those in the CEIP study.[77] Whereas CEIP reports that productivity in nonmaquiladora manufacturing increased 59 percent between 1993 and 2003, we calculate a 25 percent increase between 1994 and 2003.[78]

The divergence between productivity and real wages during the peso crisis is not surprising. In 1995–96, real wages fell sharply due to rapid inflation; meanwhile employment and hours decreased more than output, causing a rise in productivity. To some extent, the fall in real wages represented a correction of the 1990–93 period, when real wage growth outstripped productivity.[79] For the whole period between 1994 and 2003, real wages fell 5.2 percent, while productivity rose 24.7 percent. However, since the peso crisis, wages have been catching up with productivity gains. Wages rose 21.7 percent between 1997 and 2003 while productivity gained only 6.4 percent. We disagree with the CEIP study that these data demonstrate the "decoupling of wages from productivity" (Audley et al. 2003, 25). However, sluggish productivity gains in recent years are a cause for concern.

To this point, our discussion has focused on nonmaquiladora manufacturing.[80] Maquiladoras—in-bond factories that produce exclusively for export—are a growing proportion of Mexican manufacturing. They represented 30 percent of total manufacturing employment in 1994, rising to 45 percent in 2003. The maquiladora workforce is generally less productive and less well paid than nonmaquiladora manufacturing discussed above. Table 1.9b presents the trends in maquiladora manufacturing since 1990 (the earliest year data are available). Real wages decline over the period, again due to the peso crisis. However, since 1997, maquiladora real wage earnings have grown 28 percent, while productivity was up 42 percent.[81] In contrast to wage statistics expressed in hourly terms, real monthly income per worker rose by the lesser figure of 20 percent, reflecting fewer hours worked by each employee. Box 1.1 explains the boom and bust, and recent recovery, in the maquiladora sector.

The most likely explanation as to why real wage gains have lagged behind productivity growth is the large pool of unskilled Mexican labor. Rural agricultural laborers work under much harsher conditions and earn far less pay than urban workers, especially those in the manufacturing sector. Rural workers respond to higher urban wages by migrating from the farm to the city. Internal migration increases the supply of unskilled manufacturing labor and suppresses wage increases, though it often spells a dramatic improvement in the lives of erstwhile rural inhabitants. Since 1994, the share of agricultural employment in Mexico fell from 26 percent of total employment to 18 percent in 2001 (World Bank, *World Development Indicators* 2004). Over the same period, employment in maquiladoras, which employ mainly unskilled workers, doubled to over 1 million (INEGI 2004). Rural to urban migration is a necessary part of development; in 2003, the agricultural sector produced only 5 percent of Mexican GDP (World Bank, *World Development Indicators* 2004). Given that agriculture still employs almost a fifth of Mexican workers, the migration phenomenon, and its effect on manufacturing wages, will continue for the foreseeable future. As it proceeds, *average per capita income* will rise, even if manufacturing wages lag behind productivity growth.

Over the long term, average real wages for the entire population—rural as well as urban workers—are strongly linked to *national* labor productivity.[82] Productivity growth has been disappointing in Mexico. The prediction by NAFTA supporters that free trade would foster strong productivity growth has so far materialized only in export-oriented industries, such as autos (OECD 2004b). Mexico needs more, not less, productivity growth in services and agriculture, as well as manufacturing. Real wage growth will follow.

Per Capita Income Convergence

Whether or not Mexican GDP per capita income is "converging" to US levels due to NAFTA (or for other reasons) is the subject of hot debate and

77. Our calculations use the raw series Valor de Producción divided by Horas/Hombre Trabajadas (both series are from the Encuesta Industrial Mensual), deflated by the producer price index. INEGI, the official Mexican statistics service, commonly reports the series presented by CEIP (INEGI 2002, figure 22). INEGI calculates dollar-denominated productivity using the gross output method (i.e., output including the cost of intermediate inputs). Our statistics are calculated with a peso-denominated measure of output and therefore are more appropriate when comparing productivity with real wages. A second productivity series produced by INEGI (INEGI 2002, figure 14), sourced to the Sistema de Cuentas Nacionales (National Accounts) is peso-denominated (and also based on gross output) and roughly corresponds to our constructed series through 2000 (the latest available year). Banco de Mexico (2005) publishes a productivity series based on employment rather than hours worked. This series also corresponds roughly to the one we have constructed. See INEGI (2002) for more on the methodology of Mexican productivity statistics.

78. Due to classification changes in 1994, we do not report a growth rate between pre- and post-1994 data. All of the indices presented in table 1.9 are based such that 1994=100. The same change in classification systems caused the apparent decline in the number of maize farmers between 1993 and 2003, reported in the CEIP study. Using only the new census methodology, the World Bank (2004) shows an increase in the number of maize farmers between 1994 and 2004.

79. As mentioned earlier, Mexico introduced a new classification system in 1994. Therefore, caution should be used when drawing conclusions about changes between 1993 and 1994. We examine the movement of productivity and real wages from 1990 to 1993, a period that uses the old classification system.

80. However, it should be noted that companies registered under PITEX accounted for about one-quarter of the Mexican manufacturing labor force. These include all auto manufacturers and most parts suppliers. PITEX firms enjoy almost the same benefits as maquiladora firms.

81. Table 1.9b measures productivity on a value added basis, rather than a gross output basis.

82. Hanson (2003) argues that Mexican states with greater exposure to multinational firms, FDI, foreign trade, and migration enjoyed higher wage growth in the 1990s. Hanson finds a strong positive correlation between Mexican wage growth and the share of FDI in state GDP

Box 1.1 The maquiladora boom and bust

Maquiladoras—Mexican firms with special legal status originally restricted to produce exclusively for export—are a closely watched feature of the Mexican economy.[1] A common modus operandi characterizes maquiladoras: import components, add value (mainly through labor), and export products (almost entirely to the United States). Mexican firms could follow the same business model without becoming a maquiladora, but membership had its privileges.[2] In the pre-NAFTA era, privileges took the form of duty rebates for imported inputs and a preferential corporate tax regime.

