Identifying the effects of NAFTA on the U.S. economy between 1992 and 1998: a decomposition analysis

by
Peter B. Dixon and Maureen T. Rimmer[*]
Victoria University, Melbourne, Australia

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Abstract

Trade policies often get a bad rap. It is often difficult to pinpoint the causes of poor economic outcomes and trade policies become a convenient scapegoat.

In a much quoted article, Kehoe (2005) criticizes CGE modelers for underestimating the trade-stimulating effects of NAFTA. His evidence is that in the 10 years following the signing of NAFTA, trade volumes for the NAFTA countries grew more quickly than was shown *ex ante* in the CGE results. However, properly interpreted the CGE results were not about how fast trade would grow in these 10 years. Rather they were about how NAFTA would affect growth in trade. Put another way, the CGE modelers were making projections of how much trade growth should be *attributed* to NAFTA.

In this paper, we address the attribution issue. Using a detailed CGE model, we decompose movements in U.S. macro and industry variables from 1992 to 1998 into the contributions of NAFTA factors and other factors.

1. Introduction

The aim of this paper is to identify as closely as possible the effects on the U.S. economy of the North American Free Trade Agreement (NAFTA) in the early years of its implementation.[1] Towards this objective, we provide a decomposition of U.S. growth in macro variables and industry outputs between 1992 and 1998.

To see what is involved we suggest that readers look immediately at Tables 1 and 2. The layout of these tables can be understood by examining the first row of Table 1. It shows that between 1992 and 1998 real GDP for the U.S. grew by 24.40 per cent (row 1, column 1). Of this, 0.19 per cent (row 1, col 2) is attributable to what we refer to as NAFTA factors. Within this 0.19 per cent, columns 3 to 6 in row 1 identify the contributions to GDP of changes specific to Canada and Mexico in U.S. tariffs and other aspects of U.S. trading relations. Column 7 of row 1 shows that growth of 24.20 per cent in U.S. GDP was attributable to factors such as technical change (col 8), growth in aggregate employment (col 9) and developments in international trade not specific to Canada and Mexico (col 10).

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[*] We thank Alan Fox who supplied the trade data that we used in our analysis and helped us to interpret it.

[1] NAFTA came into force on January 1, 1994.

The methodology underlying the results in Tables 1 and 2 is explained in a companion paper.[2] It relies on historical and decomposition simulations with USAGE, a detailed model of the U.S. economy. In this paper we describe the results in a way which we hope is comprehensible to readers who are not interested in methodological issues. However, before we start the description it is necessary to set out what we mean by NAFTA factors.

1.1. NAFTA factors: definition

These factors have two components:

a) *movements in U.S. tariffs on imports from Canada and Mexico beyond those applying to imports from the rest of the world (ROW).* To clarify what this means we take the example of icecream from Canada. In 1992 the U.S. tariff rates on imports of icecream from Canada and ROW were 27.4 and 25.8 per cent. Between 1992 and 1998, the ROW rate dropped by 1.1 percentage points, from 25.8 per cent to 24.7 per cent. We assume that in the absence of a special relationship with Canada such as NAFTA, the tariff on icecream imports from Canada would also have fallen by 1.1 percentage points, from 27.4 per cent to 26.3 per cent. In fact, by 1998 the tariff rate on icecream from Canada was only 12.1 per cent. In our decomposition analysis, what we attribute to NAFTA is the effects of the extra movement in the tariff rate beyond the ROW movement, a fall of 14.2 percentage points, from 26.3 per cent to 12.1 per cent.

