The Impact of the Free Trade Agreement on Certain Subgroups of the Paper and Allied Products Industry in Canada

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This article evaluates the impact of free trade on three subsectors of the paper and allied products industry—paper boxes, paper and plastic bags, and miscellaneous converted papers—at the Canadian and regional (Ontario and Rest of Canada) levels.

Using the actual economic structure, this study first determines the financial impact of the loss of tariff protection on the profitability of the existing firms under static conditions. The working hypothesis is that the impact on profits initially separates winners from losers. The long-run entrepreneurial reactions of winners and losers are then incorporated. The winners try to capitalize on the new conditions, and the losers take survival measures, although not always successfully. Reactions take the form of rationalization of production, technological improvements, new products, the invasion of new markets, and so forth. The hypothesis here is that these entrepreneurial decisions are conditioned partly by the local economic environment and thus are specific to a region as noted by OECD (1987:Chap. 4) and Birch (1987: 24). Moreover, the past behaviour of the firms of a region, under conditions similar to the implementation of free trade and over a sufficiently long time, provides a clue about how the winners and losers will behave in the long run.

This method sidesteps the disaggregation problems encountered by the national models, which, even if regionalized, either underestimate or overestimate the particular subsector or local (regional) impact of free trade. Indeed, the Canadian free trade impact models (Harris 1984; Harris and Cox 1984; Magun et al. 1987, 1988), like other national models, lack detailed sector disaggregation. For example, information about the "paper and allied products" national sector does not say whether free trade will equally affect such subcategories as newsprint, cardboard, or converted papers. Within each sector, this leads to a likely lack of correspondence between the national sector's results and their disaggregation into subsectors. Large aggregate models are by nature right for total effects but wrong in specific cases.

The explanation of this discrepancy lies in the rigid rules followed by national models in allocating results to subsectors. A similar discrepancy is produced in the spatial allocation of the national impact through input-output and other trickle-down methods, which do not recognize that the local distribution of firms into subsectors is unlikely to be a mirror image of the national distribution of the same sector into its subsectors. The lack of similarity between national and local impacts is also caused by the insensitivity of disaggregation techniques to the local economic environment (besides the industrial structure) and by calculations based on an average tariff that applies to a mix of products that is not always representative of the specific tariffs affecting the particular products of the local firms. The consequence is a local sectoral performance that is sometimes different from the performance at the national level.

All this does not mean that national models cannot give satisfactory answers to such general questions as: Overall, is free trade advantageous for Canada? But they are less useful at the regional or subsector level where local planning authorities ask: "Will some local businesses be wiped out by the rationalization process? Which ones? How can the local economy profit from or cope with free trade given the types of firms operating in the region?

Because the pulp and paper and allied products industry is rather heterogeneous in terms of tariffs applicable to its subsectors (for example, 85 percent of Canada's exports of forest products to the United States enters free of tariffs), only a few subsectors are interesting subjects for the evaluation of the impact of free trade: the paper box subsector where the tariff before free trade was 9.2 percent; the paper and plastic bag subsector where the tariff was above 10 percent (10.2 percent for paper bags and 13.6 percent for plastic bags); and the miscellaneous converted paper products subsector where

the average tariff was 8.61 percent.[1] In 1986, these subsectors accounted for $5.4 billion in shipments and 41,000 employees. The paper box subsector is Canadian owned and is minimally export oriented, while the other two subsectors are half Canadian owned and are increasing their exports, although these remain modest.

According to Magun et al. (1988: simulation 1, 62-63), free trade will bring about a decrease of 1.01 percent in the gross domestic product (GDP) and a decrease of 0.63 percent in employment in the paper and allied products industry.[2] Below we will evaluate the impact of free trade on the three subsectors first at the Canadian level and then at the regional level.