NAFTA has eroded the advantages of being a maquiladora. First, NAFTA extended free trade for components originating in North America to all firms, maquiladora or not. Second, in 2000, NAFTA ended duty rebates on imports of non-NAFTA components. Third, in the wake of NAFTA, Mexico cut back on the corporate tax benefits awarded to maquiladoras. Nevertheless, the maquiladora sector boomed during the 1990s and was often cited as evidence of NAFTA's success (table 1.10).

In 2001, the Mexican economy turned sour, and NAFTA opponents seized on maquiladora contraction as evidence that NAFTA did not work after all. Mexican protectionists cited shrinking maquiladora employment as evidence of debilitating competition from low-wage workers in China. The underlying causes of the maquiladora bust are primarily cyclical, and the decline in employment, while severe, must be considered in relation to the expansion of the late 1990s, which was equally steep (table 1.10).[3] As the US economy recovered, the maquiladora industry showed signs of recovery.[4] We believe the following forces contributed to the decline of maquiladoras, in order of importance:

- ***US economic recession.*** Some 98 percent of maquiladora output is exported to the United States, and much of this consists of intermediate goods. The largest maquiladoras are foreign-owned and are organized so that they can be easily idled.[5] Gruben (2004) describes the role of maquiladoras as that of "shock absorbers" for the US manufacturing economy.[6]
- ***NAFTA Section 303,*** which ended the duty rebates on maquiladora imports of non-NAFTA components came into effect in 2001. Section 303 was especially severe on Asian-owned electronics maquiladoras, some of which reported an overnight production cost hike of 20 percent (GAO 2003). Some of these firms decided to shut down rather than absorb the tariff charges on imported components.[7]
- ***Mexican tax law*** was changed in 2000 to classify maquiladoras as "permanent establishments" and therefore subject to Mexican income tax. This both raised maquiladora tax liability and invoked a complex web of regulations for determining tax liability.[8] In 2002, maquiladoras were subjected to the Impuesto Sustantivo de Crédito al Salario, a payroll tax. The response was so negative that it was phased out in 2004. Maquiladora advocates claim the repeal will recover 50,000 jobs (UNCTAD 2004, box 1).
- ***Competition from the developing world*** severely affected textile and apparel maquiladoras and continues to do so. Competition comes not only from China (which benefited from the end of Multi-Fiber Arrangement quotas in January 2005) but also from the Caribbean and Central America. The Caribbean Basin Trade Partnership Act (CBTPA) grants Caribbean countries tariff-free status in the United States subject to rules of origin akin to preferences granted to Mexico under NAFTA.[9] When the Central American Free Trade Agreement (CAFTA) enters into force, those countries will also be granted "NAFTA parity."
- ***The strong peso*** had a marked impact as well. Just as the weak peso helped stimulate the maquiladora boom in the late 1990s, the overvalued peso in 2001–02 worked in the opposite direction (especially when coupled with an undervalued Chinese renminbi; see figure 1B.1).[10]

1. In 1993, Mexican legislation was modified to permit maquiladoras to sell 50 percent of their output to the domestic market. Under NAFTA, the export orientation requirement has been gradually phased down to 20 percent. However, in practice, maquiladoras still export most of their output.

2. In the 1960s, US, European, and Japanese firms invested in the Mexican automotive industry to supply the domestic market (which was then highly protected). When the maquiladora program was created in 1965, a parallel program, PITEX, was created to give these existing foreign investors equivalent tax benefits. At the beginning of 2005, there were 3,016 maquiladora firms and 3,665 PITEX firms in operation. For a description of the benefits available to maquiladora and PITEX firms, see "Exports from Mexico: Comparing Tax Benefits of Maquiladora vs. PITEX Regimes," *North American Free Trade and Investment Report* 15, no. 3, February 15, 2005, 1.

3. Most commentators count the decline from the peak maquiladora employment in October 2000 (1.35 million workers). From this base, employment is down 21 percent as of January 2004 (1.06 million). However, the January 2004 employment level is roughly equal to that of January 1999.

4. During January–August 2004, 800 new maquiladora companies were established in Mexico, which is 30 percent more than the same period in 2003—due to the improved health of the US economy and a modest real depreciation of the peso. See Morales (2004).

(box continues next page)

Box 1.1 *(continued)*

5. By number, about half of the maquiladoras are Mexican-owned, but these tend to be smaller firms that provide contract assembly services to foreign companies.

6. Maquiladoras made a comeback in 2004, due to the improved health of the US economy. The US upturn, and a modest real depreciation of the peso, are the significant factors that presage a rosier economic picture for maquiladoras.

7. To buffer these firms and avert more shutdowns, under its Programs for Sectoral Promotion, the government of Mexico issued a decree in November 2000 to allow duty suspensions for components that were not available in North America.

8. The tax structure is still evolving, and the Mexican Supreme Court has overruled some, not all, of the tax changes. Gerber (1999) explains the menu of tax options available to maquiladoras before the Supreme Court decision.

9. However, the CBPTA rules of origin are more onerous than NAFTA rules. This has limited the growth of apparel exports from the Caribbean to the US market.

10. The peso has actually depreciated somewhat in real terms against the dollar since April 2002, after appreciating steadily throughout the late 1990s.

