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www.naalc.org
214.754.1100
fax 214.754.1199

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CHAPTER 2

No Pain, No Gain: Lessons from the Canada–U.S. Free Trade Agreement

Daniel Trefler
Institute for Policy Analysis, University of Toronto
Harris Public Policy School, University of Chicago

Economists are fixated on the benefits of international trade agreements. Free trade raises productivity, wages, and consumer welfare by forcing countries to specialize in the narrower range of goods for which they have a cost advantage. But lurking behind this tale of industrial restructuring are laid-off workers; workers must leave high-cost, import-competing industries in search of new jobs. To the dismal scientist, it is taken for granted that without industrial restructuring and its handmaiden of worker layoffs there can be no benefits from free trade. To an unemployment-weary Canadian workforce seeking job security, nothing could be more cruel than this message of "no pain, no gain."

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This paper paints a balanced picture of the costs and benefits of the Canada–U.S. Free Trade Agreement (CAFTA) in January 1989.* Attention is restricted to the tradables sector, which includes manufacturing, natural resources, and agriculture. I will document that CAFTA brought on the destruction of 138,000 jobs, or 6 percent of the tradables workforce. Paradoxically, this job destruction was set against a large increase in production. CAFTA raised value added by $3.5 billion, or 3 percent, since the start of the agreement. Value added is the sum of labor and capital costs. This jobless recovery—job losses and output expansion—is explained by rising productivity. For industries previously protected by tariffs, CAFTA raised productivity by a remarkable 2.5 percent per year. This gain is from industrial restructuring and is a vindication of the economists' message.

The pain, of course, is lost jobs. And rising productivity was not translated into more money in the pockets of workers who kept their jobs; where productivity growth was most rapid, wage growth was most sluggish. To top things off, CAFTA contributed to rising wage inequality.

On balance, Canada gained $50,000 per lost job for a job that pays $26,000 per worker. Restated, society can afford a 2-year severance package for each lost job. This "side payment" still leaves society with the benefits of lower consumer prices. Conversely, this calculus ignores wage stagnation and exacerbated income inequality. The CAFTA scorecard: B minus. What follows is a more detailed analysis.

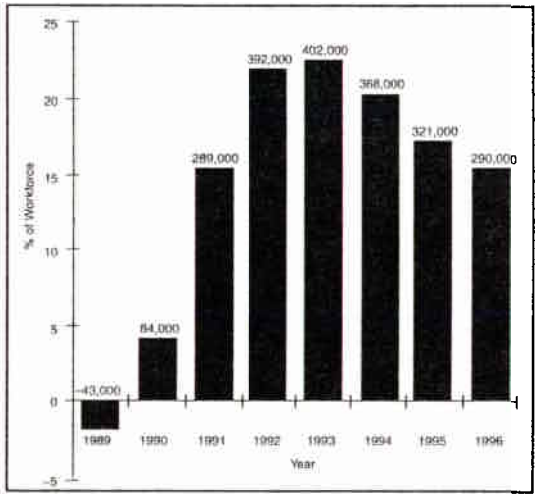
Q. Why did the tradables sector (manufacturing, natural resources, and agriculture) lose one in every four jobs right after implementation of CAFTA?

A.
- After a prolonged, 7-year expansion, a recession was due.
- The Bank of Canada fought against inflation, raised interest rates, and strengthened the dollar.
- Relative to that of the United States, Canadian productivity had been eroding for years.
- The Canada–United States Free Trade Agreement took effect.

Lost Jobs Peaked in 1993

Jobs are the number one issue in the Canadian economy and so serve as a benchmark for evaluating the performance of CAFTA. Figure 2.1 plots the lost jobs in the tradables sector since 1988. The lost jobs peaked in 1993, with about 400,000 jobs lost. This figure amounts to 23 percent of the jobs in the tradables sector. The figure has since fallen to 290,000, which still represents 15 percent of the workforce.

Figure 2.1. Lost Jobs in the Tradables Sector since CAFTA
(January 1989)



It has been common in the Canadian press to attribute most of these job losses to CAFTA. Unfortunately, the economy has been subjected to a number of other changes in the interim. The most important of these changes was the recession that was exacerbated by the Bank of Canada's battle against inflation (Fortin 1996; Gaston and Trefler 1997).