b) *changes in U.S. trading condition with Canada and Mexico beyond those applying to ROW.* By trading conditions we mean $US cif import prices and the positions of foreign demand curves for U.S. products (schedules showing the amounts that can be sold at different foreign-currency fob prices). Trading conditions for the U.S. on both the import and export sides are affected by many factors including: growth in the world economy; changes in technologies and preferences in U.S. trade-partner countries; and changes in taxes and tariffs imposed by trade partners. For 1992 to 1998, we measure changes in trading conditions with regard to both exports and imports for Canada, Mexico and ROW. Then in our decomposition analysis, what we attribute to NAFTA factors is the effects of the extra movements in trading condition for Canada and Mexico beyond those for ROW. To clarify, we consider the case of motor vehicle parts. For 1992 to 1998 we estimate that the cif price of imports of motor vehicle parts from ROW increased by 1.5 per cent while the corresponding price for imports from Mexico decreased by 4.5 per cent (perhaps reflecting cost reductions in Mexico associated with increased shipment to the U.S.). At the same time, the ROW demand curve for exports of motor vehicle parts from the U.S. moved out by 23 per cent whereas the Mexican demand curve moved out by only 11 per cent (perhaps reflecting increased ability of Mexican producers to supply their own market). In our decomposition analysis the change in trading conditions with Mexico for motor vehicle parts that we attribute to NAFTA is the joint effects of a 6 per cent reduction in the cif price of imports from Mexico (=4.5+1.5) and a 12 per cent inward movement in the Mexican demand curve for U.S. exports (=23-11).

While we refer to the factors measured by a) and b) as NAFTA factors, it should be recognized that they are not exclusively associated with the Agreement. For example, we estimate that the ROW demand curve for U.S. steel springs shifted out relative to the Mexican demand curve. It is possible that this relative shift was partly caused by developments outside the Agreement related to a stronger shift in Mexican demand towards

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[2] The companion paper is in preparation. The methodology is close to that in Dixon *et al.* (2000) and Dixon and Rimmer (2004).

manufactured products from China than the shift in ROW demand towards these products from China. In Tables 1 and 2, NAFTA effects embrace the effects of all differences between changes in U.S. tariffs and trading conditions with ROW and those with Mexico and Canada. However, we think it is reasonable to suppose that the Agreement was a major part of these differences.

2. Macro results: description of Table 1

Column 1 of Table 1 shows observed movements in U.S. macro variables for 1992 to 1998. Over this period U.S. GDP grew by 24.40 per cent (row 1). Growth in U.S. trade greatly exceeded growth in GDP with imports expanding by 73.59 per cent and exports by 48.32 per cent (rows 9 and 5). Growth of trade with Mexico was particularly rapid. U.S. imports from Mexico grew by 240.90 per cent and U.S. exports to Mexico grew by 77.64 per cent (rows 11 and 7). Column 2 of Table 1 shows the contributions of NAFTA factors to the movements in column 1, and column 7 shows the contributions of other factors.

2.1. Contribution of NAFTA factors

Column 2 implies that NAFTA effects on the U.S. macro economy were small but generally favourable: a 0.19 per cent increase in GDP and 0.42 and 0.38 per cent increases in private and public consumption. The effects on U.S. trade were more noticeable but still moderate: 5.77 and 3.25 per cent increases in imports and exports. By contrast, NAFTA factors had a major effect on the composition of U.S. imports by source and U.S. exports by destination. Of the 240.90 per cent increase in imports from Mexico, NAFTA factors accounted for 143.91 per cent, and of the 77.64 per cent increase in exports to Mexico, NAFTA factors accounted for 27.88 per cent.

Columns 3 to 6 of Table 1 break the NAFTA contributions into four component parts.

Column 3: Effect of NAFTA-related reductions in U.S. tariffs on imports from Canada

Column 3 shows the effects of changes in tariff rates on imports from Canada beyond those applying to the rest of the world (excluding Mexico). On average, the shocks in column 3 are a reduction in the power of the U.S. tariffs on Canadian imports of 0.34 per cent, that is NAFTA had the effect between 1992 and 1998 of reducing U.S. tariffs rates on imports from Canada by only 0.34 percentage points relative the rates applying to U.S. imports from ROW. This tiny average reduction reflects the fact that U.S. tariff rates on imports from Canada were very low in 1992, averaging only about 0.5 per cent. They had already been reduced by the earlier Canada-U.S. free trade agreement signed in 1988.