National Effects

Measurement under Static Conditions

The impact of free trade is first measured within a static framework in which plants simply adjust their production and export plans to the loss of tariff protection as they become either winners or losers. Winners and losers are identified by estimating their coefficients of bilateral effective protection (BEP).[3] For a Canadian manufacturing firm, removal of Canadian tariffs translates into lost protection of its products sold in Canada and a lower price for its imports, thus reducing its production costs. In contrast, removal of the U.S. tariff enables

1.   Each of the subsectors and industries examined in this article have an assigned Standard Industrial Classification (SIC) number, as specified in 1980 by Statistics Canada. The paper box subsector is composed of the folding carton and set-up box industry (SIC 2731) and the corrugated box industry (SIC 2732). The paper and plastic bag subsector is composed of the paper bag industry (SIC 2733) and the plastic bag industry (SIC 1691). And the miscellaneous converted paper products subsector is composed of the coated and treated paper industry (SIC 2791), the stationery paper products industry (SIC 2792), the paper consumer products industry (SIC 2793), and the other converted paper products industries (SIC 2799). Note that the definitions of the various subsectors used here may differ slightly from those adopted by trade journals, the Canadian Pulp and Paper Association, and other publications and associations. The definitions used here are justified by the use of Statistics Canada data, which, among other things, produces a lower proportion of shipments exported than the one proposed by the trade journals. Statistics Canada is aware of this but holds to its numbers.
2.   Simulation 2 by Magun et al. (1988: 60-61) predicts a rise of 0.85 percent in GDP and 1.55 percent in employment. But because this simulation supposes returns to scale, it is not pertinent for the subsectors under study since, as we will see shortly, transport costs prevent an appreciable concentration of production (to reap returns to scale) to serve the markets of the peripheral regions from Ontario. Transport costs are, however, a smaller hindrance to concentration of production along U.S.-Ontario border markets.
3.   The formula accounting for the model and the empirical values of the parameters used to establish the BEP for the subsectors under study are in Martin (1990: App. A).

Canadian firms to raise the border prices of their exports to the United States. The algebraic sum of these impacts on the financial profitability of a firm determines whether it is initially a loser or a winner. The assumptions in this model are either compatible with or similar to those of current national models, such as that of Harris (1984) and of Magun et al. (1988)—for details, see Martin (1991).

A negative BEP coefficient signifies that before free trade the subsector was negatively affected by Canadian and U.S. tariffs. Free trade thus should increase the profitability of the subsector. The converse applies in the case of a positive BEP coefficient, but the advent of free trade in a subsector with a positive coefficient does not signify the disappearance of the whole subsector. Indeed, each subsector has over-performing and under-performing plants as shown by the continual rotation of plants whether the subsector is in a growing industry or a declining one (OECD 1987: Chap. 4). This is why new entries are observed even in declining industries. The loss of tariff protection, however, translates into a momentary increase in the proportion of under-performing plants in a given subsector. A BEP coefficient of zero establishes the frontier between winners and losers in the advent of free trade. This frontier determines the minimum proportion of a plant's output that must be exported to remain in the category of winners. This proportion varies from subsector to subsector because the values of the parameters vary (see Table 1).

Column (5) of Table 1 reveals the initial impact of free trade in terms of lost revenues. The higher the Canadian tariff protection and the lower the U.S. tariff measured by BEP (col. [4]), the greater is the loss of revenues from the implementation of free trade. Since all the BEPs are positive, all subsectors are initial losers with free trade. But, as we will see shortly, in some subsectors transport costs will soften the impact, at least for plants in peripheral regions. The plants located near the U.S. border will be most affected.

The subsectoral impacts of free trade (before modification by transport costs) will see the paper box industry, unused to competition, losing some of its markets to U.S. exporters. According to Table 1, however, the monetary loss will be small for this subsector. The paper bag subsector (excluding plastic bags) will be affected similarly, except that the monetary impact is a bit more negative. The miscellaneous converted paper subsector, having the highest BEP, will be the most hard pressed. Nevertheless, operating profits on sales of about 20 percent (the average for large, integrated firms: see *Pulp and Paper Journal*, June 1989, 33) will be able to absorb the temporary shortfall in revenues.

TABLE 1   Bilateral Effective Protection (BEP) for the Three Subsectors: Canada, 1986

Subsector	(1) No. of Plants	(2) Percent of Own Shipments Exported in 1986	(3) Percent of Own Shipments Exported to Have BEP = 0	(4) BEP (%)	(5) Loss of Gross Revenue with Free Trade ($ per $100 of sales)
Paper box	230	4.4	46.79	8.94	3.32
Paper and plastic bag	157	8.8	53.71	12.87	5.39
Paper bags	29	2.1	34.36	10.48	3.68
Miscellaneous converted paper products	302	9.0	48.39	10.62	4.28
Coated and treated paper products	52	4.0	46.45	8.50	3.37
Stationery paper products	71	15.5	45.76	4.84	2.24
Paper consumer products	17	18.5	48.31	11.65	4.07
Other converted paper products	144	3.0	50.56	15.73	6.26

Sources: Col. (1): Small Business and Special Surveys data obtained from Statistics Canada, 31 January 1990; and Statistics Canada, *1986 Census of Manufacturers*, Cat. No. 36-250B.
Note: The simultaneous use of these two sources causes minor discrepancies in the number of plants.