To disentangle the effects of CAFTA from other events, I adopted the treatment-control framework familiar from the medical literature (Card and Krueger 1994). The control group consists of those industries that had very low or nonexistent tariffs before 1989. It is dominated by the natural resource and automotive sectors. Against this are two types of patients. The first is the high-tariff group of industries. In 1988, the year preceding implementation of CAFTA, these industries had tariff rates of between 8 percent and 23 percent. The group is primarily composed of the textile, clothing, and leather products industries. These are industries that one expects to be hard hit by CAFTA because they cannot compete on labor costs with southern U.S. states.[1] The second is the low-tariff group with pre-CAFTA rates of between 3 percent and 6 percent. This diverse group of industries includes food products, steel, and pharmaceuticals. The effect of CAFTA here is less clear. Some firms will recognize their comparative disadvantage and will either cease operations or relocate in the South. Other firms will recognize the tremendous advantage of access to the U.S. market and will respond with aggressive capital improvements to existing plants, a trimming of product lines to lengthen production runs, new marketing campaigns, and other innovations.

The treatment-control framework starts by randomly assigning subjects (industries) to a control, or placebo, group and a treatment group. The different responses of the two groups are then attributed to the treatment. In a similar vein, the different experiences of the high-tariff and low-tariff groups relative to the control group will be attributed to CAFTA.

All of this requires one to believe that the groups are really similar, except for exposure to CAFTA tariff reductions. Yet the fact that the groups have different tariffs is itself evidence of differences. Table 2.1 offers additional qualifications. The groups were constructed so that each employs about 700,000 workers, or one-third of the tradables sector's labor force. The groups differ most in terms of productivity as measured by value added per worker. Productivity and wages differ significantly as between the high-tariff and control groups: the control group is twice as productive and pays one-third more.[2]

Table 2.1. Tradables-Sector Characteristics*

	Tariff Rate (percent)	Employment	Value Added (millions)	Productivity (VA per worker)	Weekly Earnings
High-Tariff Group	10.0	743,000	$22,000	$30,000	$427
Low-Tariff Group	5.6	708,000	44,000	62,000	554
Control Group	0.7	724,000	49,000	68,000	569
Total, Tradables	4.4	2,176,000	115,000	53,000	516

*The tradables sector includes manufacturing, natural resources, and agriculture.

Q. How many of the lost jobs are attributable to CAFTA?

A. • In 1996, 138,000 of the 290,000 lost jobs were caused by CAFTA.

Figure 2.2 plots lost jobs since 1988 for the high-tariff and control groups. For example, the control group shrank 7 percent between 1988 and 1996, whereas the high-tariff group shrank 17 percent. The high-tariff group contracted about twice as much as the control group, indicating large CAFTA-induced job losses. The bottom panel of figure 2.2 plots the difference between the high-tariff and the control group employment contractions. For example, in 1996 the difference was about 10 percent (17%–7%). One can translate this figure into jobs lost by multiplying by the 1988 employment level in the high-tariff group, which gives an estimate of 74,000 lost jobs in 1996.

Figure 2.3 plots corresponding numbers for the low-tariff industries. Trade theory is unclear about the prediction here, though I would have predicted modest job gains. However, even the low-tariff group experienced significant employment reductions relative to the control group. By 1996, the low-tariff group had contracted by 16 percent, or 9 percent more than the control group. This figure translates into 64,000 lost jobs as of 1996. Summing the losses of the two groups yields 138,000 lost jobs.

