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Canada and the Asian Pacific: Views from the Gravity, Monopolistic Competition, and Heckscher-Ohlin Models

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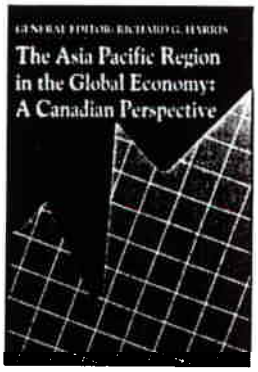


Recent East Asian growth has been spectacular, but Canadian growth has lagged behind. While economists still have much to learn about the sources of long-term growth, one possibility is that East Asian growth has been export-led. This is frustrating because it seems to imply that East Asian exports to Canada have robbed Canada of its growth potential. The argument operates through various channels. For one, East Asia is running a trade surplus with Canada that is about one percent of Canada's gross domestic product. At first glance this means Canada has lost one percent of its jobs and investment to East Asia. However, this is unlikely. Aggregate unemployment rates in Canada have not moved in tandem with trade deficits. Further, the argument is essentially mercantilist: it ignores the much larger trade surplus that Canada routinely chalks up against the United States. It is more likely that East Asia has impacted Canada by competitively forcing a shift in Canadian industrial composition towards low-growth activities. We analyze each possibility below after first giving a brief summary of Canada's trade with the rest of the world.

Overview of Canadian Trade Patterns

Figure 1 plots Canada's exports and imports over the 1972-1992 period. Since data are in 1987 constant U.S. dollars, the rapid growth in both exports and imports poignantly captures increasing Canadian integration into the world economy. A feature of the figure is the dominant role the United States plays in Canada's trading relations. The next major trading partner is Europe followed by East Asia. The latter has been broken down into Japan, the Tigers (Hong Kong, Singapore, South Korea, and Taiwan), and the rest of East Asia (China, Indonesia, Malaysia, the Philippines, and Thailand). Trade with Japan grew rapidly in the early 1970s, trade with the Tigers grew rapidly in

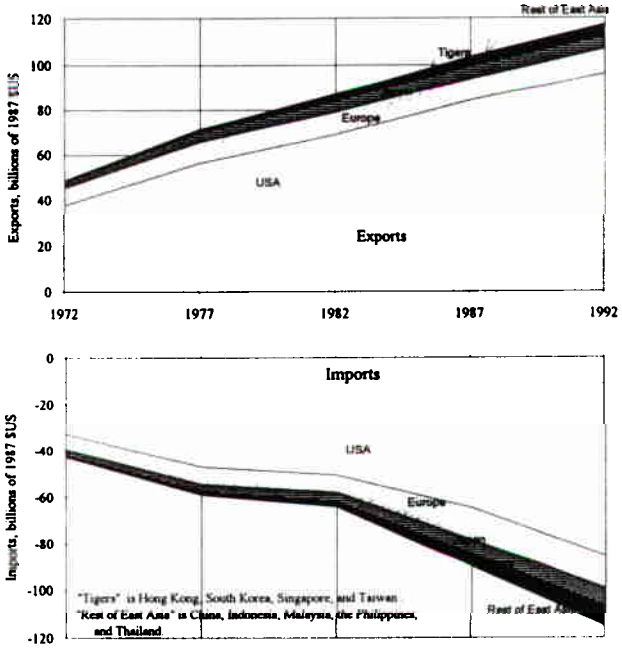
the 1980s, and trade with the rest of East Asia grew rapidly in recent years. However, since the level of trade with East Asia was initially low, years of growth have left trade at relatively low levels.

Factor Content of Trade

We now ask whether the rest of the world in general and East Asia in particular are in fact stealing good jobs and profitable industries away from Canada. The prevailing view in the U.S. context is that international trade is too small a part of the domestic economy to have had a major impact on factor markets (e.g., Krugman and Lawrence 1994). The tail simply cannot wag the dog. This argument does not hold in Canada where international trade plays a large role. Canadian imports as a share of gross domestic product stand at almost 25 percent and have been growing rapidly over the 1970-92 period of this study. The dissenting U.S. view is that conventional analysis understates the effects of trade by ignoring the way it forces producers to adopt labour-saving and skill-biased technology (Wood 1994).