But this is not the end of the story. In the long run, other forces will be at work accounting for the dynamic reaction of the plants to the Free Trade Agreement.

Measurement in a Dynamic Setting

The main impact of free trade, according to its proponents, is increased competitive pressure on Canadian plants so that eventually they will resort to technological improvements, product specialization, or rationalization of production, or they will simply decide (or be forced) to disappear. This is not a new situation since, worldwide, tariffs have been decreasing gradually over the last 15 years. For example, from 1979 to 1986 Canadian tariffs decreased from 15-17 percent to 9-10 percent in the Canadian paper and allied products subsectors. This decrease is almost as large as the one expected to result from the Free Trade Agreement of 1989. Thus, the period 1979-1986 provides empirical data that may measure, among other things, the likely reaction and change in performance of the firms affected by the advent of free trade.

Past changes in employment in Canada were the results of positive and negative forces stemming from reduced tariffs and from changes in domestic demand (see Picot and Lavallée 1986). The direct and indirect impacts[4] of changes in tariffs in the paper and allied products

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4.   The direct impacts concern changes in imports and exports, and the indirect impacts pertain to technological changes, increased labour productivity, and new products,

subsectors accounted for half of the changes in employment (Picot and Lavallée 1986: 37), signifying that changes in tariffs are as important as changes in domestic demand in explaining employment changes. This sounds exaggerated only if one accounts for the direct effects (imports and exports). But, as shown in the transport model described in the Appendix, potential imports govern local prices, so that U.S. technological changes, increased labour productivity, or new products must eventually be matched in Canada. Indirectly, then, foreign supply induces changes in Canadian employment.

Movements in the exchange rate have been cited as an additional influence on employment and output. These movements are not explicitly introduced in the transport model because the approach of Picot and Lavallée (1986) used in the model implicitly accounts for that factor. Furthermore (provided one can assimilate the pulp and paper industry into the paper and allied products industry), the 21.8 percent reduction in the value of the Canadian dollar between 1979 and 1986 did not advantage the industry because wages increased in almost the same proportion (de Silva 1988: 28). In other words, the depreciation of the Canadian dollar provided only a momentary advantage because the domestic inflation generated is eventually picked up, if not amplified, by the industry's labour unions and other factory owners. After a while there is no net gain. Moreover, the gains in labour productivity in the pulp and paper industries were much smaller in Canada than in the United States from 1977 to 1983 (see Oum and Tretheway 1988: 32). Finally, we must remember that the main impact of a drop in the value of the Canadian dollar is on the profits of the pulp and paper industry (whose elasticity is 2.2—see Schembri and Robicheau 1986: 31) and to a much smaller extent on output (elasticity, 0.6) and on labour (elasticity, 1.15).

This section is anchored in the empirical experience of the paper and allied products subsectors over the period 1979-1986. This then solves the problem of reconciling a general equilibrium analysis with a partial equilibrium analysis because the effective changes in employment and output for this period incorporate the pertinent tariffs changes, movements in relative prices, exchange rate movements, and any other effects of a general equilibrium nature.[5]

Table 2 accounts for both the short-run and long-run effects, as well as the partial and general equilibrium effects, on various subsectors of

largely stemming from international competitive pressures. Some authors (Magun et al. 1988: 10-11 and Catin 1987: 11) call these effects "dynamic gains". In France these gains have been found to be more important than those obtained by returns to scale (Catin 1987: 11).

5.   In essence, this is what Caves (1990) does in his assessment of the adaptation of Canadian manufacturing to international competition.