Figure 2.2A. Employment Losses Since 1988: High-Tariff Industries

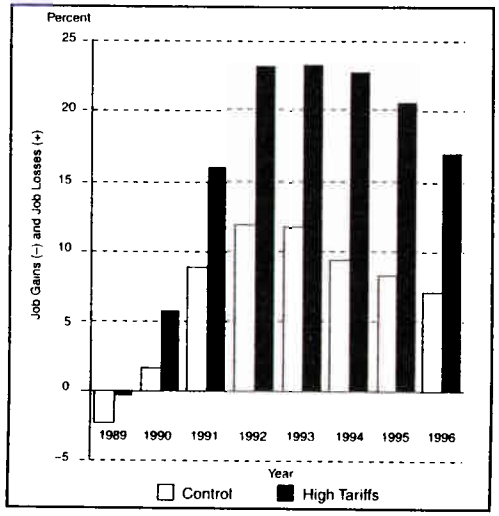


Figure 2.2B. CAFTA-Induced Job Losses Since 1988 in High-Tariff Industries

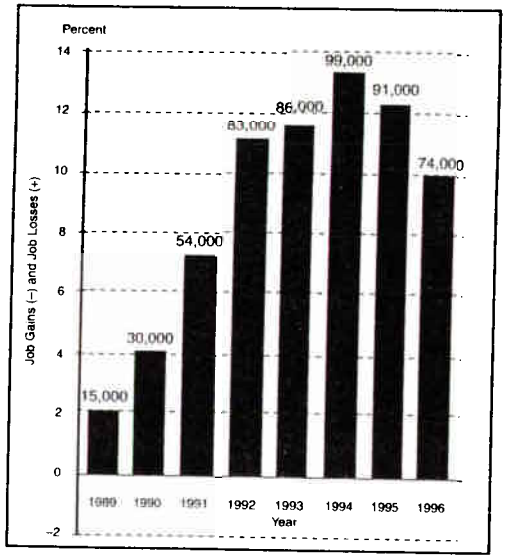


Figure 2.3A. Employment Losses Since 1988: Low-Tariff Industries

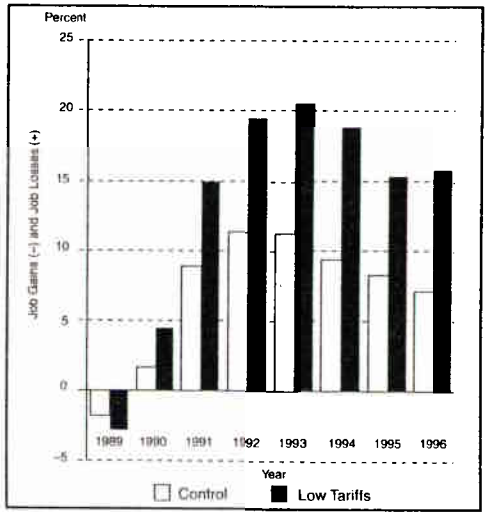
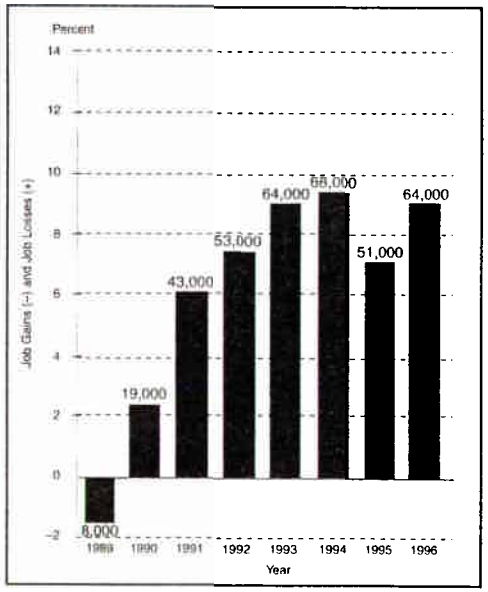


Figure 2.3B. CAFTA-Induced Job Losses Since 1988: Low-Tariff Industries



Q. Why were so many jobs lost? Did CAFTA allow U.S. firms to compete more successfully?

A.
- For high-tariff industries, output contracted in response to competitive pressures from U.S. firms. CAFTA reduced 1996 output by $2 billion.
- A reduction was not so for low-tariff industries. CAFTA increased 1996 output by a much larger $5 billion.
- The cumulative 1988–1996 effect was a $12 billion rise in Canadian value added.

