upgrading here is a specific instance of what Caballero and Hammour call the “appropriability” problem. These conjectures are thus basically about how the appropriability problem is resolved by particular firms.

5. In the current depressed conditions of the Mexican economy, the investments that the new discount retail chains made initially may also act as a rent and provide an inducement for them to take on the task of upgrading local contractors. The investments are a sunk cost. To earn a return upon them, the companies must try to minimize their losses, hold what customers they can, and survive until domestic demand revives. One strategy for doing this would be to substitute lower-cost Mexican goods for the products they were importing from abroad, but to

do so without losing the reputation that differentiates them from other retail outlets. The contribution of this strategy to survival and the long-term profit that survival will generate is thus a kind of rent that could be used to bind the producers that it trains.

6. ISO 9000 is a set of evolving international standards for businesses or organizations that initially developed in the United Kingdom in the 1970s. These guidelines and requirements apply to such tasks as inquiries and orders, doing the job or work, checking the work, and delivering the product. The intended effect of the systematic evaluation and implementation of these procedures is to improve the quality and productivity of economic units.

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