Table 1.10 Maquiladora industry, 1990–2003

Year	Firms (units)	Employment (thousands)	Real value added[a] (billions of 2003 pesos)
1990	1,703	446.4	4.8
1991	1,914	467.4	5.1
1992	2,075	505.7	5.4
1993	2,114	542.1	5.8
1994	2,085	583.0	6.5
1995	2,130	648.3	7.4
1996	2,411	753.7	8.3
1997	2,717	903.5	10.3
1998	2,983	1,014.0	12.5
1999	3,297	1,143.2	14.5
2000	3,590	1,291.2	16.3
2001	3,630	1,198.9	17.1
2002	3,003	1,071.2	16.8
2003	2,860	1,062.1	17.1

a. Deflated with the Mexican national producer price index.

Source: INEGI (2004).

is part of the NAFTA controversy over the connection between openness, economic growth, and poverty reduction (box 1.2). To convey a broad impression, table 1.12 shows OECD data on the evolution of GDP and GDP per capita for NAFTA members, using market exchange rates.

The World Bank (2003) used a regression of the US-Mexico GDP per capita ratio to make the case that NAFTA, modeled as a dummy variable covering the period 1994–2002, increased the rate of convergence between the United States and Mexico relative to the period 1960–2002. Their estimates controlled for the episode of pre-NAFTA liberalization (1986–93) and the peso crisis (October 1994 to March 1995). The model suggests that the effect of NAFTA was to increase the rate of convergence between US and Mexican per capita income. Weisbrot, Rosnick, and Baker (2004) strongly question these results. Claiming to use more authoritative data, they estimate the same model and find that NAFTA may have actually raised the ratio between US and Mexican GDP per capita, causing divergence rather than convergence.[83] This debate is far from settled. As the World Bank authors freely admit, the "combination of big events and a

83. The World Bank (2003) used adjusted GDP per capita data from the World Bank's *World Development Indicators*. Weisbrot, Rosnick, and Baker (2004) reproduced the study using data from the Penn World Tables and OECD national accounts to find a contradictory result.

Box 1.2 Poverty and income inequality in Mexico

Some scholars argue that the distributional impact of NAFTA within Mexico provides a cautionary tale. Although middle- and upper-class Mexican professionals have prospered since NAFTA, as have the northern states such as Nuevo Leon and Sonora, it is less clear that life has improved for unskilled and rural Mexicans, or the southern states such as Chiapas and Oaxaca.

In statistical terms, the poverty rate in Mexico, defined by the World Bank as the share of population living below $2 a day, declined from 42.5 percent in 1995 to 26.3 percent in 2000. Trade inspired by NAFTA arguably contributed to this improvement. Total Mexican exports might have been about 25 percent lower without NAFTA, and FDI might have been 40 percent less without NAFTA (World Bank 2003). Even though poverty has lessened, it is still high in Mexico. By comparison, the poverty rate in Chile was only 9.6 percent in 2000 (table 1.11).

One reason for the continuing high level of Mexican poverty is inequality. Measured by the Gini coefficient, Mexico has about the same inequality as other large countries in Latin America.[1] The Mexican Gini coefficient declined slightly from 53.9 in 1994 to 51.4 in 2002.[2] By comparison, the Gini coefficient in the United States is around 45.

The key to poverty reduction is faster economic growth. In the long run, economic growth requires better human capital.[3] According to the OECD 2000 Program for International Student Assessment, Mexico ranks last in the OECD on the combined score for reading and literacy among 15-year-old students.[4] Reducing the education gap is essential if Mexico hopes to compete in the global economy.

Mexican growth is also constrained by inadequate physical infrastructure (highways, urban roads, water, and sewerage), corruption, and low savings. According to Transparency International, Mexico ranks 64 out of 146 countries with a score of 3.6 against a clean score of 10.[5] The OECD notes a recent business survey that suggests new firms had to pay extraofficial sums around $4,000 to start a business in Mexico (OECD 2004d). The gross national saving rate in Mexico is around 18 percent of GDP, well below Asian levels.

1. In rural Mexico, however, where about 65 percent of the extreme poor live, inequality has worsened. The richest 10 percent of rural households increased their share of total rural income from 27 percent in 1994 to nearly 32 percent in 1998. See ECLAC (2001) and World Bank (2004).

2. The Gini coefficient measures income inequality within a population, ranging from zero for complete equality to 100 for perfect inequality. See World Bank (2003).

3. Hanson (2003), for example, found that during 1990–2000, the better-educated Mexican workers enjoyed higher wage growth.

4. Based on completion rates of upper secondary level education over the last generation, Mexico fell from rank 29 to 30. Meanwhile, South Korea moved from rank 24 to 1. See OECD (2004b).

5. The Transparency International Corruption Perception Index ranks countries based on perceptions of the degree of corruption as seen by business people and country analysts and ranges between 10 (highly "clean") and 0 (highly corrupt). In 1995, Mexico received a score of 3.18.

Table 1.11 Income inequality and poverty in Mexico

Country	Percent of population below $2/day[a]		Human Poverty Index rank[b]	Gini coefficient[c]		
	1995	2000	2003	1990	1997	2002
Argentina	n.a.	14.3	n.a.	50.1	53.0	59.0
Brazil	n.a.	22.4	18	62.7	63.8	63.9
Chile	20.3	9.6	3	55.4	55.3	55.9
Mexico	42.5	26.3	12	53.6	53.9	51.4
Canada	n.a.	n.a.	12	40.0	43.0	42.0
United States	n.a.	n.a.	17	42.8	45.9	45.0

n.a. = not available

a. Setting the poverty line at $2/day reflects the World Bank methodology, which uses purchasing power parity at 1993 prices. For 2000, international poverty lines were equivalent to $65.48 per month (1993 purchasing power parity).

b. The Human Poverty Index is based on the United Nations HPI-1 and HPI-2 human poverty indices. The HPI-1 index for developing countries measures deprivation in longevity, education, and standard of living. The HPI-2 index (for selected high-income OECD countries) includes the three dimensions in HPI-1 plus social exclusion.

c. The Gini coefficient measures income inequality within a population. The coefficient ranges from zero for complete equality (all residents receive exactly the same income) to 100 for perfect inequality (a single resident receives the total national income; other residents receive no income).