Figures 2.4 and 2.5 display the value-added growth since 1988. As expected, value added stagnated in the high-tariff group. Relative to the control group during 1988–1996, value added contracted by 8 percent, or about $2 billion. (Note that $2 billion is 8 percent of 1988 value added in the low-tariff group. Also, all data are in 1986 constant dollars.) The cumulative output loss since 1989 was $9 billion. The results for the low-tariff industries are surprising. Relative to the control group during 1988–1996, output grew by 12 percent, or $5 billion. The cumulative effect was a $21 billion increase in output. Summing over the high- and low-tariff industries, 1996 output rose by $3.5 billion and cumulative output rose by $12 billion.

Q. Why were so many jobs lost in the low-tariff industries even though output expanded? Is CAFTA implicated in this jobless recovery?

A.
- CAFTA brought about remarkable productivity growth of 5 percent per year. More output was produced with fewer workers.
- Had productivity not grown so fast, 74,000 jobs would have been created in the low-tariff group and only 50,000 jobs lost in the high-tariff group.
- Had productivity not grown so fast, 24,000 new jobs would have been created instead of 138,000 jobs destroyed.

In the low-tariff group, output grew by 2.5 percent per year. At the same time, employment shrank by 2.1 percent per year (see table 2.2).

Figure 2.4A. Value-Added Growth Since 1988: High-Tariff Industries

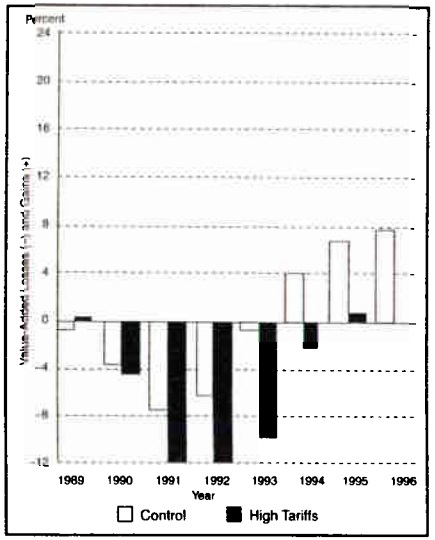
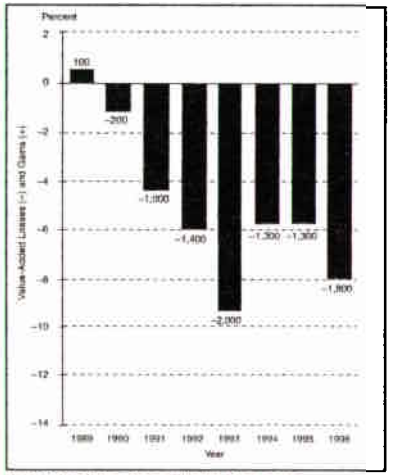


Figure 2.4B. CAFTA-Induced Value-Added Growth Since 1988: High-Tariff Industries



Note: Numbers above (below) bars are millions of 1986 dollars.

Figure 2.5A. Value-Added Growth Since 1988: Low-Tariff Industries

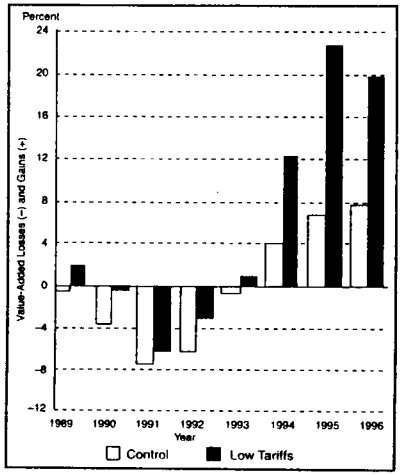
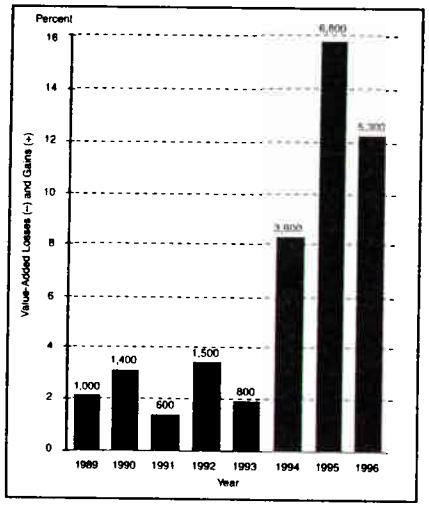


Figure 2.5B. CAFTA-Induced Value-Added Growth Since 1988: Low-Tariff Industries



Note: Numbers above bars are millions of 1986 dollars.