With the shocks in column 3 of Table 2 being so small in average terms, it is not surprising that the macro outcomes are negligible. The only noticeable effects are on the composition of imports by source. Imports from Canada increase by 2.74 per cent largely replacing imports from Mexico (-1.10 per cent) and ROW (-0.37 per cent). The overall effect on imports is an increase of 0.10 per cent.

Column 4: Effect of NAFTA-related reductions in U.S. tariffs on imports from Mexico

Column 4 is similar to column 3 except that column 4 is concerned with the effects of changes in tariff rates on imports from Mexico beyond those applying to the rest of the world (excluding Canada).

On average, the shocks in column 4 are a reduction in the power of the U.S. tariffs on Mexican imports of 0.78 per cent. This has the effect of increasing imports from Mexico by 11.81 per cent, largely at the expense of imports from Canada (-0.94 per cent) and ROW (-0.63 per cent). The overall increase in imports is 0.08 per cent, slightly less than that in

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column 3 even though the reduction in the power of the tariffs on imports from Mexico in column 4 (0.78 per cent) is greater than that on imports from Canada (0.34 per cent) in column 3. This is explained by the data for 1992 which show the value of U.S. imports from Canada at about 2.5 times those from Mexico.

Columns 5 and 6: Effects of non-tariff-related NAFTA factors (changes in cif prices for imports from Canada and Mexico relative to ROW and shifts in Canadian and Mexican demand curves for U.S. products relative to ROW)

We expected to find that NAFTA reduced the $US cif prices of U.S. imports from the NAFTA partners particularly imports from Mexico. Our reasoning was that closer economic integration with the U.S. would allow firms in NAFTA partner countries to achieve cost-reducing economies of scale by improving the suitability of their products for the U.S. market thereby increasing export volumes. Our estimates for 1992 to 1998 support this story strongly for some commodities. For example, they show the cif price of U.S. imports from Mexico falling by more than 20 per cent relative to the cif price of imports from ROW for 37 of the 500 USAGE commodities including: Aircraft (commodity 357), Tirecord fabric (109), Railroad equipment(362), Jewellery materials (382), Pulp mills (153) and Laboratory instruments (377). Averaging over all commodities, the cif price of U.S. imports from Mexico fell by about 7.5 per cent relative to the price of imports from ROW. This was responsible for a large increase in U.S. imports from Mexico (134.04 per cent, row 11, column 6). By contrast, the cif prices of imports from Canada showed almost no movement relative to prices of imports from ROW.

On the export side, we find favourable changes in trading conditions in Canada and Mexico relative to ROW for some industries and unfavourable changes for others. Favorable changes are associated with NAFTA-related cuts in Canadian and Mexican tariffs on U.S. products. As described in subsection 1.1, unfavorable changes may be associated with cost reductions in the NAFTA partners allowing their domestic producers to compete more strongly with imports from the U.S. Favorable changes predominate for U.S. exports to Canada while unfavorable changes predominate for U.S. exports to Mexico.

Relative to the effects shown in columns 3 and 4 for NAFTA-related U.S. tariff changes, the effects shown in columns 5 and 6 for NAFTA-related shifts in trading conditions are large. Reductions in cif import prices (especially for imports from Mexico) and easier access to NAFTA markets (especially for exports to Canada) allowed the U.S. to improve its terms of trade (the prices of its exports relative to the prices of its imports). NAFTA factors relating to Canada generated a terms-of-trade improvement of 1.25 per cent (column 5, row 20) while those relating to Mexico generated an improvement of 1.57 per cent (column 6).

Because terms-of-trade improvements allow a country to obtain more imports for any given volume of exports they allow an increase in real consumption. Columns 5 and 6 show increases in private consumption for the U.S. of 0.19 and 0.24 per cent (row 2), with slightly smaller increases in public consumption (row 4). Favorable terms-of-trade movements also generate increases in real wage rates. This effect can be seen in row 15 of columns 5 and 6: real wage increases of 0.32 and 0.44 per cent.