Sources: World Bank *World Development Indicators*, 2004; United Nations *Human Development Report*, 2004; ECLAC (2004); World Bank (2003); Statistics Canada, *Analysis of Income in Canada*, 2002; US Census Bureau, *Money and Income in the United States*, 1998 and 2002.

short experience with NAFTA increases the difficulty of empirically identifying the impact of the agreement on income and productivity gaps."

In a more general and longer-term study, Arora and Vamvakidis (2004) make the case that increased trade with rich countries improves the growth rate of developing countries. They report several panel regressions across 101 countries over the period 1960–99. After controlling for demographics, investment, human capital, macroeconomic stability, trade openness, and other common drivers of growth, their study found that a 1 percent higher growth rate in the rich trading partners of a developing country (weighting the partners by exports) corresponds to a 0.8 percent increase in the growth rate of the developing country itself. Similarly, Bhalla (2002) argues that globalization disproportionately benefits the poorest households (the lowest 20 percent) in developing countries. Bhalla estimates that every 10 percent increase in total income in those countries is associated with a 5 percent decline in the poverty level. We report these global results while waiting for more complete evidence on NAFTA. As of now, however, it does not appear that Mexico's GDP has converged toward the US level.

Other panel studies have found empirical links between increased trade openness and growth. Dollar and Kraay (2004) present regressions explaining national growth rates using (among other variables) decadal changes in a country's openness to trade (measured as X+M/GDP) as an

Table 1.12 GDP and per capita GDP of the NAFTA countries, 1989–2004

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
GDP at market exchange rates (billions of 2000 US dollars)																
Canada	534	535	524	528	541	567	582	592	617	642	678	714	727	752	767	790
Mexico	393	413	431	446	455	475	446	469	501	526	545	581	581	585	592	617
United States	6,988	7,110	7,075	7,292	7,486	7,792	8,002	8,290	8,661	9,035	9,409	9,765	9,790	10,024	10,330	10,783
GDP per capita, at market exchange rates (in 2000 dollars)																
Canada	19,599	19,339	18,701	18,641	18,869	19,560	19,897	20,006	20,649	21,313	22,326	23,280	23,441	23,982	24,254	n.a.
Mexico	4,907	5,088	5,088	5,177	5,184	5,319	4,946	5,088	5,330	5,490	5,606	5,886	5,804	5,765	5,765	n.a.
United States	27,998	28,200	27,773	28,321	28,707	29,514	29,907	30,667	31,681	32,636	33,713	34,575	34,479	34,775	35,488	n.a.
GDP annual growth (percent)																
Canada	2.6	0.2	–2.1	0.9	2.3	4.8	2.8	1.6	4.2	4.1	5.6	5.3	1.9	3.4	2.0	3.0
Mexico	4.2	5.1	4.2	3.6	2.0	4.4	–6.2	5.2	6.8	5.0	3.6	6.6	0.0	0.7	1.3	4.2
United States	3.5	1.7	–0.5	3.1	2.7	4.1	2.7	3.6	4.5	4.3	4.1	3.8	0.3	2.4	3.1	4.4
GDP per capita annual growth (percent)																
Canada	0.9	–1.3	–3.3	–0.3	1.2	3.7	1.7	0.6	3.2	3.2	4.8	4.3	0.7	2.3	1.1	1.8
Mexico	2.2	3.7	0.0	1.7	0.1	2.6	–7.0	2.9	4.8	3.0	2.1	5.0	–1.4	–0.7	0.0	2.8
United States	2.6	0.7	–1.5	2.0	1.4	2.8	1.3	2.5	3.3	3.0	3.3	2.6	–0.3	0.9	2.1	3.4

n.a. = not available

Sources: OECD (2004a, 2005); IMF *World Economic Outlook* database, 2005.

independent variable. On the basis of data from 101 countries, their findings indicate that a 100 percent increase in trade openness would result in a 25 to 48 percent increase in per capita income growth over a decade (Dollar and Kraay 2004, table 4).[84] Cline (2004, 228–38) surveys an earlier version of the Dollar-Kraay analysis and other studies and finds that all report significant and positive correlations between increased trade intensity and per capita income. Additional calculations indicate that free trade substantially reduces global poverty.[85] Within the Mexican context, these results suggest the wisdom of opening domestic markets to international trade, through NAFTA and other initiatives.

Dispute Settlement

Indirectly, NAFTA was designed to *increase* the number of trade disputes between the partner countries! The reason is straightforward: the larger the volume of trade, the greater the possibility of trade friction. Anticipating this equation, an important part of the negotiating strategy for Canada and Mexico was to restrain US antidumping (AD) and countervailing duty (CVD) actions and establish trilateral dispute settlement mechanisms to cover issues that might arise under the pact.

In the end, NAFTA incorporated *six* dispute settlement processes to manage and expedite the resolution of disputes among the three countries.[86] While AD and CVD cases are by far the most numerous, the most controversial dispute provisions cover investor-state disputes under Chapter 11. When investor rights were first conferred, the Chapter 11 provisions were relatively uncontroversial; in fact, they were hailed as a better forum than national courts for resolving investment disputes. In practice, however, the rules (e.g., the ban on indirect expropriation under Article 1110 and the minimum standards under Article 1105) have fostered litigation by business firms against a broader range of government activity than originally envisaged. We summarize in chapter 4 the caseloads under each class of NAFTA disputes and analyze in some detail the most contentious cases.

