

# Openness and Industrial Response in a Wal-Mart World: A Case Study of Mexican Soaps, Detergents and Surfactant Producers

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## 1. INTRODUCTION

**B**ETWEEN the mid-1980s and the mid-1990s, Mexico substantially reduced its trade barriers and liberalised its foreign investment code. The initial wave of commercial policy reforms was locked into place when Mexico joined the General Agreement on Tariffs and Trade (GATT) in 1985. Further liberalisation vis-à-vis the United States and Canada was codified in the North American Free Trade Agreement (NAFTA) signed in 1992 and implemented on 1 January 1994. Thus by the early 1990s, Mexico had committed itself to integration with the global economy in general, and it had opened its markets especially relative to the United States.

This paper uses a case-study approach to explore the effects of these policies on innovation and trade in the Mexican soaps, detergents and surfactants (SDS) industry. Rather than simply examine the correlation of trade barriers with trade

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flows and foreign direct investment (FDI) barriers with FDI flows, the objective is to develop a more nuanced understanding of the channels through which Mexico's opening has affected industrial sector performance, and where responses are lacking, to understand why.

Several basic messages emerge. First, according to the SDS firms that were interviewed, the most profound effect of NAFTA and the GATT on the SDS industry was neither a reduction in trade costs nor an inflow of rival multinational subsidiaries. Rather, it was a fundamental change in the relationship between these firms and their retailers. Reductions in trade barriers made Mexico a more attractive market for Wal-Mart, which found that it could profitably bring consumer goods into the country from the United States. Once Walmex (Wal-Mart of Mexico) was established, it changed the way that SDS producers and other suppliers of consumer goods interacted with retailers. By exercising its bargaining power, it squeezed profit margins among the major brands, offering them higher volumes in return. It also engaged the most efficient small-scale local producers as suppliers of store brands, thereby creating for itself a residual source of SDS products that could be used in bargaining with the major (multinational) branded suppliers. Those local firms that were not efficient enough to meet Walmex's terms lost market share, and many failed. At the same time, the limited set of producers that survived grew, and with prodding from Walmex they became more efficient and innovative, adopting innovations first introduced into the market by their multinational competitors. A similar transformation took place among retailers themselves in reaction to the new business practices that Walmex brought to the country.

The second basic message is that Mexican SDS exporters have managed to gain market share in the US since the mid-1990s, but their ability to build on this trend is constrained by a combination of factors. The export growth that they have achieved thus far has targeted the expanding Latino community in the United States, where their brands are already known. If these producers are to penetrate the non-Latino US market, substantial marketing investments will be necessary. They will also need to re-tool for the production of phosphate-free concentrates, which are required by law in much of the US. SDS exports are further impeded by substantial delays at the US/Mexican border, which have increased shipping costs by 9 to 15 per cent. And the competitiveness of Mexican SDS products abroad is compromised by the fact that one of their key inputs – caustic soda – is protected in Mexico by an anti-dumping ruling, driving up marginal production costs.

It is possible – but far from certain – that the cost savings associated with the removal of border frictions and protection for caustic soda producers would be sufficient to induce producers to invest in marketing and in re-tooling. If this were to happen, a discrete surge in Mexican detergent exports might occur.

The final basic message is that the SDS sector rapidly improved its value-added per worker after the mid-1990s, and that this reflected a combination of

labour-shedding and innovative activity. The latter was facilitated by the presence of multinationals in several respects. Most directly, SDS subsidiaries drew on the research efforts of their headquarters abroad. But the Mexican-owned firms also benefited from multinationals, both through imitation and through their interactions with foreign-owned suppliers, who regularly approached them with new inputs and suggestions for new products and processes. Additionally, large retailers – especially Walmex – provided a stimulus for small and medium-sized suppliers to adopt innovations and improve production efficiency.

The remainder of the paper is as follows. The following section gives an overview of how we conducted the interviews underlying this case study. Section 3 focuses on Wal-Mart's entry into Mexico and the changes in retailing this triggered. Patterns of innovation and technology diffusion to Mexican firms are discussed in Section 4, while Section 5 provides information on the exports response of Mexican firms to the US market. A summary and concluding discussion can be found in Section 6.

## 2. METHODOLOGY

### *a. Objective*

Our objective in conducting firm interviews was twofold. First, we wanted to learn what changes in business conditions and policies were important to firms operating in Mexico's soap and detergent market during the period 1980–2005. Second, we were interested in exploring whether the academic literature on integration had missed some factors that these firms considered important.

### *b. Method<sup>1</sup>*

We conducted face-to-face interviews with the management of major industry players, both domestic and foreign, operating in Mexico. The interviews took place in August 2005. They were conducted in Spanish or English depending on the preferences of the interviewee. We guaranteed full confidentiality to interviewees promising not to disclose any sensitive information without their prior approval.

### *c. Sample*

Through internet searches, consultations with industry associations and visits to supermarkets, we identified 13 companies operating in the soaps, detergents and

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<sup>1</sup> In general, we followed the interview-based case-study methodology recommended by Yin (2002).

surfactants industry in Mexico. These were: Procter & Gamble, Henkel Capital, Colgate-Palmolive, Fábrica de Jabón La Corona, Sánchez y Martín S.A. de C.V., Alen, Latinoamericana de Detergentes S.A. de C.V., Fábrica de Jabón la Reinera, Advanced Research Laboratorios de México (Carepro), Industrias H24, Grupo Aguaviento, Pinta Piel S.A. de C.V., Distribuidora Casam S.A. de C.V.

In order to keep the required travel within the budgetary means of this study, we requested interviews with 10 firms and managed to interview representatives of six enterprises, a 60 per cent response rate. Our final sample included a range of companies that differed in terms of size, market position, domestic or foreign ownership and location.

We also conducted interviews with representatives of the National Chamber of Processing Industries (Cámara Nacional de la Industria de Transformación) and the National Association of Retailers and Department Stores (Asociación Nacional de Tiendas de Autoservicio y Departamentales). These interviews with industry associations served in part as cross-checks on the firm interviews. Overall, we found the information that was gathered to be consistent, and there were no obvious problems with selective recall.

#### *d. Interview Structure*

Each interview consisted of a structured portion designed to collect a predetermined type of information, followed by a non-directed part designed to solicit general views of the interviewees and some unanticipated aspects of the issues discussed. Not every question was asked in each interview, as not all questions were applicable to all firms interviewed. Prior to setting up an interview, we collected information from publicly available sources on the company to be visited. The questions that did not apply to a particular company were omitted.<sup>2</sup>

In the non-directed part of the interview process, we used broadly formulated questions and relied mostly on the interviewee's volunteering relevant facts and opinions with some prompting. The advantage of this non-directed approach was that it allowed us to obtain information on some unanticipated aspects of the issues and provided useful insights into areas that we had not considered before.