We examine this issue in a Canadian context using an entirely new approach. We tend to focus on trade flows when what we really care about is the factor market consequences of these trade flows. For example, the number of cars Canada imports from Japan is uninteresting in and of itself.

Figure1. Canadian Exports and Imports



It takes on importance because of its factor market consequences: the Canadian jobs displaced and the effect on wages; the supplanted investment and the effect on rates of return to capital. These are concerns about the factor content of trade. The "usual approach" to factor content calculations answers the question: how much skilled and unskilled labour are required to produce a country's exports and imports? The answer can then be interpreted as the impact of trade on the demand for skilled and unskilled labour. These results are reported in Table 1. According to this usual approach, international trade competition has reduced the net demand for no-education workers in Canada by 1.3% or 3,000 of 233,029 jobs.

We extend the usual approach by adjusting the technology matrix to accommodate lesser-developed-country factor-content calculations. In particular, we have assumed that the amount of each type of labour used to produce a good in the U.S. depends upon the educational percentile rather than the absolute level of education. For example, suppose that a fiftieth percentile worker has 12 years of education in Canada and 8 years of education in Thailand. We assume that both do similar jobs even though the Canadian worker has more education. Under this adjusted method, international trade competition has reduced the net demand of no-education workers by 140.3% or 326,800 jobs. For Canadian trade with the world, therefore, such adjusted calculations alter the conclusions about the effect of trade on wages. Furthermore, the results are remarkably similar to Wood's (1994) calculation using a very different, more ad hoc procedure. The implication is that even a small amount of international trade can lead to very large domestic wage implications for less-educated workers. None of this effect comes from trade with East Asia. Most of it comes from trade with the United States and, to a much lesser extent, from trade with Europe. Note that no-education workers form a small group representing less than two percent of the work force. There is also a large effect for workers with only some primary education. These workers represent one-fifth of the labour force. For the largest groups, workers with more than a primary education, international trade has increased demand. In short, international trade

Table 2. Canada's Adjusted Factor Content of Trade by Education

Education	1992 Endowment	Domestic Calculations 1000s of Workers	Domestic Calculations % of 1992 Endowment	Foreign Calculations 1000s of Workers	Foreign Calculations % of 1992 Endowment	Hi-Lo Calculations 1000s of Workers	Hi-Lo Calculations % of 1992 Endowment
			WORLD				
None	233,029	-3,000	-1.3	-29,300	-12.6	-326,800	-140.3
Primary	2,956,720	-14,600	-0.5	-96,400	-3.3	-838,100	-28.3
Secondary	5,295,230	-118,000	-2.2	-50,300	-1.0	683,800	12.9
College	5,223,951	-53,400	-1.0	-15,500	-0.3	285,400	5.5
			EAST ASIA				
None	233,029	-400	-0.2	-4,000	-1.7	-11,300	-4.8
Primary	2,956,720	-3,200	-0.1	-4,100	-0.1	-21,000	-0.7
Secondary	5,295,230	-8,700	-0.2	-1,000	0.0	17,100	0.3
College	5,223,951	-200	0.0	-100	0.0	6,900	0.1

has helped better-paid workers at the expense of a small group of less-skilled, poorly-paid workers.

Changes in Industrial Composition and Comparative Advantage

We next consider whether changing industrial composition can be explained by standard comparative advantage reasoning. East Asia has pursued an industrial policy of targeting export-oriented industries. If East Asian industrial targeting has been successful then, at a bare minimum, East Asia must have distorted trade patterns. That is, the region must have trade patterns that cannot be explained by theories of comparative advantage. We examine whether this is true by using multivariate analysis to ask whether the components of East Asian trade that cannot be explained by comparative advantage considerations are systematic. If so then one explanation, though not the only one, is that trade policies can be effective in promoting the development of desirable industries. These models of comparative advantage are the gravity model associated with transactions costs of trade, the increasing returns to scale model associated with monopolistic competition, and the factor endowments model associated with the Heckscher-Ohlin theorem. We estimate these models at both the aggregate and industry levels.

Our first conclusion is that Canada trades more natural resource-based goods and East Asia trades more high-end manufactures than can be explained by any of these models. This is consistent with the observation that East Asian industrial targeting has effectively distorted trade patterns. However, we caution against the wider interpretation that East Asian industrial targeting was a success. Our work ignores the potentially high costs of industrial targeting. Our second conclusion is that when East Asian regional trade is unusually large, East Asian trade with other regions is unusually large. That is, regional arrangements complement multilateral arrangements.