While this type of jobless recovery permeated the economy, it was most pronounced in the low-tariff group. Jobless recovery is intimately related to productivity since productivity is often measured as value added per worker:

(1) PROD = VA/WORKER

where PROD is productivity, VA is value added, and WORKER is employment. It follows that productivity grows by the difference between output and employment growth,[3]

(2) %PROD = %VA – %WORKER

where "%" means percentage of change.

Table 2.2. Average Annual Growth Rates, 1988–1996[a]

	Employment Growth (percent)	Value Added Growth (percent)	Productivity Growth (percent)	CAFTA Job Losses Net of Productivity Growth
Control	–0.9	1.0	2.0	—
High	–2.1	0.0	2.5	50,000 Jobs Lost
Low	–2.0	2.5	5.3	74,000 Jobs Gained

[a] The growth rate between 1988 and 1996 divided by the number of years (8). See endnote 3 for an explanation of why equation (2) does not hold exactly.

Table 2.2 shows productivity growth. It was dramatically highest for the low-tariff group. *Table 2 provides a vindication of comparative advantage theory. Removing tariffs dramatically improved productivity in the sector that stood to benefit most from access to the larger U.S. market.*

This growth in productivity leads one to wonder what job losses would have been like had they been driven by output changes rather than by rising productivity. While lost jobs by any other name are still lost jobs to those afflicted, the fact is that rising productivity is the core of rising national living standards and so needs to be figured into the credit side of the CAFTA balance sheet. One way of doing this is to ask what employment would have been had productivity in the low- and high-tariff groups grown at the same rate as productivity in the

control group. Roughly, employment can be projected by rewriting equation 2 as[4]

(3) $\%WORKER^*_{HIGH} = \%VA_{HIGH} - \%PROD_{CONTROL}$

and

(4) $\%WORKER^*_{LOW} = \%VA_{LOW} - \%PROD_{CONTROL}$.

For the low-tariff group, the result is that we now have 74,000 jobs gained instead of 64,000 jobs destroyed. For the high-tariff group, we have 50,000 jobs destroyed instead of 74,000 jobs destroyed. Summing over the two groups gives 24,000 jobs created rather than the actual 138,000 jobs destroyed. Clearly, most of the job destruction is associated with CAFTA-induced productivity gains.

Q. Does this change in the creation and loss of jobs mean rising productivity in each industry or a shift of output to industries with high productivity?

A.
- Most of the change reflects rising productivity in each industry.
- CAFTA had little effect on the productivity of high-tariff industries, but raised productivity in the low-tariff industries by an enormous 4 percent annually.

Why Did Productivity Rise?

The trouble with aggregate productivity numbers is that they are very difficult to interpret. Did productivity rise because of a shift in the composition of output from low-productivity to high-productivity industries? Or did productivity rise in each industry? Two good examples of the latter appear in the data. Consider the manufacturing of electrical products (excluding household appliances and household receivers), which is the largest industry in the low-tariff group. Over 1988–1996, that industry experienced a 100 percent increase in output and a 25 percent decline in employment. This figure translates into a 166 percent increase in productivity. This increase is clearly an example of how CAFTA enabled the industry to thrive. Furniture and fixtures is a medium-sized industry in the high-tariff group. Under CAFTA,

that industry was expected to disappear and indeed showed every sign of doing so in the early years of the agreement. However, the industry has made something of a comeback with Palliser Furniture of Winnipeg leading the way. Over the 1988–1996 period, industry value added held its own in the face of intense U.S. competition, employment fell by 24 percent, and productivity rose by 33 percent.