The following sections present results from these interviews, which we have integrated with information from other sources, such as the Mexican Statistical Office, INEGI.

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<sup>2</sup> The list of questions common to each interview is available from the authors on request.

## 3. WAL-MART'S ENTRY: A REVOLUTION IN RETAILING

*a. The Ascendance of Walmex*

As the Mexican economy began to open in the mid-1980s, its retail sector began a process of profound transformation. Drawing on interviews with industry managers and supporting data from INEGI, Chavez (2002) provides an excellent synopsis and interpretation of the changes that occurred. This subsection summarises his main findings, devoting particular attention to the changes that were important for the performance of the SDS industry.

Mexican producers of consumer goods were heavily protected until the mid-1980s. Thus retailers based in the United States – whose strength was in dealing with their home-market suppliers – stayed out. But as tariffs fell over the following half-decade, Mexican retailers began to offer more consumer goods imported from the United States. And when NAFTA locked in place commercial policy reforms while extending national treatment to foreign investors, the Mexican market became attractive to large US-based retail chains.<sup>3</sup> This attraction was heightened by Mexico's large population, its growing middle class and its increasing urbanisation.

Participation by foreign retailers in the Mexican market began when executives at several of the major Mexican retailers approached their counterparts in Texas and California concerning possible collaboration. And for their part, major retail chains in the United States took increasing interest in Mexico as the NAFTA negotiations progressed.<sup>4</sup> These events triggered a wave of joint ventures between Mexican and foreign chains. In 1991 the largest Mexican firm involved in retailing, Aurrera (part of the Mexican commercial group CIFRA), formed a joint venture with Wal-Mart. Then, in 1992, Comercial Mexicana entered into a joint venture with Price-Costco. Finally, in 1994 the Mexican supermarket chain Gigante entered into joint ventures with the French retailer Carrefour and with Office Depot. Only one important Mexican supermarket chain, Soriana, remained independent.

After familiarising themselves with Mexico, and having brought their own strengths with them, some foreign retailing firms felt that they no longer needed local collaborators. Most importantly, Wal-Mart bought controlling interest in Aurrera in 1997 and became Wal-Mart de México (Walmex). For its part, the French retailer Carrefour left its partnership with Gigante, but remained in the Mexican market.<sup>5</sup>

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<sup>3</sup> Tegel (2003) also concludes that Mexico's unilateral liberalisation and signing of the GATT in 1987 were key to the entrance of foreign retailers. The Appendix provides a more detailed discussion of the relevant GATT- and NAFTA-induced policy reforms.

<sup>4</sup> Chavez (2002) observes that 'members of the chambers and associations of retailers were invited by their governments to take part in the negotiating commissions representing their sectors and members' (fn. 1, p. 505).

<sup>5</sup> 'Many Mexican food retail analysts speculate that Carrefour used its relationship with Gigante to get to know the domestic market, and then shifted its strategy to operate solo' (Chavez, 2002, p. 512).

With the influx of foreign retailers, a handful of major chains came to dominate the market, and many of the smaller retailers were forced to shut down. By 2001, 'only 4 chains dominated the market: Wal-Mart de México with almost half (45.6 percent), Comercial Mexicana with a little over a fifth (20.6 percent), Gigante (15.5 percent) and Soriana (14 percent)' (Chavez, 2002, p. 507). By 2002, Walmex's total sales had grown to \$10.1 billion (Tegel, 2003), and by 2004 to \$12.5 billion (Wal-Mart, 2005).

*b. Changes in Business Practices*

The growing dominance of Walmex helped to induce two fundamental changes in the Mexican retail sector. First, the sector modernised its warehousing, distribution and inventory management. Second, it changed the way it interacted with its suppliers. The former changes partly reflected the growing availability of information technology. But they also reflected the innovations that Walmex imported from the United States. Walmex not only introduced the system of channelling deliveries from suppliers through centralised warehouses, it also required delivery trucks to have appointments and drivers to carry standard identification cards.<sup>6</sup> Those that missed appointments were subject to fines. Shipments were required to be on standardised palettes (rentable from Walmex), and be shrink-wrapped with corner protectors. They were also subject to third-party quality audits.<sup>7</sup> Many of these innovations have diffused to the other major retail chains.

Walmex's hard-nosed style of negotiation with its suppliers may have been at least as important. Famously, Wal-Mart keeps negotiations with its suppliers as stark as possible – both in terms of the bargaining environment and in terms of the number of negotiable contract features. And because it controls such a large share of the retail market, this often amounts to a take-or-leave-it offer. In the United States, the company is exceptionally private about its business practices and its suppliers are very reluctant to discuss details (Fishman, 2003).<sup>8</sup> However, former suppliers are more willing to talk. They agree that Wal-Mart's uniquely large market share gives it extraordinary bargaining power, and allows it to drive its suppliers' profit margins very low. For standardised products, it demands annual price reductions, so those firms that are unable to frequently introduce new goods – and thus avoid establishing a benchmark price – are squeezed relatively more

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<sup>6</sup> Tegel (2003) states that Walmex is 'the only Mexican retail chain that has its own centralized distribution system. Suppliers thus can deliver their goods just once to any of 11 Walmex depots scattered across the country, rather than to each individual store'. Interviews for this study revealed that since the time of Tegel's writing, other major retailers have gone to centralised warehouses.

<sup>7</sup> These features of Walmex's delivery system were mentioned by several SDS firms interviewed for the present study.

<sup>8</sup> One company that helps businesses work with retailers commented, 'If Wal-Mart takes something the wrong way, it's like Saddam Hussein. You just don't want to piss them off' (Fishman, 2003).

(Fishman, 2003). Those suppliers that balk at Wal-Mart's demands are simply discontinued, and new suppliers are brought in.

Evidence on retail prices in the United States confirms that the 'Wal-Mart squeeze' (Fishman, 2003) is real, and quantitatively important. Using region-specific prices of several specific consumer goods, Basker (2005) develops an econometric model of price adjustments when a new Wal-Mart enters a region. Controlling for serial correlation, seasonal effects, city fixed effects and endogenous opening dates, he finds that the long-run effect of a new Wal-Mart is to drive down retail prices by from 1 per cent to 13 per cent, depending upon the product. For present purposes it is worth noting that the effect on detergent prices is relatively large – about 9 per cent. This may be due to the fact that this product is fairly standardised, and thus subject to annual demands for price concessions.