2.2. Contribution of other factors

GDP growth is driven primarily by improvements in technology and increases in employment. These are the dominant factors taken into account in columns 8 and 9 of Table 1. Together these two columns explain 23.59 percentage points (=14.69 + 8.90) of U.S. GDP growth of 24.40 per cent between 1992 and 1998. In generating these two columns, we treat technology and employment as exogenous, that is determined independently of trading

conditions and other factors mentioned in the column headings of Table 1. By exogenizing technology we rule out trade-related technology effects of the type hypothesized in the literature associated with Melitz (2003).[3] We judge that these effects are not important for the U.S. although they may be important for its NAFTA partners, particularly Mexico. By exogenizing aggregate employment we assume that over a 6-year period trade shocks affect wages rather than aggregate employment. For the medium term we assume that favorable (unfavorable) economic developments mean that a given level of employment is achieved with higher (lower) real wages. The "given level of employment" is determined by demographic factors and the state of the business cycle, factors that are independent of trade policies.

Non-NAFTA trade factors (column 10 of Table 1) include shifts in ROW demand curves for U.S. products and shifts in Canadian and Mexican demand curves by the same percentages as those in the ROW demand curves. [Recall that shifts in Canadian and Mexican demand curves beyond those for ROW have already been taken into account as NAFTA factors.] Similarly non-NAFTA trade factors include changes in cif prices of imports from ROW and changes in cif prices of imports from Canada and Mexico by the same percentages as those for imports from ROW. Also included as non-NAFTA trade factors are twists in U.S. import/domestic preferences causing changes in import shares in U.S. domestic markets beyond those that can be explained by changes in relative prices of imported and domestic products. As in many other countries, in the 1990s U.S. preferences shifted towards imported products. This possibly reflected easier access to information about foreign products.

For 1992 to 1998, twists in import/domestic preferences, movements in export demand curves and other non-NAFTA trade factors generated a 28.20 per cent increase in U.S. imports (row 9, col 10) and a 19.99 per cent increase in U.S. exports (row 5). While non-NAFTA trade factors were strongly trade creating, they made only a minor contribution to GDP growth (0.61 percentage points, row 1, col 10).

Returning to column 8 of Table 1, we see that technology improvements were also strongly trade creating, generating export growth of 36.68 per cent and import growth of 12.88 per cent (rows 5 and 9, col 8). Technology improvements facilitated U.S. exports by improving their competitiveness while at the same time they increased U.S. economic growth thereby stimulating imports.

Column 9 shows that macro factors stimulated imports but retarded exports (26.75 per cent growth for imports but 11.61 per cent contraction for exports). Column 9 not only contains the effects of employment growth but also the effects of changes in business confidence. In 1998 business confidence, reflected in investment/capital ratios for industries, was considerably higher than in 1992. Consequently column 9 shows strong growth in investment relative to GDP (38.01 per cent for investment compared with 8.90 per cent for GDP, rows 3 and 1). Strong investment growth leads to real appreciation and associated stimulation of imports and retardation of exports.

3. Industry results: description of Table 2

Our decomposition calculations produce results for 502 industries, the number of industries in the USAGE model. But presenting results for that many industries is unwieldy. Consequently Table 2 presents results for a manageable number of selected industries. It shows: the 11 industries for which NAFTA-factors had the largest negative impacts on

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[3] For a detailed discussion of welfare and GDP effects of tariff changes in the context of a Melitz model, see Dixon *et al.* (2014).

output; the 16 industries for which NAFTA factors had the largest positive impacts; and 5 industries between these groups that are included in the table to illustrate a point of interest.

Consistent with the macro impacts of NAFTA factors being small, the industry impacts are approximately balanced between negative and positive. Out of the 502 USAGE industries, 236 suffered a negative impact from NAFTA factors while 266 benefited from a positive impact. However, while many critics of free-trade agreements such as NAFTA can believe that the macro effects are benign, they are concerned about the structural effects.