Conclusions

Any important effects of East Asia trade on Canada should appear in two ways. The first is factor market effects. We find that the labour and capital content of Canada's net exports each shrunk by close to 5 percent over the 1972-92 period. This is just large enough to be cause for concern about the effects on Canadian wages and rates of return to capital. Further, when adjusted to account for the fact that low-end competition from East Asia has forced Canadian producers to adopt labour-saving, skill-intensive technology, it appears that the unskilled-labour content of Canada's net imports has risen sharply. *Ceteris paribus*, this should have contributed to falling wages for less-educated workers.

Communications and Telecommunications in Canada: In the next issue of the *Bulletin*!

Les communications et les télécommunications au Canada: dans le prochain numéro du *Bulletin*!

The second effect is that East Asia trade may have altered Canada's industrial composition. We find that Canada has inexplicably large levels of trade in natural resource-based products. It is inexplicable in the sense that we have controlled the following products for Canada's sources of comparative advantage: resource endowments, scale returns, and transactions costs. On the other hand, East Asia has inexplicably large levels of trade in a few low-end manufactures as well as a few high-tech industries. This probably reflects the division of the region between the miraculous tigers and labour-abundant countries such as China. Again, the results are inexplicable in the sense that we have controlled for the sources of comparative advantage associated with resource endowments, scale returns, and the transactions costs of doing business outside a country's region. The implication is that East Asian industrial targeting has indeed distorted trade patterns.

These results make us wonder whether, like several East Asian economies, Canada does indeed have an industrial policy albeit one that is buried in its tax structures etc. Our results suggest that such an implicit policy may exist and may have directed Canada towards inappropriate specialization in natural resource-based industries. What may be called for is a new pattern of industrial incentives that would encourage Canadian entrepreneurs to migrate out of natural resources and into growth-oriented, high-wage technology industries. Both the factor market and industrial composition effects of East Asia trade with Canada are developments that will need to be examined in further detail. ✿

This article summarizes an article entitled "Explaining Canada's Trade with the Asia Pacific," published in The Asia Pacific Region and the Global Economy: A Canadian Perspective, *edited by Richard Harris, University of Calgary Press, 1996.*

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Militaires canadiens et l'Asie-Pacifique au XX^{e} siècle

par Serge Bernier, directeur Histoire et Patrimoine, Défense nationale

Le capitaine H.C. Thacker est l'adjudant de la Garnison de l'artillerie de Québec, en 1904, lorsqu'il est désigné - après s'être porté volontaire pour cette tâche - pour faire partie du groupe des attachés militaires britanniques destiné à aller observer, en Mandchourie, le déroulement d'une guerre qui oppose la Russie au Japon. En ce début de siècle, l'Angleterre (et par extension, le Canada) qui est alliée au Japon, joue avec l'idée de s'impliquer contre les Russes dans ce conflit.

Le choix, par les Canadiens, d'un officier junior au titre d'attaché militaire n'est pas innocent. D'une part, ses rapports n'auront pas le crédit et la visibilité qu'auraient eus ceux qui seraient parvenus d'officiers supérieurs connus: or, dans les affaires militaires et impériales, le gouvernement de Laurier se fait aussi discret qu'il le peut. D'autre part, un jeune officier ferait ainsi une expérience dont profiterait durant de nombreuses années la petite force permanente canadienne, en particulier la branche de l'artillerie, la plus professionnelle à l'époque. Dans ce sens, Thacker

Le commandant J.H Fraser, agent de liaison canadien du commandement de l'ONU à Séoul, et M. Kap-Chong Chi, directeur de l'association coréenne des alliés de guerre des Nations unies, en compagnie des élèves de l'école primaire Nogok érigée en 1954 par la 25^{e} brigade photographiés lors de leur visite le 21 avril 1969. Archives nationales du Canada.

s'avère être un excellent choix: cet officier a en effet un potentiel immense, puisqu'il deviendra chef de l'état-major général de l'armée, en 1927.

Cela dit, les missives intelligentes qu'il expédie au Canada du Japon, puis de la Mandchourie, ainsi