Basker's (2005) findings are consistent with anecdotal evidence, which suggests that 'when Wal-Mart enters a market, its everyday low prices are anywhere from 5 percent to 25 percent lower for identical goods' (Business Planning Solutions, 2007). They are also consistent with more aggregated econometric analyses that link region-specific consumer commodity-price indices to the share of Wal-Mart stores in local retailing (Business Planning Solutions, 2007).

### *c. Responses of Mexican SDS Producers to Wal-Mart's Entry*

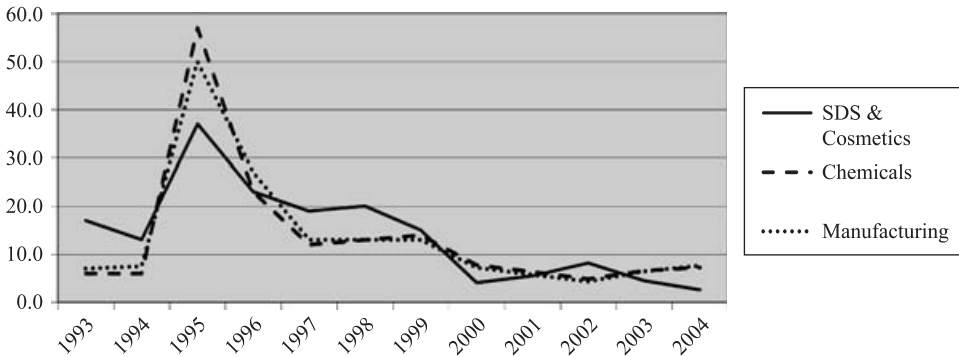
The above characterisation of Wal-Mart's effect on pricing in the United States is completely consistent with the observations that Mexican SDS manufacturers offered regarding Walmex during our interviews. Indeed, the appearance of Walmex was typically cited as the most important structural change to market since 1990.

One fundamental effect of Walmex, cited by both the major brands and the smaller suppliers, was to change the relative bargaining position of small and large firms. More precisely, Walmex uses roughly 25 domestically-owned small and medium-sized producers to supply store-brand (*marca blanca*) detergents and cleaners, each producing a differentiated product. These firms are efficient enough to survive at the prices Walmex offers them, and while most had previously been fringe players, they now collectively provide Walmex with a credible bargaining tool when it sits down with representatives of the major brands.

In addition to reducing suppliers' bargaining power, small suppliers and major brand suppliers agreed that it has increased industry-wide efficiency. One way, of course, has been to drive high-cost suppliers out of business. But those able to survive on Walmex's terms have been able to reach a much larger market and thereby exploit scale economies. Even the major brand suppliers agreed that Walmex's distribution system had made retailing more efficient.

The firms visited for this study were by definition survivors, and most were currently dealing with Walmex, so our sample under-represents the opinions of

FIGURE 1  
Annual Inflation Rates and Value-added Prices



Source: INEGI (2005).

firms that have been made worse off by its market dominance. But those small and medium producers who addressed the issue indicated that they preferred the current business environment to the earlier epoch in which competition was more muted, relations with buyers were more social, and side payments for contracts were not unusual. Several mentioned how clubby the retailers had been before Walmex arrived, and noted that Walmex quickly withdrew from the National Association of Retailers and Department Stores after discovering that the Association's culture did not suit Wal-Mart's business model.

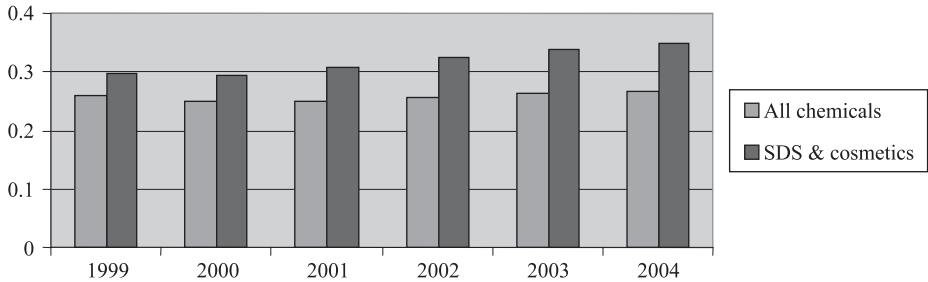
In light of these observations, it is interesting to examine the value-added prices of SDS producers, which net out the effects of material price changes. Figure 1 shows SDS value-added prices along with prices for other products in the chemical industry.<sup>9</sup> The latter series is included as a benchmark because these are products that use related technologies, but most are not consumer goods, and thus are not subject to the Walmex effect. To provide an additional benchmark, an aggregate value-added price index for the manufacturing sector is also included. While one can easily read too much into this graph, it does confirm that inflation rates came down relatively rapidly in the SDS and cosmetics sector as the structural transformation of the retail sector took shape in the late 1990s and early 2000s. (The spike in 1995 reflects the Tequila Crisis and the associated devaluation – refer to the Appendix for details.)

Some interviewees mentioned that one of the difficulties they faced was their inability to pass increases in material prices on to consumers, and they traced this problem partly to their lack of bargaining power vis-à-vis Walmex. While it is

<sup>9</sup> Note that cosmetics are included with SDS products in the available series – since these are also consumer goods sold by Walmex, this should not change the basic message.

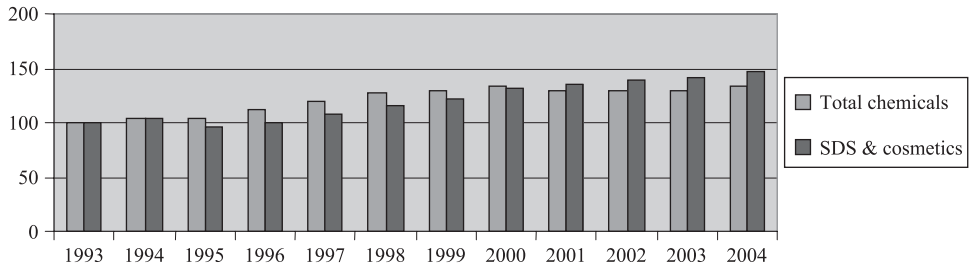


FIGURE 2  
Gross Margins: All Chemicals versus SDS and Cosmetics



Source: INEGI (2005).