84. Birdsall and Hamoudi (2002), however, disagree with the methodology adopted by Dollar and Kraay. Specifically, they claim that using the trade/GDP ratio to measure trade openness is a poor proxy for government policy because it overstates the importance of trade policy in economic growth and excludes the "commodity dependence" variable. By including the effects of commodity-dependent exports, Birdsall and Hamoudi (2002) estimate a lower induced growth in per capita income.

85. After recalculating country poverty elasticities, Cline estimated that complete free trade could lift 440 million people out of poverty. His original estimate was 540 million. See technical correction to Cline (2004), www.iie.com/publications/chapters_preview/379/erratatiie3659.pdf (accessed on December 30, 2004).

86. The six processes are Chapter 11 (investment), Chapter 14 (financial services), Chapter 19 (antidumping and countervailing duties), Chapter 20 (functioning of the agreement), the NAALC (labor), and the NAAEC (environment).

In general, the dispute settlement process has worked relatively well in cases where the NAFTA obligations were clearly defined (including most Chapter 19 cases involving AD and CVD) but poorly in big cases where domestic politics have blocked treaty compliance (notably, US-Mexico trucking, Canada-US softwood lumber, and US-Mexico sugar and high-fructose corn syrup [HFCS]). In areas where the specific procedures were intentionally cumbersome, and relied heavily on consultation rather than litigation (the side pacts and general disputes under Chapter 20), most actions have been hortatory. Even the WTO dispute settlement mechanism, however, has difficulty resolving politically sensitive cases (e.g., beef hormones and genetically modified organisms). The procedures for disputes on financial services (Chapter 14) remain untested.

Labor and the Environment

The North American Agreements on Labor Cooperation and on Environmental Cooperation (NAALC and NAAEC, respectively) were negotiated and appended to the NAFTA in 1993 at the behest of President Clinton to encourage US ratification of the pact. These side agreements had three specific objectives: monitor implementation of *national* laws and regulations pertaining to labor and the environment, provide resources for joint initiatives to promote better labor and environmental practices, and establish a forum for consultations and dispute resolution in cases where domestic enforcement proves inadequate.

Despite a slow and cumbersome start, the pacts have begun to show results. Both side pacts primarily focused on oversight of national laws and practices, sponsoring comparative studies, training seminars, and regional initiatives to promote cooperative labor and environmental policies. These efforts seem small in relation to the magnitude of the problems, but they have directed fresh attention and resources to old issues.

Dispute settlement provisions in the two side pacts were a major US objective, but the record to date has been mixed. Both Mexico and Canada resisted the incorporation of penalties in the side pacts and only accepted a compromise process that was long on consultation and short on adjudication. Contrary to expectations, there has been no flood of environmental dispute cases under the NAAEC, indeed not a single state-to-state case has been adjudicated. Even when environmental cases run the adjudication gauntlet, only a factual record (with no recommendation) is released, and no follow-up takes place.

Beyond dispute settlement, the side pacts have promoted increased cooperation on transboundary problems. They have directed additional attention, and a small amount of new resources, to labor and environmental problems. While fears of "downward harmonization" have not been substantiated, progress to date pales in comparison with the scarcity of water and the burden of pollution. In fact, the absence of specific envi-

ronmental indicators makes it difficult to set spending priorities, although the current level of public funding is surely inadequate. The trade pact cannot reverse decades of environmental abuse nor can it turn the spigot on billions of dollars of remedial funding. But the Commission for Environmental Cooperation (CEC) could do more to focus attention on areas where environmental conditions are substandard. With better information on environmental conditions, and a better assessment of needed environmental investments, the CEC could make a major contribution to informed policy making in all three countries.

Trilateral, Regional, and Multilateral Cooperation

The final touchstone, based on NAFTA Article 102, is quite broad. We consider NAFTA's contribution toward furthering regional and multilateral trade agreements and also whether cooperation within NAFTA has led to deeper cooperation in other areas of North American concern, most notably energy and migration policy.

For better or worse, many of these issues are linked politically. For the United States, faster economic growth in Mexico is critical to improving security on the southern border, while deeper post–September 11 cooperation with Canada is essential to ensure the efficient flow of goods and people across the long northern border. Mexico's economic prospects depend on radical reform of Mexican tax and energy policies to allow extensive investment in a sector that has been closed to foreign investment for seven decades. While this should be a standalone priority for Mexico, political realities may require more attention to the plight of Mexican migrants in the United States as an unstated quid pro quo. At the same time, much more could be done to address border environmental and health issues—led by urban water shortages and pollution—but only with substantial financial support from the US and Mexican federal governments.

Furthering Trade Negotiations

While NAFTA contains an accession provision, it has not been used so far. At the Summit of the Americas in Miami in December 1994, Chile was hailed as a future NAFTA partner. While the "four amigos" of Miami are joined together in a series of bilateral FTAs, they have made no effort to consolidate their ties into a common pact. Based on this experience and others, it seems likely that the Free Trade Area of the Americas (FTAA), if concluded, will coexist with NAFTA and other bilateral and regional pacts.

Although NAFTA itself has not expanded, its provisions have served as precedents for bilateral FTAs between the United States and other countries. Successive agreements—with Jordan, Chile, Singapore, Australia, Morocco, Central America–Dominican Republic, Bahrain, and others under negotiation—have drawn heavily on their predecessors, with NAFTA serving as the primary template. The basic NAFTA model has been refined in the years since the agreement. Most notably, environment and labor standards have been moved from side agreements into the treaty text. In response to sovereignty concerns, investor-state dispute settlement provisions have been weakened and ill-advised capital-market provisions have been added, but nothing akin to chapter 19 arbitration exists in post-NAFTA agreements.

Indirectly, NAFTA played a role in facilitating the liberalization of world trade at the multilateral level. The agreement helped provide the final push to the completion of the Uruguay Round, which was signed in April 1994. Mexico has become a world leader in bilateral FTAs, compiling agreements with 32 countries, including pacts with the 15-member European Union in 2002 and Japan in 2004.