In looking for structural problems we started by examining industries for which the NAFTA factors had a negative impact of more than 5 per cent over the period 1992 to 1998. There are 26 such industries. However this does not indicate NAFTA-related structural problems. Most of the 26 industries had positive growth despite the negative impact of NAFTA. For example, industry 277 (Steel springs, row 1), the industry worst affected by NAFTA factors, showed strong positive growth (34.39 per cent, row 1, col 1). Steel springs benefited from exceptionally strong export growth outside NAFTA giving it a large positive entry in col 10 of Table 2, offsetting the *relative* [4] decline of its exports to NAFTA partners (the main contributor to the large negative entry in column 2). Industries 356 (Motor vehicle parts, row 9) and 374 (Watches, row 11) are broadly similar cases. While their exports were relatively subdued in NAFTA markets, they exported strongly to ROW. This was facilitated not only by large outward movements of the ROW demand curves for U.S. Motor vehicle parts and Watches, but also by rapid technical improvements in these U.S. industries. Consequently both columns 10 and 8 in Table 2 show large positive entries for Motor vehicle parts and Watches, overwhelming the negative entries in column 2.

Another way of looking for NAFTA-related structural problems is to examine industries that did poorly between 1992 and 1998 and ask whether their problems were seriously exacerbated by NAFTA factors. Of the 502 USAGE industries, 37 had negative growth over this period. Of these, NAFTA factors contributed more than half of the negative result in 7 cases (see rows 3, 6, 12, 13, 14, 15 and 16 of Table 2). Even for these seven industries, NAFTA factors were not the major cause of their decline. The major negative contribution for Small arms ammunition (row 3), Earthenware (row 6), Luggage (row 15) and Flavor syrups (row 16) occurs in column 10, indicating that these industries competed poorly either against non-NAFTA imports in the U.S. market or against competitors in non-NAFTA export markets. For Nonferrous ores (row 3), Ordnance (row 12), and Primary smelting (row 14) the major negative contribution is in column 9. This column includes the effects of cuts between 1992 and 1998 in military investment, explaining the Ordnance result. It also includes the effects of adjustments in rates of return. In 1992, rates of return in Nonferrous ores and Primary smelting were low causing reductions in their capital stocks across the period, reducing their ability to produce.

Rather than causing structural problems, NAFTA factors may have mitigated such problems. Of the 16 industries (listed at the bottom of Table 2) for which NAFTA factors made the largest positive contributions to output, 14 have negative entries in column 10. These industries were not performing well in non-NAFTA export markets or in competition with non-NAFTA imports in the U.S. market. For them, improved access to NAFTA export markets and availability of cheaper inputs from NAFTA countries made a useful contribution to output growth in what was otherwise an unfavourable international situation.

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[4] Steel spring exports to NAFTA partners grew quite strongly between 1992 and 1998, but not nearly as strongly as exports to ROW. NAFTA factors for this industry include the negative shifts of Canadian and Mexican demand curves for U.S. Steel springs relative to the shift in the ROW demand curve.

4. Concluding remarks

In popular discussions, trade policies often get a bad rap. They get blamed for a multitude of economic evils. To many people, it seems just a matter of common sense that a policy which encourages imports will cost U.S. jobs. But of course this is not right. Boosting imports also boosts exports. Nevertheless it is often difficult to pinpoint the causes of poor economic outcomes and trade policies become a convenient scapegoat.

Even within the economics profession there is confusion about what should be attributed to what. For example, in a much quoted article, Kehoe (2005) criticizes CGE modelers for underestimating the trade-stimulating effects of NAFTA. His evidence is that in the 10 years following the signing of NAFTA, trade volumes for the NAFTA countries grew more quickly than was shown *ex ante* in the CGE results. However, properly interpreted the CGE results were not about how fast trade would grow in these 10 years. Rather they were about how NAFTA would affect growth in trade. Put another way, the CGE modelers were making projections of how much trade growth should be *attributed* to NAFTA.