FIGURE 3  
Real Value-added Index: All Chemicals versus SDS and Cosmetics

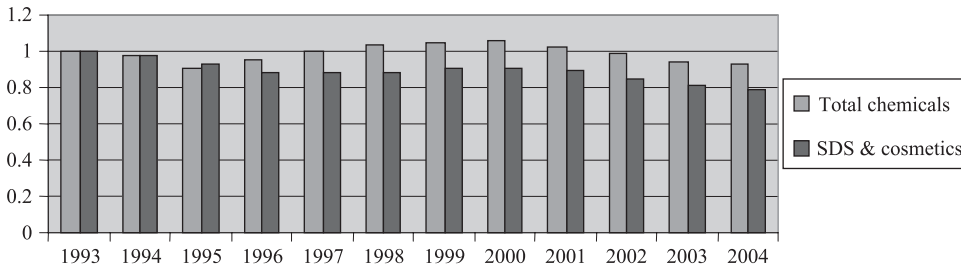


Source: INEGI (2005).

true that the rate of inflation in value-added prices has been below industry norms in all years except one since 1999 (see Figure 1), this has not translated into lower gross profit margins for SDS and cosmetics producers overall. As Figure 2 demonstrates, the opposite has been the case.

Rising gross margins have been possible because the industry has expanded production without a corresponding expansion in employment. While real value-added has expanded relatively rapidly for SDS and Cosmetics producers, employment has actually gone down substantially since 1999 (see Figures 3 and 4). The initial decline in employment was caused by the Tequila Crisis in 1994. But as output growth resumed in 1996 and thereafter, employment did not rebound. By 2004, real value-added had grown 50 per cent and employment had shrunk more than 20 per cent, implying a cumulative improvement in real value-added per worker of nearly 90 per cent! Presumably this reflected the exit of relatively inefficient producers, the exploitation of scale economies, product and process innovation, and labour-shedding among those firms that continued to operate.

FIGURE 4  
Employment Index: All Chemicals versus SDS and Cosmetics



Source: INEGI (2005).

#### 4. PATTERNS OF INNOVATION AND KNOWLEDGE DIFFUSION

The heightened competitive pressure that Walmex brought to Mexico created incentives to cut waste and to innovate. We know from Figures 3 and 4 that labour productivity improved dramatically and that some of this gain has come from labour shedding. But in addition, successful firms have increased their product appeal and improved their revenues per unit input cost through a variety of innovative activities. The interviews conducted for this study and recent papers on the SDS industry shed light on the sources of these process and product improvements. We summarise the basic messages below.

##### *a. Sources of Innovation among Multinationals*

Globally, the leading SDS producers are actively involved in product research and development. Modern detergent formulations, jealously guarded by the global industry leaders, are increasingly complex combinations of raw materials, formats, chemical additives and biotechnology. This complexity, coupled with competition and liberalised rules for international trade and investment, has pushed R&D activity to be distributed globally, and integrated throughout the supply chain.

Multinational detergent firms invest heavily in research. When Unilever launched its new concentrated powder in 1994, it had already invested £100 million in the technology, which contained a new bleaching system, new active ingredients, a new water softener system, used less energy and water to produce, and was more biodegradable (Ward, 1994). Henkel employed approximately 3,600 people worldwide in research and development (R&D) activities in 1997. During the same year, the company devoted US\$247 million to R&D, with a further US\$101 million being spent on technical services. A large portion of the research activities is concentrated at the headquarters in Düsseldorf. Product

development and application engineering activities, on the other hand, are performed on a more decentralised basis.<sup>10</sup>

As the multinationals innovate, they often induce imitation among their competitors, and upstream adjustments among input suppliers. For example, when Procter & Gamble launched a detergent with built-in fabric softener in mid-2004, it not only sparked a race among competitors to create similar products, but it also spurred speciality chemical companies to develop the inputs that would be needed. Thus input suppliers sometimes serve as conduits for technology transfer to other firms, and increasingly, they are a source of research themselves (McCoy, 2001).<sup>11</sup>

Foreign affiliates operating in the Mexican markets benefit from the massive R&D investment undertaken by their parent companies, and draw on the innovations produced in the headquarters. They are the local market leaders in terms of introducing new and innovative products. However, not all innovations are accepted by Mexican customers. Consumer preferences for high-volume powder detergents limit the scope for launching premium-priced compact products.

#### *b. Sources of Innovation among Mexican-owned Firms*

While Mexican-owned detergent producers lack global economies of scale and thus the incentive to invest heavily in R&D, many introduce incremental improvements to the regular powder format. They usually follow the lead of multinationals. Often they are prompted to do so by their customers, including Walmex. As mentioned above, product improvements help them avoid drastic price cuts demanded by Walmex. Such innovations usually involve introducing a new fragrance or changing the appearance of the product (by, for instance, adding blue inactive granules to the powder).

Input suppliers, usually foreign affiliates, are the primary channel through which Mexican-owned producers obtain access to innovations. According to the information obtained during the interviews, small Mexican producers meet with their input suppliers every six months to find out about the possibilities of upgrading their products. Suppliers provide the necessary inputs and often prepare a new formula for the product based on these inputs. To entice local producers, they can reformulate the product to substitute standard ingredients with their cheaper form in order to offset part of the increased input cost due to the innovative ingredients.

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<sup>10</sup> <http://www.monografias.com/trabajos10/ugm/ugm2.shtml#>.

<sup>11</sup> Globally, the nature of supplier research has been changing. R&D partnerships are becoming more common, and several chemical companies are extending these alliances to include not only suppliers and customers, but other players in the chain, such as retailers and designers (Milmo, 2002). Rhodia, a leading speciality chemicals maker, dedicates 20 per cent of its R&D budget to research partnerships. Realising the importance of speeding new products to market, suppliers are investing in high throughput equipment and trying to rise above the commodity-type pricing of inputs for existing products (Schmitt et al., 2002).

Mexican-owned producers often intentionally lag in introducing new products. Most prefer to wait until multinationals undertake the expensive task of educating consumers about the benefits of using liquid detergents and concentrated products. If a shift in broad perceptions of customers takes place, they can follow with similar products at less risk. For instance, one of the interviewed firms reported having the capacity to produce liquid detergents and expecting to have to use it in the future, but waiting until a perceptible shift in consumers' views has taken place and the demand for currently produced powder formulas has dwindled.

### *c. Tailoring Products to the Local Market*

Evolving consumer demand helps to induce continuous innovation, which is often specific to a particular market. Heightened sensibilities in the US about the eutrophication of lakes and rivers prompted a reduction in phosphates, while general environmental concerns led to a shift in perceptions about volume. Detergent buyers in the US now believe that compacts can clean as effectively as regular formulas, liquid formats dissolve better in the wash, and fragrance and anti-microbial features are important. Anti-microbial characteristics have become especially important with rising energy bills and their ability to kill germs in cold water.

Mexican consumers have different preferences – most notably for regular powdered detergent, with large amounts of sulphate filler to counter their relatively hard water. Because Mexican firms operate in a different regulatory environment and cater to these local preferences, they have not invested in the wholesale format changes that US firms have made: from regular to compact powder, from compact powder to liquid, from regular liquid to compact liquid, or from compact liquid to tablet.