US-Mexican Migration

The question of migration was too hot to handle in NAFTA negotiations. Proponents of NAFTA claimed that the agreement would support Mexican development and thereby stem the flow of unauthorized migrants to the United States in the long term; after 10 years, however, the economic incentive to come to the United States—legally or illegally—remains as strong as ever. In fact, the population of unauthorized Mexican immigrants—who constitute the majority of unauthorized immigrants in the United States—is growing faster than the total unauthorized immigrant population. Although statistics on undocumented immigrants are only rough estimates, table 1.13 displays US government figures on the number of unauthorized immigrants living in the United States. According to these estimates, the population doubled between 1990 and 2000, with an annualized increase of 400,000 per year.

Philip Martin, in chapter 8 on migration, offers a possible explanation for the surge in Mexican immigration: a "NAFTA migration hump." In Martin's scenario, NAFTA increased migration in the short term—due to dislocations in the Mexican economy, primarily in agriculture. Eventually, long-term declines will follow the "hump" as a result of faster development and an aging Mexican population.

For compelling reasons, both humanitarian and economic,[87] the Mexican government has attempted to open a dialogue on "regularizing" the status of its emigrant workers. In early September 2001, President Fox eloquently raised the question with President Bush and Congress during a visit to Washington and received a sympathetic hearing. But the September 11 terrorist attacks made border security an antiterror issue rather than an immigration issue. In 2004, President Bush sought to revive his earlier proposal for a guest worker program for Mexican migrants; possi-

87. Household remittances—many of them from illegal migrants in the United States—have become an important source of foreign exchange to the Mexican economy; see table 1.1.

Table 1.13 Estimated unauthorized resident population in the United States, 1990 and 2000 (thousands)

Country/state	1990	2000	Growth (percent)	Percent of total unauthorized population in 2000
By origin				
Mexico	2,040	4,808	135.7	68.7
El Salvador	298	189	-36.6	2.7
Guatemala	118	144	22.0	2.1
Colombia	51	141	176.5	2.0
Honduras[a]	42	138	228.6	2.0
China	70	115	64.3	1.6
By residence				
California	1,476	2,209	49.7	31.6
Texas	438	1,041	137.7	14.9
New York	357	489	37.0	7.0
Illinois	194	437	125.3	6.2
Florida	239	337	41.0	4.8
Arizona	88	283	221.6	4.0
Total	3,500	7,000	100.0	100.0

a. Includes 105,000 Hondurans granted temporary protected status in December 1998.

Source: USCIS (2003).

bly the Bush administration will press Congress for legislation in 2006 or 2007. So far, however, US-Mexican collaboration on migration policy—predicted to be a logical outgrowth of NAFTA cooperation—continues to languish on the policy drawing board.

Energy Security

The text of NAFTA leaves the continent a long way from an integrated North American energy market. This is particularly unfortunate when oil prices are above $60 per barrel, and turmoil appears to be a long-term descriptor of the Middle East. As between the United States and Canada, NAFTA built on the CUSFTA by liberalizing energy investment in addition to trade. However, Mexico opted out of energy investment liberalization and also took exceptions on trade liberalization to protect its state monopoly in petroleum and electricity. US officials agreed, noting that the FTA negotiation should not be used to revise the Mexican Constitution.

Predictably, therefore, NAFTA has had little effect in reforming the Mexican energy sector. Over the next decade, Mexico must invest heavily in energy production and distribution or endure slower growth on account of widespread energy shortages.[88] So far, Mexico clings stubbornly to provisions in its 1917 Constitution that declare all subsoil minerals the property of the Mexican people (i.e., the state) and prohibit private investment in the energy sector. President Fox tried but failed to enact even modest proposals directed at electricity generation and distribution. Underproduction, rising costs, and energy shortages thus loom on the horizon for Mexico. For energy resource–rich Mexico, inadequate supplies of energy will continue to act as a drag on economic growth.

North America's energy needs over the next 25 years can only be described as massive. Whether they will be met at current prices is an open question. Continental consumption is expected to rise by an average 1.5 percent a year through 2025 (EIA 2004a). Energy consumption in the United States dwarfs that in Canada or Mexico; however, the growth rate in Mexican energy demand may well be the fastest over the next 20 years. If current trends continue, the continent will drastically increase its energy imports.

In the United States, energy policy episodically overlaps with "energy independence," usually defined as a reduced reliance on foreign oil, especially from the Middle East. Energy security should instead be considered in a regional context. Canada correctly feels it has a part to play in the US energy strategy; Mexico can contribute as well. Several proposals should be considered to better equip North America to meet the growing demand.[89]

Canada and the United States both have an interest in coming to agreement over appropriate routes for natural gas pipeline construction. The tar sands of Alberta and natural gas deposits in the Mackenzie Delta are promising sources of future Canadian production. At a minimum, Canadian oil and natural gas deposits should play a role as part of a North American "insurance policy" (in addition to the Strategic Petroleum Reserve) against acute shortages. Moreover, the United States and Canada should be working together to improve the reliability of energy transmission systems—especially electricity. This need was highlighted by the August 2003 blackout that spread across the northeast United States and eastern Canada, turning the lights out in both New York and Toronto.

Energy integration in hydrocarbons and conventional electricity has progressed between Canada and the United States since the CUSFTA entered into force in 1989. Looking to the future, Provincial Premier Dalton McGuinty envisions that Ontario will build multiple nuclear plants to satisfy its future energy needs. These plants could conceivably serve the

88. In 1999, the Zedillo government announced that over $59 billion in investment in power generation and infrastructure alone would be required to meet Mexican demand growth through 2009 ("Meeting Mexico's Electricity Needs," *North American Free Trade and Investment Report* 14, no. 2, January 31, 2004, 3). Nothing like this amount is built into Mexican investment plans. In fact, nearly all of Pemex's revenue surplus is drained off to support the federal budget.