TABLE 2 Evolution of Shares Accounted for by Plant Size and Ownership Type with Respect to Plant Turnover and Exports: Canada, 1979-1986

	1979-1986 Turnover[a] (%)	Percent of Own Shipments Exported		1986 to 1979 Employment Ratio
		1979	1986	
Paper Box Subsector				
Plant size				
Small	57 (50/64)	0.00	0.01	1.67
Medium	27 (24/30)	0.51	0.49	1.32
Large	36 (39/32)	0.56	5.47	0.84
Ownership				
Canadian	39 (36/41)	0.59	4.60	0.99
Foreign	46 (63/30)	0.20	1.81	1.34
Total	39 (38/40)	0.54	4.43	0.94
Paper and Plastic Bag Subsector				
Plant size				
Small	80 (78/81)	0.01	0.14	1.98
Medium	39 (32/46)	1.56	1.83	1.32
Large	69 (73/66)	1.67	13.98[b]	0.95
Ownership				
Canadian	58 (50/67)	1.67	2.59	1.09
Foreign	58 (57/59)	1.43	16.88[b]	1.18
Total	61 (56/66)	1.58	8.76	1.12
Miscellaneous Converted Paper Products Subsector				
Plant size				
Small	69 (66/72)	0.00	6.39	1.31
Medium	45 (42/48)	9.00	12.50	1.18
Large	43 (45/40)	2.40	8.17	0.99
Ownership				
Canadian	55 (51/59)	3.18	7.12	1.30
Foreign	45 (53/37)	3.84	11.14	0.81
Total	53 (52/54)	3.56	9.02	1.04

Source: Computations by author using Small Business and Special Surveys data obtained from Statistics Canada, 31 January 1990.

Note: Turnover is measured as the arithmetic mean of the proportion of 1979 plants that disappeared during the 1979-1986 period (first figure given in parentheses) and the proportion of 1986 plants that appeared during the same period (second figure in parentheses).

a. For small plants "disappearance" has two meanings: outright disappearance or graduation to a larger size. This, of course, does not apply to "large" plants, which either survive or disappear. In the Small Business and Special Surveys data (Statistics Canada), the terms used are "no longer identified","newly identified", and "continuously identified" plants or firms. To understand this data base completely, one should consult *Developing a Longitudinal Database on Business in the Canadian Economy*, Statistics Canada, Cat. No. 18-501E, 1988.

b. This extraordinary figure stems from the inclusion of plastic bags. This subgroup experienced a large upsurge in exports in 1986. The paper bag industry does not seem to have experienced any such surge in exports.

the stress of continual tariff reductions and changes in domestic demand during the period 1979-1986 at the national level. The data in Table 2 may help identify the survivors of the next round of tariff reductions brought about by free trade. Over the period 1979-1986, all

plant sizes and types of ownership that survived increased their proportion of shipments in the form of exports.

The role of exports as a determinant of survivability and growth in spite of foreign and domestic competition is even more clearly expressed in Table 3. Among the survivors, those that increased their employment always exported relatively more than the survivors who decreased their employment. It is also significant that the newcomers usually had a higher propensity to export than the average plant. Note also that those plants that disappeared during 1979-1986 had in 1979 a smaller proportion of their shipments exported than the survivors that increased their employment.

TABLE 3 Percent of Own Shipments Exported According to Type of Plant: Canada, 1979 and 1986

Type of Plant	1979			1986		
	Paper Box Sub-sector	Paper and Plastic Bag Sub-sector	Miscellaneous Converted Paper Products Subsector	Paper Box Sub-sector	Paper and Plastic Bag Sub-sector	Miscellaneous Converted Paper Products Subsector
Those that disappeared during 1979-1986	0.71	1.75	2.48	—	—	—
Those that appeared during 1979-1986	—	—	—	5.37	11.75	7.97
Survivors that increased their employment	0.79	2.02	7.77	4.99	6.87	10.33
Survivors that decreased their employment	0.14	0	2.99	2.40	4.05	10.08

Source: Computations by the author using Small Business and Special Surveys data, Statistics Canada, 31 January 1990.

All this suggests that the ability to export is a good predictor of survivability and growth. Other approaches to predicting survivability are size and ownership. While it is true that large plants account for most exports and that small plants export very little, one cannot infer from this, as is usually done, that large plants are less likely to disappear—that is, they are likely to have the smallest turnover rate, at least for the subsectors under study. First, the large plants are not always (proportionately) the largest exporters (in relative terms). In the miscellaneous converted paper products subsector, the medium-sized plants are the largest exporters. One cannot then always associate large plants with a large propensity to

export. Second, in the paper box sector and the paper and plastic bag sector, medium-sized plants have a lower turnover than the large plants (see Table 2). In the miscellaneous converted paper products sector, the large plants are only barely more stable than the medium-sized plants. Thus, the rate of disappearance and size are not perfectly correlated.