Many of the major new developments, including inputs, manufacturing processes and packaging, are designed for use with compact liquids that now represent the majority of sales in mature markets. This trend effectively precludes Mexican firms from importing several new detergent technologies unless they change their product format. In an industry long known for secrecy, leaders such as Procter & Gamble and Unilever are now even secretive about whom their suppliers are in order to prevent competitors from deducing formulations (Schmitt et al., 2002).

However, the interest in new additives among the large detergent makers and incentives to cut inventory costs have encouraged suppliers to develop inputs that are compatible across multiple formulations. Recent examples include surface modification for easy cleaning, surface adhesion for textile fabric care and time-controlled discharge of perfumes. Up to 90 per cent of perfumes are destroyed during the wash and they account for as much as 30 per cent of the input costs. Using latex, polymers and minerals such as silica and surfactants, researchers developed a controlled release that preserves 60 per cent rather than 10 per cent of perfumes (Milmo, 2002).

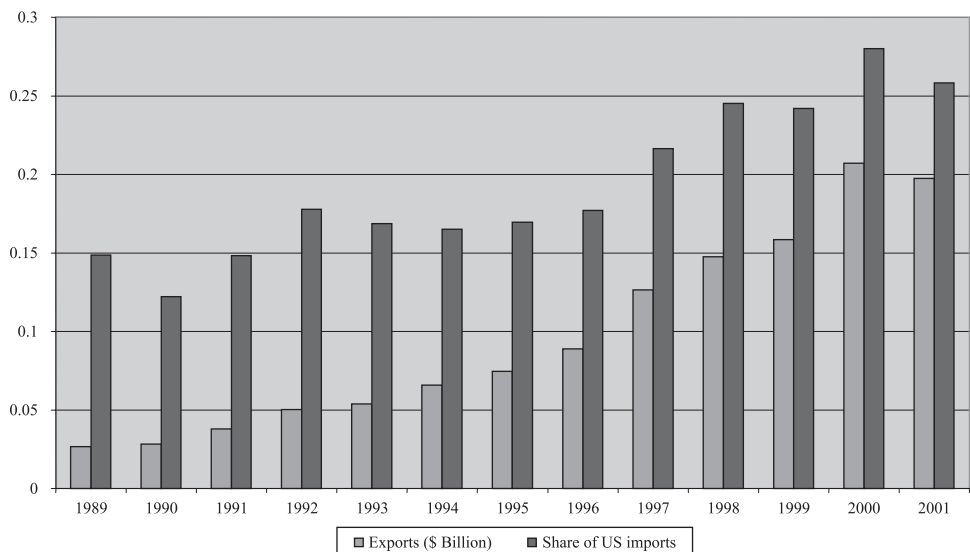
## 5. CONSTRAINTS TO EXPORT RESPONSE

After 1994, Mexican SDS exports to the United States increased and Mexican producers captured a growing share of the US import market. Figure 5 shows that Mexico's share in total US SDS imports rose from about 17 per cent in 1994 to 27 per cent in 2000 before falling somewhat. Also, while aggregate Mexican exports grew about 57 per cent over the period 1994–98, SDS grew somewhat more rapidly (81 per cent), and continued to expand until 2001.

What forces drove the increasing success of Mexican SDS exporters in the US market? Reductions in US tariffs on Mexican exports of detergents to the United States may have played some role. However, these tariff rates were not high to begin with. Hence the real devaluation that accompanied the Tequila Crisis and the major productivity gains achieved by the SDS industry were probably much more important.

Another important factor was the growing interest on the part of US super-market chains to cater to the Latino population by providing 'nostalgia brands' or 'heritage brands'. These are modestly-priced products that have well-established brand names in Latin American countries, and thus do not require costly promotional campaigns. Indeed, the firms interviewed indicated that Latinos constituted the core market for Mexican exports to the US. The most important firm to have tapped this market is *Fábrica de Jabón La Corona*, one of the largest laundry detergent producers in Mexico. In 2002, *La Corona's* sales in the US of US\$15

FIGURE 5  
Mexico's SDS Exports to the US: Levels and Share of Total US SDS Imports



Source: US Census Bureau (2007).

TABLE 1  
US Sales of Laundry Detergents, 2002 (\$ million)

	<i>Powder</i>	<i>Liquid</i>	<i>Total</i>	<i>Share (%)</i>
Procter & Gamble	802.81	1,307.15	2,109.96	58
Lever Brothers	126.15	470.51	596.66	16
Dial Corp.	42.18	244.37	286.55	8
Church & Dwight	77.42	116.28	193.70	5
USA Detergents	16.14	131.17	147.31	4
Colgate-Palmolive	18.90	111.65	130.55	4
Private Label	35.79	66.46	102.25	3
Huish Detergents	21.48	22.30	43.78	1
Fábrica de Jabón La Corona	14.97	10.03	25.00	1
Redoc Brands	4.62	9.99	14.61	0
Total market	1,165	2,502	3,667	100

Notes:

Includes sales from supermarkets, drug stores and mass merchandisers, excl. Wal-Mart.

Source: Information Resources Inc.

million of powdered detergents and US\$10 million of liquid detergents amounted to a market share of 1 per cent (Table 1). Gunnar Hallgrímsson, manager of international sales, said ‘It is very simple. There are a lot of Mexicans there. [We are] exporting to them a product they have been using all their life’. For La Corona, South American markets have proved much less attractive than the United States, which received 80 per cent of its exports in 2003.

Multinational subsidiaries operating in the SDS sector in Mexico are not actively engaged in exporting to the United States. Procter & Gamble does not export detergents to the United States, although some of its products are exported by wholesalers. Colgate no longer produces detergents in Mexico, having sold its Viva brand to Henkel in 2000, but it does export softeners (Suavitel) to the United States. Henkel has been exporting Viva, its largest-selling brand, to the US market for the past three years. Like the Mexican-owned producers, both Henkel and Colgate are concentrating on exporting familiar brands to the expanding diaspora of Latinos.

In sum, therefore, it appears that exporting to the United States is relatively unprofitable for Mexican firms, *except* in cases where their brands are already established in the Latino community. Similarly, the availability of relatively low-cost Mexican labour does not appear sufficient to induce multinationals to shift production of non-Latino brands from the United States into Mexico and export them back to the United States.

#### *a. Transportation Costs*

Besides the costs of establishing brand recognition among non-Latinos, what keeps the return on exporting low? Perhaps the most obvious is transport costs.