89. Moreover, if the United States chooses to enact a petroleum import duty, as a means both of promoting conservation and raising revenue, petroleum originating in Mexico and Canada should be excluded from the duty. However, the preference should be conditioned on Canadian and Mexican willingness to charge the same duty on their own petroleum imports.

northeastern United States as well, sidestepping America's not-in-my-backyard (NIMBY) complex over nuclear power.

Mexico's failure to invite energy investment from private firms is a missed opportunity for all three countries, although the costs fall most heavily on Mexico. Basically, Mexico has three choices: find tax revenue elsewhere and allow Pemex to reinvest its financial surplus in exploration and development; invite private energy producers into Mexico to drill for oil and gas; or slide into the ranks of energy-importing countries. While the decisions to find alternative revenue sources or open its energy fields to private (and foreign) investment rest with Mexico alone, other steps can be taken to advance energy cooperation on the continent. For example, the growing demand for natural gas presents an opportunity for Mexico and the United States to cooperate on liquefied natural gas (LNG) regasification terminals in Mexico. These terminals could supply both partners with imports from the Pacific region (e.g., Indonesia, Australia, and Peru), sidestepping another NIMBY complex in US coastal cities.

Rules of Origin Reform

In certain "sensitive" sectors (e.g., textiles, apparel, and some electronics) NAFTA rules of origin were intentionally distorting. Some progress has been made since NAFTA was ratified. In response to industry suggestions, NAFTA members have negotiated changes that allow somewhat more foreign content and reduce the administrative costs of qualifying for NAFTA treatment. The first changes were negotiated for alcoholic beverages, petroleum, pearl jewelry, headphones with microphones, chassis fitted with engines, photocopiers, and some food additives. These went into effect in January 2003 in Canada and the United States and in July 2004 in Mexico.

As noted earlier, in July 2004, NAFTA countries reached a "tentative" agreement for revised origin rules for a second group of products, which account for over $20 billion in trilateral trade: spices and seasonings, precious metals, speed drive controllers, printed circuit assemblies, household appliances (except televisions), loudspeakers, thermostats, and toys.[90] These reforms came into force in January 2005 in Canada and the United States but still await ratification by the Mexican Senate.[91]

In a separate announcement, negotiators agreed to end the 55 percent value added requirement and allow the use of imported uppers in footwear; these rules will go into effect in January 2006.[92] So far, changes in the rules of origin have been ad hoc, and more such changes are expected. However, ministers have "temporarily set aside" consideration of harmonizing MFN duty rates.[93]

90. See "Ministers Agree to Change NAFTA Rules of Origin on Nine Product Groups," *Inside US Trade*, July 23, 2004, 1.

91. See "The Continued Liberalization of NAFTA Rules of Origin," *North American Free Trade and Investment Report* 15, no. 2, January 31, 2005, 1.

92. Strict rules of origin have been blamed for the overall decline in US footwear imports from Mexico since 1997 and a 22 percent drop in US imports from Mexico in the first five months of 2004 ("NAFTA Chiefs Ease Footwear Rules," *Footwear News*, July 26, 2004, 14).

NAFTA Institutions

NAFTA was designed with minimal institutional structures; none of the partners wanted to grant authority to a new regional bureaucracy. The restraint was too severe. NAFTA's skeletal institutional structure has impeded the achievement of certain core objectives.

In terms of political power, the institutional structure in NAFTA and the European Union are polar opposites. The NAFTA Commission—composed of the trade ministers of each country—is neither seen nor heard, aside from a semiannual meeting and joint statement. Beneath the commission more than 30 working groups toil on topics as diverse as goods, investment and services, rules of origin, agricultural subsidies, government procurement, sanitary and phytosanitary measures, and worn clothing. Working groups are intended to be apolitical bodies that explore and make recommendations. While the Working Group on Rules of Origin played an instrumental role in drawing up proposed reforms, and other groups have in some cases served as a forum to resolve disputes through negotiation, they remain weak and solely advisory. The NAFTA Secretariat is responsible for administering the dispute settlement processes (with the exception of those established under the side agreements); it also provides day-to-day assistance to the working groups and the commission. It has insufficient resources to do either job well.[94]

The Bottom Line

The first lesson is the most fundamental. NAFTA was designed to promote economic growth by spurring competition in domestic markets and promoting investment from both domestic and foreign sources. It has worked. North American firms are now more efficient and productive. They have restructured to take advantage of economies of scale in production and intraindustry specialization. US-Mexico trade has grown twice as fast as US trade outside of NAFTA, and foreign investment in Mexico has soared—from both North American and outside sources.

The US and Canadian economies have performed well during the NAFTA era, growing by average annual rates of 3.3 and 3.6 percent, re-

93. See "Ministers Agree to Change NAFTA Rules of Origin on Nine Product Groups," *Inside US Trade*, July 23, 2004, 1.

94. Pastor (2001) regards NAFTA's institutional structure as grossly inadequate and proposes the establishment of several new trinational bodies, including a North American Court on Trade and Investment and a North American Parliamentary Group.

spectively, over that period (OECD 2004a). Mexican growth has been a disappointment. Although Mexico grew at an annual rate of 2.7 percent between 1994 and 2003 (despite its sharp recession in 1995 following the peso crisis), this is well below Mexico's potential growth.[95] For better or worse, growth numbers cannot in the main be attributed to NAFTA—indeed NAFTA was a tiny factor in the US boom of the 1990s. While the agreement has played a positive role, particularly in Mexico, sectors that were shielded from NAFTA—particularly energy in Mexico—have also been shielded from its positive effects.