We can return to the treatment-control framework to analyze the effects of CAFTA on productivity. I calculated productivity growth in each industry and then calculated the group average using 1988 employment and value-added weights.[5] Figure 2.6 plots average annual productivity growth for each of the three groups. High-tariff industries experienced productivity growth only 0.4 percent higher than control-group industries; CAFTA had little effect. In contrast, average productivity growth in low-tariff industries outstripped growth in control-group industries by 4 percent. This growth is a remarkable testament to the benefits of trade agreements, benefits that play center stage in economic theory.

Q. Has rising productivity been met with rising earnings or wages?

A.
- No. Earnings growth (for all workers) was the same in all groups despite rapid productivity growth in the low-tariff group.
- No. Wages (for workers paid by the hour) declined in all groups despite rising productivity. Further, wages declined most where productivity rose fastest.
- No. Similar conclusions hold within the low-tariff group.
- Inequality of rising earnings was most pronounced in the low- and high-tariff industries.

One would hope that rising productivity would be met by rising wages. This has not been the case either across groups or within groups. Table 2.3 ranks groups by average annual productivity growth in the CAFTA period. Despite large differences in productivity growth across the three groups, earnings growth has been the same. For workers paid by the hour, faster productivity growth has been met by faster wage *declines*. Thus, there is no link between productivity and wage growth.

Figure 2.6. Average Annual Productivity Growth, 1988–1996

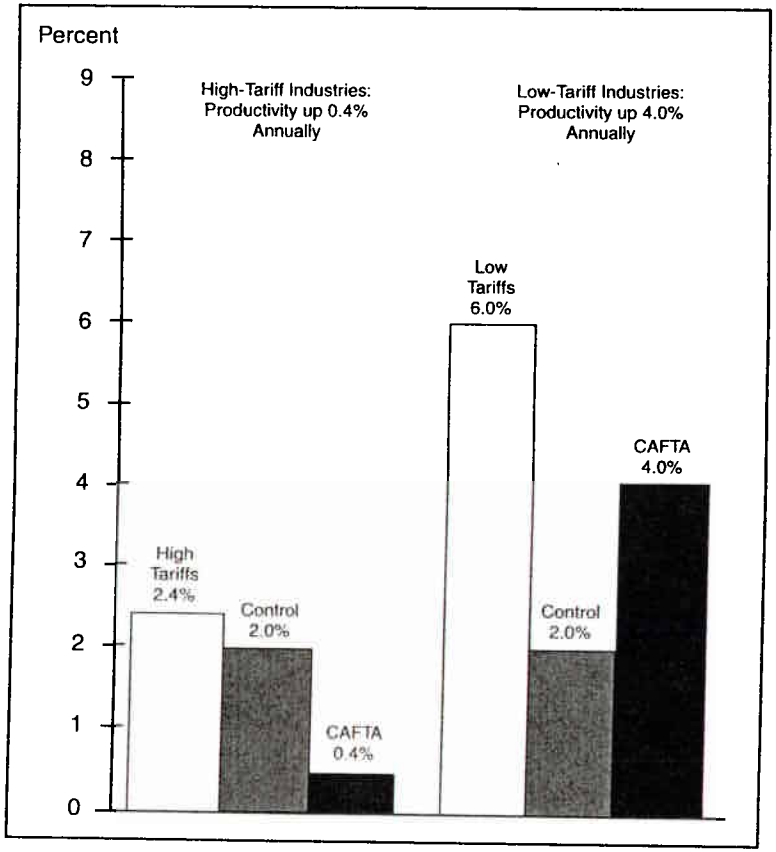


Table 2.3. Average Annual Productivity and Wage Growth, 1988–1996

	Productivity Growth (percent) (1)	Earnings Growth: All Workers (percent) (2)	Wage Growth: Workers Paid by the Hour (percent) (3)	Rising Income Inequality (2) – (3)
Control	2.0	0.5	–0.1	0.6
High	2.4	0.6	–0.6	1.2
Low	6.0	0.5	–1.2	1.8

Within-group results are slightly different. For the control group, we get the expected result that each 1 percent rise in productivity is accompanied by a 0.7 percent rise in earnings. However, for the low-tariff group, we find that each 1 percent rise in productivity is accompanied by a 0.5 percent decline in earnings.