Detergents have a low value to volume (weight) ratio, so transportation costs constitute a relatively large fraction of total revenues when they are shipped long distances.<sup>12</sup> More compact detergents have higher value-density, use less packaging, and therefore offer significant cost-savings in distribution. For example, Unilever's All Small & Mighty uses less than half the plastic packaging and saves an estimated 10 million gallons of water per year to produce compared to its 100-ounce size, substantially cutting manufacturing and other supply-chain costs. The smaller size reduces diesel fuel consumption, translating into significant transportation savings (Walsh, 2006). But concentrated detergents have not proved popular among Mexican consumers, so the products Mexican firms offered in their local markets contain high levels of sulphate fillers and are particularly expensive to ship abroad.<sup>13</sup>

Importantly, transportation costs are increased by the regulatory environment. Trucking is the primary shipping mode between Mexico and the United States, representing about 85 per cent of trade in terms of value (Haralambides and Londoño-Kent, 2004).<sup>14</sup> Since NAFTA came into effect, cross-border trade by truck between the two countries has grown significantly (Figure 6). In Chapter 12 of the NAFTA, the three parties established parameters for cross-border trucking and, in Annex I, they agreed to a timeline for phasing-out restrictions to cross-border provision of trucking services. In addition to allowing Mexican trucks access to the US market, the agreement stipulated allowing US interests to participate in the Mexican transportation sector.

However, the implementation of this NAFTA provision was unilaterally suspended by the US on safety grounds. US trucking associations and unions alleged that Mexican trucks posed a safety hazard as they were considerably older than the US fleet and were not as well maintained. The Mexican side countered with the argument that safety should be a matter of technical inspection of individual vehicles and should not be addressed with a blanket prohibition. Moreover, a significant upgrading of the Mexican fleet had taken place since the introduction of NAFTA (Haralambides and Londoño-Kent, 2004). Mexico challenged the blanket ban before a NAFTA arbitration panel which in 2001 found the US to be in violation of NAFTA rules. A series of events in subsequent years paved the way for lifting the ban which, however, has not happened yet due to the lack of political will.

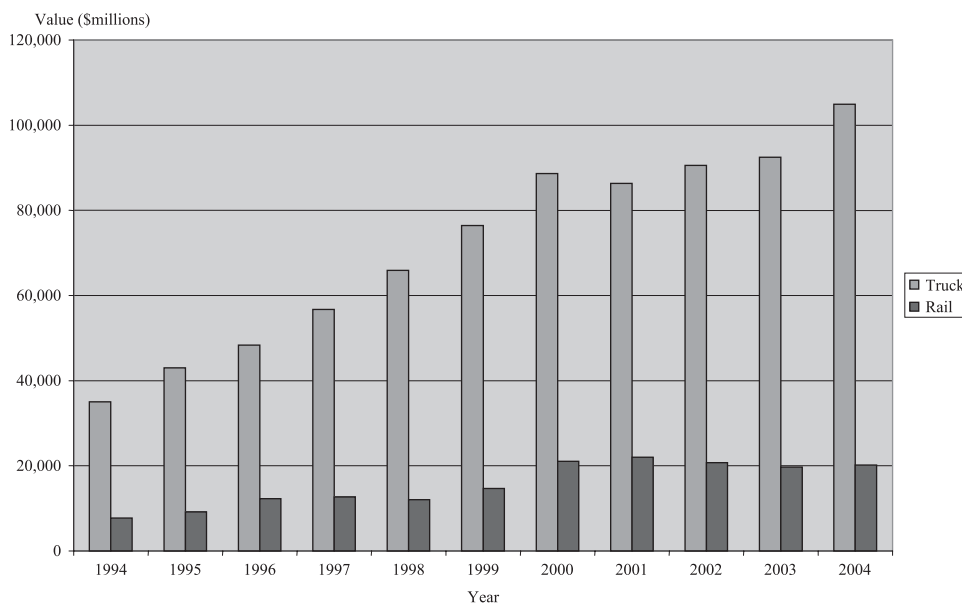
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<sup>12</sup> The importance of transport costs to the industry is illustrated by the fact that liberalisation of the trucking industry in the United States was a key factor driving consolidation of Procter & Gamble detergent production facilities in the country. Their number decreased from 14 in the late 1970s to only four in 2005. Though the transportation cost of more centralised production facilities is higher, the economies of scale in production offset the incremental shipping costs. There is also a cost savings achieved by lowering the transportation cost of inputs coming into four instead of 14 facilities.

<sup>13</sup> Foreign producers attempted to introduce concentrated detergents in the Mexican market but the effort failed. The public did not appreciate the benefits of concentrated products and perceived a lower volume to be associated with a lower value of the product.

<sup>14</sup> Geographic distance in the US costs about a dollar per truck-mile (Boyer, 1997).

FIGURE 6  
Value of US Land Imports from Mexico by Mode



Source: [http://www.bts.gov/publications/national\\_transportation\\_statistics/2005/html/table\\_01\\_54.html](http://www.bts.gov/publications/national_transportation_statistics/2005/html/table_01_54.html).

In addition to trucking restrictions, huge inefficiencies are present at the key US–Mexican border crossings. Crossing the Rio Grande river in the northbound direction with a loaded truck involves at least three pieces of equipment (trucks and trailers) and several drivers.<sup>15</sup> The additional cost imposed at the border increases the cost of transport from Monterrey to Chicago by between 9 and 16 per cent – see Table 2 (Haralambides and Londoño-Kent, 2004).

#### *b. US Environmental Regulations*

Another barrier to exports derives from environmental concerns in the US. In the 1960s a large public debate began over phosphate effluent from detergents and the resulting eutrophication of US rivers and lakes. By the late 1960s, almost 10,000 lakes were reported to be suffering from excessive nutrient enrichment by human activities (ReVelle and ReVelle, 1988). As early as 1985, jurisdictions which had enacted phosphate bans included New York, Michigan, Indiana, Vermont, Minnesota, Dade County, Florida, Akron, Ohio and Chicago Illinois (Knud-Hansen, 1994). By 1996, more than 19 states and counties in 15 other

<sup>15</sup> La Corona, the single major Mexican exporter, uses a third-party logistics provider to deliver less-than-truckload shipments, multi-vendor consolidated loads, and retail-driven consolidated shipments across the border to regional warehousing throughout the US.



TABLE 2  
Costs of Crossing the US–Mexican Border (Northbound)

	<i>Costs (US\$)</i>		<i>Time (hours)</i>	
	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>
<i>Mexican side</i>				
Trucking Monterrey–border	188	210	2.5	3.0
Unloads and reloads as needed	75	150	0.3	1.0
Drayage	75	150		
Mexican inspection			0.0	2.0
Totals Mexico	338	510	2.8	6.0
<i>United States side</i>				
Congestion, waiting time			1.0	6.0
US inspection			0.0	4.0
Unloads and reloads as needed			0.3	0.5
Trucking to Chicago	1,338	1,343	30.0	51.0
Totals US	1,338	1,343	31.3	61.5
Total US and Mexico	1,676	1,853	34.0	67.5

Source: Haralambides and Londoño-Kent (2004, p. 178).

states were limiting the phosphorous content of household laundry products to 0.5 per cent.<sup>16</sup> In 1999, many regions of the US had adopted phosphate limitations or bans, affecting about 40 per cent of the US population (Kostick, 2004). The effects of these phosphate bans on consumption are apparent in Figure 7.