Similarly, ownership is not a reliable predictor of survivability. For example, foreign-owned plants, although usually (proportionately) large exporters, have a higher turnover rate than Canadian-owned plants in the paper box sector (even though their relatively small importance in this subsector somewhat reduces the weight of this evidence), have the same turnover rate as Canadian-owned plants in the paper and plastic bag sector, and have a lower turnover than Canadian-owned plants in the miscellaneous converted paper products sector. Note, however, that in the latter subsector they also have a much higher proportion of exports than Canadian-owned plants (in 1979 and 1986). Consequently, this last case does not contradict the use of exports as an indicator of survivability. All things considered, therefore, the propensity to export is a better predictor of survivability and growth than size or ownership.

Conclusions

The immediate impact of the Free Trade Agreement of 1989 on the subsectors studied here will translate into more or less severe reductions in gross revenues because there is no hope that any subsector can attain the proportion of exported shipments necessary to insulate it from the loss of tariff protection. Yet the initial impact is not uniform: the miscellaneous converted paper products subsector will be hurt the most. All this would be temporarily exacerbated by the rising value of the Canadian dollar, but this will mainly affect current profits.

In the long run, the prospects are much brighter, although there are some subsector differences. The paper box subsector, having already substantially increased its productivity during the period 1979-1986, may not be able to repeat this feat on the same scale. Less able to export, it is likely to lose employment. The case of the paper bag subsector (excluding plastic bags) is similar for the same reasons (see Table 1). But the case of the miscellaneous converted paper products subsector is much better. The largest exporter, it can expect a continuing trend of increasing output and employment. Its relative concentration in Ontario (a spatial consideration dealt with in the next section) favours rationalization processes and the discovery of export niches. Its track record of 1979-1986 supports this view. In retrospect, then, no single simulation or prediction of Magun et al.

(1988) applies simultaneously to the three subsectors under study. One policy implication for the survival and growth of the miscellaneous converted paper products subsector is that very large plants should not be promoted because in this subsector large plants have not demonstrated a noticeable superiority in survivability over medium-sized plants, and medium-sized plants are better exporters and job creators.

Regional Effects

This section will introduce the effect of space (distance) by dividing Canada into two regions: Ontario and the Rest of Canada (ROC).[6] This comparison is meaningful because, although the numbers for Ontario (see Table 4) are roughly 35 percent larger than those of the Rest of Canada region, this difference is within the range of differences that yield interesting comparisons. Not surprisingly, because distance translates into transport costs that hinder market interconnections, the export propensity of the peripheral region (Rest of Canada) is lower than that of the Ontario region.

TABLE 4 Shipments, Exports, and Employment in the Three Subsectors: Ontario versus Rest of Canada, 1986

Subsector	Total Shipments ($000,000)	Exports ($000,000)	Employment
Paper box			
Ontario	1,269	50	9,565
Rest of Canada	1,018	51	7,561
Paper and plastic bag			
Ontario	412	50	3,302
Rest of Canada	490	29	3,935
Miscellaneous converted paper products			
Ontario	1,439	147	10,781
Rest of Canada	727	49	5,608

Source: Small Business and Special Surveys data, Statistics Canada, 31 January 1990.

Measurement under Static Conditions

Featuring the bilateral effective protection (BEP) measure which evaluates the initial impact of the loss of tariffs, Tables 5 and 6 reveal the immediate impacts of free trade on the profits of the plants in the two regions. But because the spatial dimension of the impact of free trade in a large country such as Canada may matter, any interpretation of Tables 5 and 6—particularly, column (5)—should

TABLE 5 Bilateral Effective Protection (BEP) for the Three Subsectors: Ontario, 1986

Subsector	(1) No. of Plants	(2) Percent of Own Shipments Exported in 1986	(3) Percent of Own Shipments Exported to Have BEP = 0	(4) BEP (%)	(5) Loss of Gross Revenue with Free Trade ($ per $100 of sales)
Paper box	131	3.96	46.29	9.05	3.30
Paper and plastic bag	67	12.03	58.63	12.55	5.72
Paper bags	11	2.1	41.86	11.89	4.86
Miscellaneous converted paper products	158	10.18	55.93	8.85	3.59
Coated and treated paper products	28	5.0	48.45	7.95	3.48
Stationery paper products	38	17.0	45.71	4.60	2.12
Paper consumer products	7	19.5	50.48	11.80	3.79
Other converted paper products	77	4.0	50.56	14.95	6.11

Sources: Col. (1): Small Business and Special Surveys data obtained from Statistics Canada, 31 January 1990; and Statistics Canada, *1986 Census of Manufacturers*, Cat. No. 36-250B.