Table 2.3 also provides information on rising income inequality. Salaried workers tend to earn more than workers paid by the hour (Berman, Bound, and Griliches 1994). Thus, all workers (salaried plus hourly) tend to earn more than those paid by the hour. (Variation in hours worked turns out not to be important here.) From table 2.3, earnings have been rising and wages have been falling. Restated, high-paid salaried workers have experienced rising income while low-paid workers have experienced falling incomes. This is evidence of the rising income inequality that has been documented by others. What is remarkable is that rising income inequality has been most pronounced in both the high-tariff and the low-tariff industries, especially the latter. Thus, *CAFTA exacerbated income inequality.*

Q. What is the CAFTA scorecard?

A.
- B Minus.
- It generated enough surplus to cover a 2-year severance package for displaced workers.
- Consumers benefited from lower prices.
- Falling wages, rising income inequality, and rising workplace insecurity are all effects of CAFTA.

The effects of CAFTA were remarkably in accord with the theory of comparative advantage. Firms with high tariffs were hit hard both in terms of employment and output. Nevertheless, the firms best positioned to enter the U.S. market thrived. Unfortunately, their productivity growth was so enhanced that jobs were actually lost even in this sector. In addition, the agreement slowed wage growth, worsened income inequality, and raised job insecurity.

It is impossible to quantify all these effects without much more work. However, consider the following: Value added rose by $12 billion, of which approximately two-thirds, or $8 billion, is left after capital ex-

penses. At least 160,000 jobs were lost (the figure for the 1994 trough). This change leaves a $50,000 surplus per job for a job that on average pays $26,000 per year. That figure is enough to cover 2 years of severance pay. While not generous, it is not skimpy either. And the calculus ignores consumer benefits from lower prices. This is a reasonable, but not a stellar, return from policy. I give it a B minus.

Endnotes

[1]Note that U.S. and Canadian tariffs are highly correlated. Industries with high tariffs in one country have high tariffs in the other country.

[2]Other possible differences between the groups are differential responses to business cycles and differential secular movements associated with "deindustrialization." Gaston and Trefler (1997) show this is not a serious issue. To the extent that ignoring these differences results in misleading conclusions, ignoring them biases slightly upward the effect attributed to CAFTA.

[3]More precisely, the formula is

$$\frac{\Pi_{96i} - \Pi_{88i}}{\Pi_{88i}} = \frac{Y_{96i} - Y_{88i}}{Y_{88i}} - \frac{L_{96i} - L_{88i}}{L_{96i}} - \frac{Y_{96i} - Y_{88i}}{Y_{88i}} \times \frac{L_{96i} - L_{88i}}{L_{96i}}$$

where:

Π = productivity,

Y = value added,

L = employment, and

i = control, low or high (the group). In table 2.2, employment growth is measured as

$(L_{96i} - L_{88i})/L_{96I}$

Note that the denominator is

L_{96I} rather than L_{88i}.

In table 2.2, employment growth and value-added growth are the first and second terms on the right-hand side, respectively.

[4]More precisely, the equation in endnote 3 can be rewritten as

$L_{96i} = L_{88i} (Y_{96i}/Y_{88i}) / (\Pi_{96i} / \Pi_{88i})$.

Define $L^*_{96LOW} = L_{88LOW} \times (Y_{96LOW}/Y_{88LOW})/(\Pi_{96CONTROL}/\Pi_{88CONTROL})$

where

$\Pi_{96CONTROL}/\Pi_{88CONTROL} = 1.02 \times 8$.

From the control group's productivity growth per year comes 1.02 (2.0%) times the number of years (8). The analysis of the job gains and losses from CAFTA proceeds as before but with L^*_{96LOW} replacing L_{96LOW}. The procedure for the high-tariff group is analogous.

[5]The weights used were 1988 group shares of employment and value added. Using the notation of previous endnotes, define

$\omega_{L,HIGH} = L_{88j}/\Sigma_{j\in HIGH} L_{88j}$ and $\omega_{Y,HIGH} = Y_{88j}/\Sigma_{j\in HIGH} Y_{88j}$.

The weights used for the high-tariff calculations were $(\omega_{L,HIGH} + \omega_{Y,HIGH})/2$.

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