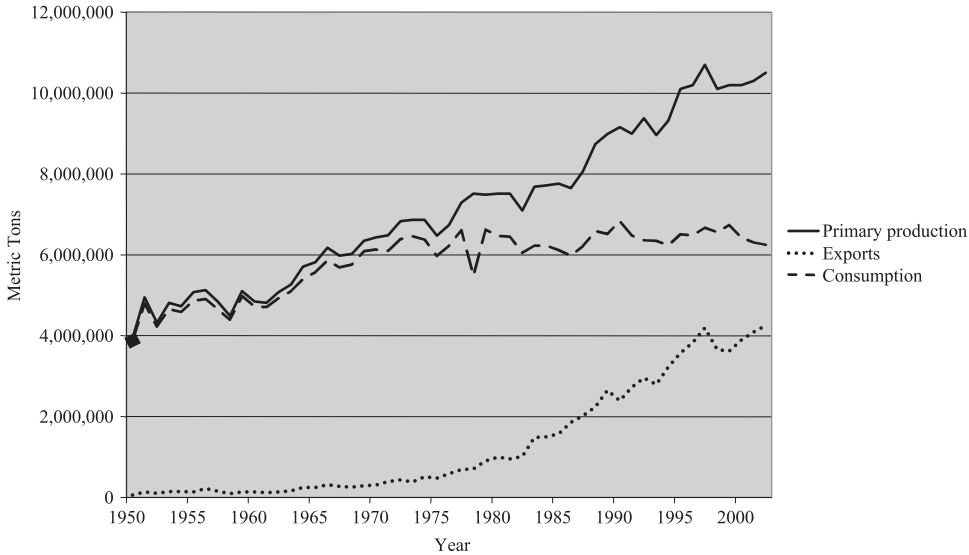
Zeolites (hydrated aluminosilicates of the alkaline and alkaline-earth metals) are an environmentally friendly alternative to phosphates and are commonly used in liquid detergents as builders.<sup>17</sup> The introduction of phosphate-reduced (1976) and later phosphate-free detergents (1983) marked the beginning of the era of builder systems containing zeolites. Many US suppliers are also researching the building properties of soluble silicates. These can be used in both liquid detergents or in powders (after being spray-dried).

The water in Mexico is relatively hard, making phosphates a desirable ingredient to local consumers. According to the information obtained during firm interviews, most detergents produced in Mexico are phosphate-based and can only be legally exported to those US states that have not enacted prohibitions. Switching production from phosphate-based to phosphate-free detergents and vice versa cannot be

<sup>16</sup> Source: published summary of phosphate legislation from the Soap and Detergent Association, 20 March 1996 (<http://www.ledizolv.com/LearnAbout/LeadDustCleaning/lzsixarg.asp>).

<sup>17</sup> 'Builders' serve to tie up mineral (hard water) ions, specifically magnesium and calcium, so surfactants can work better. They emulsify oil stains, reduce the re-deposition of dirt during washing and rinsing, provide alkalinity for cleaning and soften laundry water.

FIGURE 7  
US Soda Ash Balance



Source: USGS (2005), available online at <http://minerals.usgs.gov/ds/2005/140>.

done without significant costs, and producing both types of detergents at the same facility is not deemed to be commercially viable.

### c. Intermediate Input Costs

Finally, Mexican detergents are less competitive than they might be in the US market because an important intermediate input – sodium hydroxide (chemical caustic soda) – is subject to Mexican anti-dumping duties (United States Trade Representative, 2005). On 2 July 2003, the Mexican National Oils, Fats, Soaps and Detergents Industry Association (CANAJAD) requested a NAFTA panel review under Chapter 19 of the countervailing duty (*cuota compensatoria*) imposed by the Secretary of the Economy on sodium hydroxide originating in the US. According to CANAJAD, this countervailing duty has effectively given monopoly power to two local producers which supply most of the product to the Mexican market. Presumably due to the lack of political will, no ruling has taken place yet.

## 6. CONCLUSIONS

The first message of this study is that traditional approaches to analysing trade agreements may miss important implications. In the case of the SDS sector,

Mexico's GATT- and NAFTA-related commercial policy reforms mattered little in terms of their direct effect on SDS trade and innovation. However, they helped to induce the entry of Wal-Mart into Mexico, which in turn led to fundamental changes in the structure of the SDS sector and in the retail sector in general. More precisely, the entry of Walmex led to:

- the dissemination of the latest retail techniques to other retail chains and increased competition in the retail sector;
- waste reductions in bringing goods to market;
- scale economy exploitation by those Mexican-owned and foreign producers that sold to Walmex;
- greater incentives for small-scale local producers to adopt innovations;
- movement toward marginal cost pricing, even among the major brands; and
- exit of some of the less efficient SDS producers.

The second message of the paper is that the full benefits of improved market access may not be realised in the presence of non-tariff barriers to trade. In the case of the Mexican SDS industry, the competitiveness of local producers is severely hindered by input costs being inflated due to the anti-dumping measures that protect Mexican producers of caustic soda and by the limited competition in the trucking sector causing delays and inflating costs.

Neither of these barriers to trade is insurmountable, and both could be removed with the stroke of a pen. Whether they would lead to dramatic growth in Mexican exports is difficult to predict, but the nature of the North American SDS market suggests that this is a possibility. More precisely, Mexican producers who wish to export to non-Latinos in the United States face two types of start-up costs: they must establish brand recognition and trust in this market, and they must re-tool their production facilities to produce phosphate-free liquid concentrates instead of bulky, phosphate-intensive powders. It is possible that for a number of firms, the pay-offs in terms of future export profits are just shy of these start-up costs, in which case a modest increase in operating profits per unit export could trigger a significant export boom. On the other hand, it is also quite possible that exporting to the non-Latino in the US is far from profitable for Mexican firms, and that reductions in transport costs and input prices would have little effect on trade flows.<sup>18</sup>

The third lesson is that innovation and adoption of innovations is very sensitive to incentives. By giving local producers an opportunity to tap into a larger market,

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<sup>18</sup> Das et al. (2006) quantify start-up costs and export operating profits for several Colombian manufacturing industries. They find that among knitted fabric producers, many were near the threshold of profitable exports. Thus, when the Colombian peso depreciated in the late 1980s, large numbers began to penetrate foreign markets. In contrast, leather product suppliers were much more heterogeneous in terms of their payoffs from exporting, so only a few responded to the devaluation by initiating foreign sales.

and by insisting on steady price reductions for products that remain unimproved, Wal-Mart created a powerful incentive for SDS producers to improve product quality and/or productive efficiency. Although it is beyond the scope of this paper to isolate the effects of this incentive on productivity in the SDS sector, value-added per worker clearly improved rapidly as Walmex gained market share.