Note: There are very minor discrepancies between Tables 5 and 6 and Table 1 regarding the paper bag industry because of the difficulty of separating it from the plastic bag industry.

TABLE 6 Bilateral Effective Protection (BEP) for the Three Subsectors: Rest of Canada, 1986

Subsector	(1) No. of Plants	(2) Percent of Own Shipments Exported in 1986	(3) Percent of Own Shipments Exported to Have BEP = 0	(4) BEP (%)	(5) Loss of Gross Revenue with Free Trade ($ per $100 of sales)
Paper box	99	5.2	47.42	8.81	3.23
Paper and plastic bag	90	6.0	48.63	13.39	5.23
Paper bags	18	2.1	40.02	12.21	4.56
Miscellaneous converted paper products	144	6.72	49.18	11.53	4.60
Coated and treated paper products	24	3.0	43.71	9.37	3.19
Stationery paper products	33	12.5	45.87	5.32	2.47
Paper consumer products	10	14.5	49.99	12.09	4.90
Other converted paper products	67	2.0	50.74	15.43	6.42

Sources: Col. (1): Small Business and Special Surveys data obtained from Statistics Canada, 31 January 1990; and Statistics Canada, *1986 Census of Manufacturers*, Cat. No. 36-250B.

Note: There are very minor discrepancies between Tables 5 and 6 and Table 1 regarding the paper bag industry because of the difficulty of separating it from the plastic bag industry.

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6. Lack of data prevents disaggregation into more numerous regions. That would likely have produced even more differentiation of the results than the ones that follow.

take into account two interrelated factors: the local demands facing each plant and transport costs.

The demands facing the plants of the three subsectors are neither perfectly elastic (as the large number of competing plants in Canada would warrant) nor perfectly inelastic. Canada is not, for these products, one market but, rather, a series of more or less interconnected markets protected from each other and from the U.S. plants by transport costs.[7] Yet, a reduction in tariffs by lowering the Canadian (and local) price of the product will increase the quantity sold and thus the revenues (see the Appendix). (It is supposed here that the plants operate in the elastic portion of their local demand curves.) Thus, in Tables 5 and 6 the figures in column (5) should be marginally reduced.

Transport costs, when they are significant, play the same role as a tariff. They should then be incorporated into the analysis. The Appendix examines four cases that reveal the role of transport costs in determining Canadian local prices within a tariff framework. In Case B, which applies to Canadian markets within 200 kilometres of U.S. plants, a reduction in tariffs lowers Canadian prices by the amount of the tariffs. Thus, Tables 5 and 6 do not have to be corrected. For peripheral markets, however, Case C or D applies. According to the model, for them the loss of tariff protection has little or no effect, at least initially. But over the long run, plants located near the U.S. border, in reacting to the loss of tariffs, may become more efficient, thus forcing a reduction in the local prices in some peripheral markets if they use the lowering of their costs to absorb some transport costs. Some small peripheral plants may then be eliminated.

With this in mind, Tables 5 and 6 can be interpreted in the following manner. As might be expected, because of a low propensity to export in all subsectors (especially in the Rest of Canada region) coupled with relatively high BEP values (up to 15.43 percent), all regions are immediately affected negatively by the loss of tariffs. In comparing columns (5) of Tables 5 and 6, Ontario seems marginally less affected. But this is true only if transport costs are not taken into account. When they are taken into account, column (5) of Table 5 (Ontario) remains the same since the Ontario markets are not protected, but in column (5) of Table 6 (Rest of Canada) the values should be reduced because of the protection provided by distance. Thus,

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7.   Transport costs are relatively high because the "product is bulky and of low value per unit of weight" (*Pulp and Paper Journal*, June 1989, 29). Thus, there is almost no offshore trade. Moreover, the need to rapidly serve the varying needs of different urban centres requires a proliferation of plants across Canada. Markets are usually within 200 kilometres of a plant. In the paper box and paper bag subsector, exports to the United States are very small and limited to regional border markets. The miscellaneous converted paper subsector has somewhat wider markets.

overall regional differences in the immediate impact of free trade are minimal. But this is achieved by two sets of opposite forces: space (distance) and the relative efficiency of the two regions.