In this paper, we have addressed the attribution issue. Using a detailed CGE model, we have decomposed movements in U.S. macro and industry variables from 1992 to 1998 into the contributions of NAFTA factors and other factors.

At the macro level our results show that NAFTA factors made a minor but useful contribution to aggregate U.S. economic welfare. From 1992 to 1998 we attribute an increase of about 0.4 per cent in private and public consumption to NAFTA factors. In present day terms this is an annual welfare gain of about $50 billion.

At the industry level we focused on whether there were structural adjustment problems in the U.S. economy that developed between 1992 and 1998 and should be attributed to NAFTA. Working at the 502 industry level we did not find such problems. For industries that suffered negative growth during this period we found that the major cause in most cases was poor performance in non-NAFTA export markets or in competition with non-NAFTA imports in the U.S. market. For some industries we found that NAFTA factors mitigated a potential structural adjustment problem by easing access to NAFTA markets in a situation in which there was strong competition in non-NAFTA markets.

With regard to trade, our results show that NAFTA factors greatly stimulated U.S. trade with Mexico. For 1992 to 1998, we attribute to NAFTA factors growth of 143.91 per cent in U.S. imports from Mexico and growth of 27.88 per cent in U.S. exports to Mexico. But other factors also played a major role, stimulating U.S. imports from Mexico by a further 97.00 per cent and exports to Mexico by a further 49.76 per cent. U.S. trade with Canada grew rapidly between 1992 and 1998. Our decomposition analysis shows that this was predominantly for non-NAFTA reasons.

Table 1. Decomposition of movements in macro variables between 1992 and 1998: contributions of driving factors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Total observed movement 1992-98	Total effects of NAFTA factors	Decomposition of NAFTA factors				Total other effects (excludes NAFTA factors)	Decomposition of other effects		
			Tariff on imports from Canada	Tariff on imports from Mexico	Other Canada trade effects	Other Mexico trade effects		Technology and tastes	Aggregate employment & other macro factors	Trade effects (excludes NAFTA factors)
	Percentage changes									
1 Real GDP (Y)	**24.40**	**0.19**	-0.01	0.00	0.07	0.13	**24.20**	14.69	8.90	0.61
2 Real private consumption (C)	**24.23**	**0.42**	-0.01	-0.01	0.19	0.24	**23.81**	11.17	11.13	1.51
3 Real investment (I)	**60.93**	**0.76**	-0.02	0.00	0.26	0.52	**60.16**	20.50	38.01	1.65
4 Real public consumption (G)	**4.07**	**0.38**	-0.01	-0.01	0.18	0.21	**3.69**	10.02	-7.70	1.38
5 Real exports (X)	**48.32**	**3.25**	0.14	0.11	1.49	1.51	**45.06**	36.68	-11.61	19.99
6 *to Canada*	*63.39*	*16.86*	*0.14*	*0.12*	*18.63*	*-2.03*	*46.53*	*34.87*	*-13.96*	*25.62*
7 *to Mexico*	*77.64*	*27.88*	*0.17*	*0.13*	*-3.39*	*30.97*	*49.76*	*39.61*	*-13.34*	*23.49*
8 *to ROW*	*39.67*	*-4.30*	*0.13*	*0.10*	*-2.83*	*-1.70*	*43.97*	*36.80*	*-10.67*	*17.84*
9 Real imports (M)	**73.59**	**5.77**	0.10	0.08	2.69	2.90	**67.83**	12.88	26.75	28.20
10 *from Canada*	*67.81*	*4.77*	*2.74*	*-0.94*	*10.01*	*-7.03*	*63.04*	*5.15*	*29.64*	*28.25*
11 *from Mexico*	*240.90*	*143.91*	*-1.10*	*11.81*	*-0.84*	*134.04*	*97.00*	*19.03*	*36.59*	*41.37*
12 *from ROW*	*61.68*	*-4.86*	*-0.37*	*-0.63*	*1.39*	*-5.25*	*66.54*	*14.05*	*25.36*	*27.13*
13 Aggregate employment (L)	**11.92**	**0.00**	0.00	0.00	0.00	0.00	**11.92**	0.00	11.92	0.00
14 Aggregate capital (K)	**17.47**	**0.56**	-0.01	0.00	0.19	0.39	**16.91**	14.44	1.35	1.12
15 Real wage (W/P_c)	**10.43**	**0.77**	0.00	0.01	0.32	0.44	**9.66**	14.89	-8.23	2.99
16 Real exchange rate	**16.02**	**3.45**	-0.06	-0.05	1.59	1.96	**12.57**	-6.52	6.25	12.84
17 Price deflator for C (P_c)	**11.83**	**0.00**	0.00	0.00	0.00	0.00	**11.83**	0.00	11.83	0.00
18 Price deflator for I (P_I)	**2.95**	**-0.39**	0.01	0.01	-0.09	-0.32	**3.35**	-4.23	8.87	-1.28
19 Price deflator for G (P_g)	**15.26**	**0.45**	0.01	0.01	0.19	0.25	**14.80**	8.27	5.15	1.39
20 Terms of trade	**6.49**	**2.75**	-0.04	-0.03	1.25	1.57	**3.75**	-10.09	4.26	9.58
21 Price deflator for GDP (P_y)	**11.69**	**0.36**	0.00	0.00	0.17	0.19	**11.33**	-0.80	10.90	1.24
	Percentage point changes									
22 Trade balance, % of GDP	**-1.29**	**0.10**	0.00	0.00	0.04	0.07	**-1.40**	1.11	-2.87	0.37
23 Net f'gn liabilities, % of GDP	**5.22**	**1.49**	-0.03	-0.01	0.60	0.92	**3.74**	27.14	-26.46	3.06