Finally, industry-wide growth in value-added per worker reflected a combination of labour shedding and innovation, and much of the innovation that took place among SDS producers was traceable – directly or indirectly – to multinationals. For the multinational SDS subsidiaries, innovation was largely accomplished through the research efforts of their headquarters abroad. For the Mexican-owned SDS firms, innovation originated largely with their intermediate suppliers, who regularly brought them new compounds and suggestions for new products or processes. Many of these suppliers were themselves foreign-owned, and some of the inputs they brought to Mexican-owned firms were developed in response to the needs of the major multinational producers.

#### APPENDIX: MAJOR POLICY REFORMS AND MACRO SHOCKS: 1965–2005

During the last four decades, Mexico's policies towards international trade and foreign direct investment have been characterised by a general trend towards liberalisation. At the same time, this has been punctuated by several policy reversals in times of crisis that typically lasted only a few years. We offer a chronology of the major episodes below.

##### *a. Import Substitution until the 1960s*

Until the mid-1960s, Mexico's economic policy was typical of the import substitution paradigm that pervaded Latin America. This meant generally highly protectionist trade and foreign direct investment (FDI) policies. During the late 1960s and early 1970s, there were some initiatives of liberalisation, both in terms of trade as well as certain foreign direct investments. For example, the first *maquiladora* programme was authorised in the year 1965 (and subsequently liberalised in 1972). However, the changes made tended to be selective, carried by an apparent belief that highly directive government policy can guarantee good outcomes. Specifically, the general *Law on Foreign Investment*, passed in 1973, remained highly restrictive with respect to foreign ownership of firms in Mexico.

##### *b. 1974 Oil Price Shock*

The first oil price shock in the year 1974 led to a current account deficit in Mexico. The Mexican exchange rate stayed initially at the fixed rate of 0.0125 pesos

per US dollar, but a recession contributed to the decision to let the peso devalue by the year 1977. The oil price shock also triggered a pattern of policy reversal that would be typical for Mexico over the last four decades, as the limited trade liberalisation measures that were put in place since 1970 were now reversed.

*c. Second Oil Price Shock and 1982 Debt Crisis*

In the late 1970s, Mexico started tapping into newly discovered oil reserves on its territory. Thus, the second oil price shock of 1979 initially benefited Mexico. With the windfall of increased oil revenues, the country dramatically extended its international borrowing. However, at least *ex-post* most of these projects turned out to have a low long-run rate of return. Mexico's international debts were mounting, and in the year 1982 the Mexican government declared default on its international debt obligations.

*d. GATT Membership in 1985*

During the mid-1980s, the Mexican exchange rate was in free-fall versus the dollar, with an average rate of depreciation versus the dollar of around 65 per cent per year between 1981 and 1988. A number of measures were taken to stabilise the Mexican economy, including structural adjustment programmes agreed upon with the major international lending organisations. The key policy change was that Mexico joined the General Agreement on Tariffs and Trade (GATT) in the year 1985. GATT membership served as the anchor for the initial push of domestic *and* international trade reforms during 1985–88 that substantially liberalised the Mexican economy. From 1985 to 1990, Mexico's average import tariff rate fell from 24 per cent to 13 per cent, while the import quota coverage ratio fell from 92 per cent in 1985 to 20 per cent in 1990. Along the same lines, the new *Law on Foreign Investment* of 1989 represented a major relaxation relative to the 1973 law, and a number of state-owned enterprises were privatised during the years 1989–92. Import licensing continued to decline in importance during the early 1990s.

*e. NAFTA Treaty in 1994*

In June of 1990, the United States and Mexico indicated their intention to extend the Canada–US trade agreement to include Mexico, thus forming the North American Free Trade Agreement (NAFTA). After several years of negotiations, NAFTA was finally ratified by the US Congress in November 1993 and implemented on 1 January 1994. The far-reaching changes sought by NAFTA were:

- the gradual elimination of tariffs;
- the abolishment of most non-tariff barriers;
- the opening-up of government purchases;
- the liberalisation of foreign investment;
- the elimination of barriers for service companies;
- the promotion of competition within countries;
- greater protection of intellectual property rights;
- the creation of dispute settlement mechanisms.

Among the important principles laid down in the NAFTA treaty are *national treatment* and *most-favoured-nation treatment* (NAFTA Article 102). National treatment for goods means that once goods have been imported into any NAFTA member country, they will not be subject to discrimination (including by sub-federal governments). Most-favoured-nation treatment implies that the signatories of NAFTA have to extend trading benefits to each other equal to those accorded to any – that is, the most favoured – non-NAFTA country.

Overall, two features of the NAFTA agreement stand out as particularly important. First, Chapter 11 investment gives private investors the means to seek arbitration against NAFTA governments. This means that private companies need not rely on their own government to take up their case. Second, and more generally, by signing the NAFTA treaty Mexico has further committed itself to the trade and FDI liberalisation policies it began in the mid-1980s. This ‘tying-one’s-own-hand’ aspect of NAFTA may be its single most important aspect, since it lowers the risk of policy reversals, and is associated with less policy uncertainty more generally.

#### *f. 1994 ‘Tequila’ Crisis and Aftermath*

In December of 1994, lax banking laws and a record fiscal deficit combined to trigger the so-called ‘Tequila Crisis’. As the exchange rate regime collapsed, the peso depreciated 123 per cent vis-à-vis the dollar and GDP contracted by about 6 per cent, leaving Mexico in its worst recession since the 1930s. However, in contrast to earlier crises, there was no major policy reversal in terms of Mexico’s trade and investment policies – retrenchment essentially amounted to a moderate increase in import tariffs. This was partly due to the NAFTA commitments, and partly because Mexico became a member of the OECD in 1994 and a member of the new World Trade Organisation in 1995. Mexico’s relatively steady policy course was also facilitated by a \$50 billion aid package from the United States.

In 1996, the Mexican government further liberalised foreign direct investment by opening areas for FDI that were formerly reserved for the Mexican government, such as railways. In 1999, following the Asian financial crisis, some import

tariffs were again slightly raised, but compared to earlier protectionist responses to crises, the general scale of these policies was fairly minor.

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