Measurement in a Dynamic Setting

As in the Canadian case, the reactions of plants to reduced tariffs and to changes in domestic demand during the period 1979-1986 when disaggregated by region also must be studied in a dynamic setting covering the turnovers in plants and the changes in the proportions of shipments exported. In this way, regional survivability is assessed.

Table 4 demonstrated that Ontario is a larger exporter (in absolute terms) of paper and plastic bags and miscellaneous converted paper products. One could now add that, overall, Ontario's proportion of exports is much superior to that of the Rest of Canada region for the paper and plastic bag subsector and the miscellaneous converted paper products subsector.[8] The superiority of Ontario lies in its large or foreign-owned plants for the paper and plastic bag subsector and in its medium-sized plants for the miscellaneous converted paper products subsector.

As in the case of Canada as a whole, in each subsector in Ontario and the ROC region all plant sizes and types of ownership that survived increased the proportion of their exported shipments.[9] Yet, as might be expected, there are regional differences. With respect to the miscellaneous converted paper products industry , turnover is larger in Ontario than in the Rest of Canada region for all plant sizes and types of ownership. But this should be tempered by the consideration that both types of 1986 survivors in Ontario have a much greater propensity to export than those of the ROC region. In the miscellaneous converted paper products subsector, however, medium-sized plants export proportionately more and are more stable than large plants. This is not the case for the Rest of Canada region where large plants are marginally more stable than the medium-sized plants. For the paper box subsector (a less important export subsector), the Rest of Canada exports exclusively through its large plants a larger proportion of its output than does Ontario. As for the paper and plastic bag subsector, the high Ontario index of exports is attributable to large (foreign-owned) plants producing plastic bags.

Employment growth is quite similar (in relative terms) in the two regions.

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8.   Based on tables similar to Table 2 but drawn for the Ontario region and the Rest of Canada region. These tables are available in Martin (1990).

9.   Except for one insignificant observation: the medium-sized plants in the paper box subsector.

Conclusions

In the short run, the loss of revenues due to the Free Trade Agreement will be the largest in the other "converted paper products industry" and the paper and plastic bag subsector (see Tables 5 and 6). Since in Ontario these two industries are concentrated (notably the plastic bag industry), the proximity of the U.S. border will force the plants in question to bear the brunt of the loss of tariff protection. The nominal loss in gross revenue will also be large for these two industries in the Rest of Canada region, but there transport costs may soften the impact of the loss of tariff protection. Some less-protected industries, such as the stationery products industry, will be less affected. The paper box subsector, which is not concentrated in Ontario, may escape part of the U.S. competition. Yet none of the losses in revenues seem fatal to the plants, at least if we compare them to the other short-run preoccupations of the producers, such as the rise in value of the Canadian dollar, the rising energy and raw materials costs, and the rising costs of pollution abatement.

In the long run, Canada is in a rather favourable position. Its Ontario plants (with very minor exceptions) have demonstrated an ability to react successfully to foreign competition. By discovering export niches, especially in the plastic bag, stationery paper products, and paper consumer products industries, they have transformed negative situations into positive ones. They are expected to do the same in the future. The Rest of Canada region will continue to serve its local markets without much competition unless there is a technological change producing returns to scale superior to transport costs.

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APPENDIX: The Role of Transport Costs in the Determination of Canadian Local Prices

Within the Canadian economy, the local price in a region B (p_b) cannot exceed the f.o.b. price of a competing plant in another region A (p_A), plus transport costs from A to B (T_{AB}):

$$p_B \leq p_A + T_{AB}$$

Within the North American economy, the local price in a Canadian region near the border (p_B) cannot exceed the f.o.b. price of a competing plant in a U.S. region (p_A), plus transport costs from A to B and the Canadian tariff (t_{can}):

$$p_B \leq p_A + T_{AB} + t_{can}$$

Similarly

$$p_A \leq p_B + T_{BA} + t_{us}$$

The U.S. price cannot exceed the Canadian price plus transport costs from Canada to the United States and the U.S. tariff. If large