Table 2. Decomposition of movements in selected industry outputs between 1992 and 1998: contributions of driving factors

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		Total observed movement 1992-98	Total effects of NAFTA factors	Decomposition of NAFTA factors				Total other effects (excludes NAFTA factors)	Decomposition of other effects		
				Tariff on imports from Canada	Tariff on imports from Mexico	Other Canada trade effects	Other Mexico trade effects		Technology and tastes	Aggregate employment & other macro factors	Trade effects (excludes NAFTA factors)
	Percentage changes										
1	277 Steel springs	**34.39**	**-52.66**	0.19	0.01	-37.97	-14.89	**87.05**	26.79	9.67	50.59
2	255 Metal barrels	**11.59**	**-15.34**	0.03	0.03	-8.60	-6.80	**26.93**	18.48	9.49	-1.04
3	23 Nonferrous ores	**-2.94**	**-15.07**	0.06	0.07	-14.23	-0.97	**12.13**	3.80	-20.98	29.31
4	350 Elect equip for internal combustion engines	**25.34**	**-13.88**	0.05	-0.01	-3.90	-10.02	**39.22**	34.03	8.68	-3.48
5	206 Boot cut stock	**8.34**	**-10.31**	0.18	0.11	-2.88	-7.73	**17.34**	23.81	-12.06	5.59
6	223 Earthenware	**-10.42**	**-9.22**	-0.28	0.04	-2.44	-6.55	**-1.19**	14.32	-1.47	-14.04
7	124 Fabric textile prods	**21.75**	**-9.19**	0.01	-0.11	-2.04	-7.06	**30.94**	17.53	9.99	3.42
8	304 Print machinery	**49.25**	**-9.07**	0.11	0.09	-6.10	-3.16	**58.32**	23.76	32.77	1.79
9	356 Motor vehicle parts	**39.54**	**-9.05**	0.09	-0.04	-5.10	-4.00	**48.59**	23.28	7.78	17.53
10	329 Relays & industrial controls	**39.19**	**-8.82**	0.06	0.00	-8.89	0.00	**48.01**	41.45	12.10	-5.54
11	374 Watches	**80.35**	**-8.48**	0.03	0.02	-4.70	-3.83	**88.83**	50.10	-5.18	43.91
12	52 Ordnance	**-3.39**	**-3.12**	0.02	0.02	-2.48	-0.68	**-0.27**	32.78	-34.17	1.11
13	51 Small arms ammunition	**-2.90**	**-2.45**	0.05	0.03	-1.58	-0.96	**-0.45**	9.65	2.72	-12.83
14	245 Primary smelting	**-2.25**	**-2.06**	-0.16	-0.03	-0.90	-0.97	**-0.19**	11.26	-9.63	-1.82
15	210 Luggage	**-1.73**	**-2.03**	0.04	-0.23	-1.14	-0.70	**0.30**	23.25	19.74	-42.69
16	88 Flavor syrups	**-2.58**	**-2.02**	0.03	0.14	-1.34	-0.85	**-0.56**	24.48	2.05	-27.08
17	355 Motor vehicles	**38.93**	**6.99**	-0.05	-0.03	5.97	1.11	**31.94**	16.12	18.32	-2.50
18	354 Truck trailer	**64.37**	**7.51**	-0.01	-0.03	7.45	0.10	**56.86**	-1.53	59.34	-0.95
19	362 Railroad equipment	**72.91**	**7.66**	-0.11	0.05	7.64	0.08	**65.25**	23.98	52.69	-11.42
20	106 Thread mills	**28.63**	**7.68**	0.05	-0.03	-1.68	9.33	**20.95**	20.70	4.29	-4.04