While NAFTA succeeded in its core goal—eradicating trade and investment barriers—trade pacts only create opportunities; they do not guarantee sales or new investment. In some cases, expectations (or fears) were overblown. NAFTA never had the potential for luring droves of US firms or sucking millions of US jobs into Mexico. Nor could NAFTA create "jobs, jobs, jobs" or significantly raise wages in the United States. Those gains essentially depend on good macroeconomic policies, a flexible labor force, better worker skills, and effective use of information technologies. With regard to the Mexican agricultural sector in particular, but on a wider basis as well, adjustment costs were underappreciated. Programs that were designed to alleviate adjustment burdens were inadequately funded.

In contrast to the European Union, the institutional mechanisms of NAFTA were designed to minimize interference with "business as usual" in the member states. A low level of commitment accurately reflected the political temperament of the time: There was no interest in a North American echo of European supranationalism. But NAFTA institutions were left with such minimal mandates and meager funding that they barely meet their original expectations. The prime example is NADBank, which approved only five loans in its first five years of existence. The pace has picked up sharply but still remains far below levels that would perceptibly improve border environmental conditions. Other institutions that focused on labor and the environment—the Commission for Labor Cooperation (CLC) and the Commission for Environmental Cooperation (CEC)—are similarly underfunded and have little power to influence national practices.

The dizzying mix of ad hoc NAFTA arbitration panels and standing committees (featuring six dispute settlement processes) if nothing else blurs the public image of NAFTA adjudication. In some cases, such as Chapter 20 hearings, the practice of nonbinding advisory opinions was intended to leave ultimate interpretation of NAFTA obligations in the hands of national authorities. In other cases, supposedly binding arbitration has not resolved long-running disputes because they were just too big—particularly the marathon battles involving Mexican trucking and Canadian softwood lumber. This led Canadian Prime Minister Paul Martin to complain that "we've got to find a way that disputes can not only be settled, but be settled permanently."[96] On the other hand, NAFTA critics charge that Chapter 11 was a giveaway to foreign investors, citing $13 billion of claims filed, even though Chapter 11 awards to date amount to only $35 million.

A free trade area raises the premium on cooperation between partners. But the assumption that NAFTA would lead to closer cooperation on the environment, water resources, migration, and other issues has not been borne out—with the significant exception of the 1994–95 peso crisis. Meanwhile, border security concerns—not an issue during NAFTA negotiations—are now central to the national security of the United States. Security concerns have been dealt with on an ad hoc and bilateral basis rather than in a trilateral fashion.

With the benefit of hindsight, many of NAFTA's successes and failures appear predictable. The primary focus of the agreement was to reduce barriers to investment and trade, and it succeeded in that goal. NAFTA was able to bring the continent closer to free trade; this alone will not guarantee prosperity, but without free trade, prosperity would prove more elusive. The agreement improved the quality of life in North America but clearly not enough. Other ingredients are essential—good governance, good infrastructure, and good education, which are conspicuously short in many parts of North America, not only in Mexico.

The bottom line is that NAFTA is a great building block, but much remains to be built. In the rest of this book, we analyze particular sectors and issues and offer recommendations for constructive work.

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95. The OECD estimates that Mexico's potential growth rate could be lifted to 6 percent through improvements in infrastructure and education ("Tequila Slammer—The Peso Crisis Ten Years On," *The Economist*, January 1, 2005).

96. See "NAFTA Needs Fixing, PM Says," *The Globe and Mail*, July 8, 2004, A4.

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Appendix 1A
NAFTA and Trade Generation: Review of the Literature

Researchers have used two methods to attempt to answer the question, "How much trade did NAFTA create?" The first applies an ex ante construct: A computable general equilibrium (CGE) model compares the difference in trade with NAFTA against a hypothetical world without NAFTA. NAFTA itself is modeled as simply lower (or zero) tariff rates and ad valorem equivalents of nontariff barriers. This is a bare-bones conceptualization of the agreement. The second method applies an ex post regression: A gravity model explains the size of trade between nations in terms of several control variables.[97] NAFTA's presence or absence for a given year is one of the variables. Any trade expansion associated with the NAFTA dummy variable is attributed to NAFTA.

CGE models could be (and were) deployed before NAFTA came into force, and this was an advantage. The disadvantage is that CGE models rely on a complex network of assumptions, and the results may change substantially with a small change in the assumed framework.[98] Also, these models take into account only quantifiable barriers to trade, not investment liberalization, dispute settlement, or other parts of the agreement that have an indirect effect on trade flows.

- Brown (1992) surveyed CGE models of NAFTA and found that while all of the models considered predicted an increase in trade within North America on account of NAFTA, the increase varied from less than 5 to over 40 percent of total trade depending on the assumptions.
- Burfisher, Robinson, and Theirfelder (2001) found the consensus of CGE modelers seemed to be that "the [welfare] effects of NAFTA would be positive but small for the US, and positive and large for Mexico."
- Fox (2004) assessed the performance of the Michigan model for NAFTA (Brown, Deardorff, and Stern 1992) and added capital, labor, and balance of trade shocks to account for at least some of the exogenous events that occurred in the NAFTA era.[99] Using this model, Fox calculated that NAFTA generated a welfare gain of 0.1 percent of GDP

97. These models are called gravity models because two control variables are always country size and distance. Like Sir Isaac Newton's theories on gravitational pull, trade is directly related to country size (measured in GDP terms) and inversely related to distance.

98. Some particularly hotly debated assumptions are constant versus increasing returns to scale, static versus dynamic effects, and the appropriate values of Armington elasticities. Brown (1992) provides a useful overview of the choices that must be made when constructing a CGE model.

99. All of these events are regarded as exogenous in the model, but NAFTA might have triggered or augmented some of them. The Brown, Deardorff, and Stern model accounts for capital accumulation and economies of scale as a result of the reduction in trade barriers.