enough, tariffs and transport costs govern local prices. The removal of all tariffs might eventually affect most Canadian local markets because they are all somehow interconnected by the above expressed relationships. To illustrate this reasoning, four limiting cases are presented here.
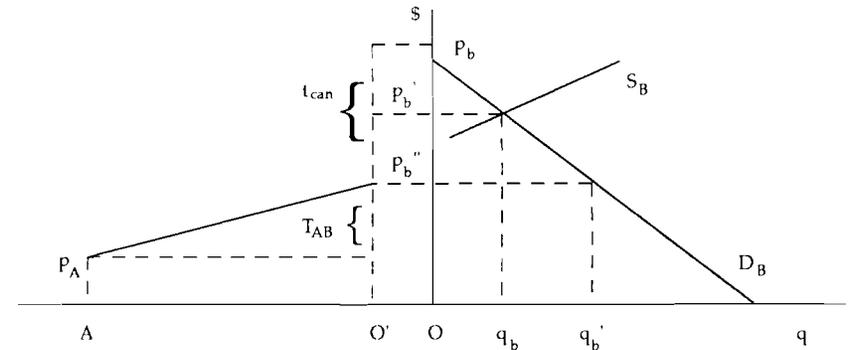
Case A: No Transport Costs
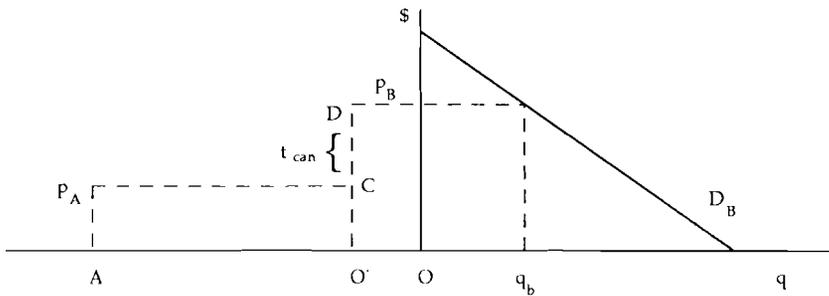
AO' = literal distance from U.S. plant to Canadian regional market B

Oq = axis of a local demand curve in units of product

O'O = imaginary space (Canada-U.S. border) where the Canadian tariff is applied

CD = Canadian tariff in dollars

$p_A A$ = f.o.b. U.S. price

Canadian price = $p_B = p_A$ + Canadian tariff

q_b = quantity sold in market B

D_B = local demand for product

## Case B: With Transport Costs
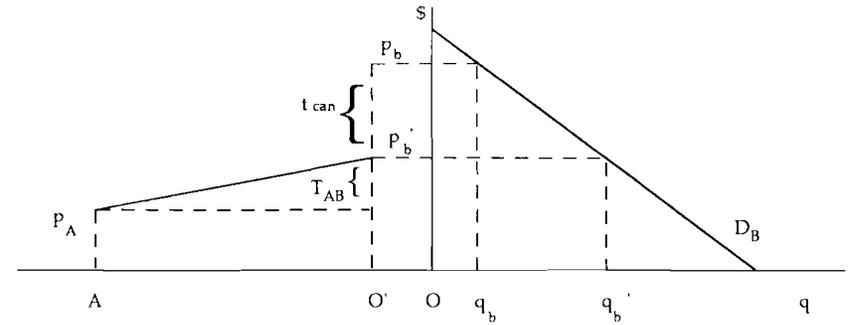
The elimination of the Canadian tariff reduces the local price by the amount of the tariff, and there is an increase in the amount sold.

Case C

Transport costs and Canadian tariffs are such that the U.S. price has no effect on the Canadian local price. But the disappearance of the tariff may reduce somewhat the Canadian price if this price was previously higher than p_B'.

Case D
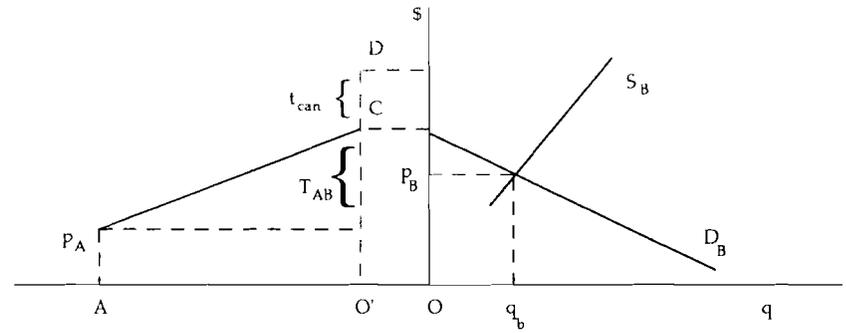
Here the removal of the Canadian tariff has no effect on the local
Canadian price.