Table 2. Decomposition of movements in selected industry outputs between 1992 and 1998: contributions of driving factors

		(1) Total observed movement 1992-98	(2) Total effects of NAFTA factors	(3) Decomposition of NAFTA factors	(4)	(5)	(6)	(7) Total other effects (excludes NAFTA factors)	(8) Decomposition of other effects	(9)	(10)
				Tariff on imports from Canada	Tariff on imports from Mexico	Other Canada trade effects	Other Mexico trade effects		Technology and tastes	Aggregate employment & other macro factors	Trade effects (excludes NAFTA factors)
21	56 Butter	**-0.25**	**7.91**	0.04	-0.01	4.91	2.97	**-8.16**	7.04	4.28	-19.48
22	293 Machinery tools, metal forming	**27.80**	**8.47**	0.00	0.09	7.08	1.30	**19.33**	22.05	25.57	-28.28
23	5 Cotton	**23.78**	**8.49**	0.06	-0.01	0.36	8.09	**15.29**	28.05	-0.80	-11.95
24	196 Petroleum & coal products	**11.28**	**8.75**	0.05	0.04	4.06	4.60	**2.53**	8.53	-9.92	3.92
25	298 Industrial patterns	**34.96**	**9.75**	0.03	0.02	9.55	0.14	**25.22**	16.08	15.72	-6.59
26	353 Truck & bus body	**60.46**	**11.25**	0.02	-0.01	8.72	2.51	**49.21**	5.09	50.64	-6.52
27	22 Copper ores	**-9.27**	**12.06**	-0.07	0.00	12.22	-0.10	**-21.33**	21.75	-19.99	-23.09
28	246 Primary aluminum	**-2.88**	**13.71**	0.05	0.02	11.41	2.23	**-16.60**	12.60	1.01	-30.20
29	318 Computers	**344.86**	**15.35**	0.12	0.11	14.32	0.81	**329.50**	358.61	77.42	-106.52
30	108 Coated fabric	**32.12**	**16.64**	-0.04	-0.01	8.20	8.48	**15.49**	25.82	12.53	-22.87
31	345 Electronic tubes	**159.44**	**27.52**	0.13	-0.02	-5.32	32.73	**131.92**	116.22	6.15	9.56
32	148 Public building furniture	**45.12**	**38.45**	0.10	0.07	20.83	17.46	**6.66**	27.46	22.71	-43.51
Average across 502 industries using industry output weights		**26.56**	**0.32**	0.00	0.00	0.16	0.17	**26.24**	16.66	9.31	0.27

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