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The “Double Diamond” Model of International Competitiveness: The Canadian Experience

Abstract

- Porter's home-base diamond model of international competitiveness is seriously flawed when applied to a small, open, trading economy like Canada's.
- Porter's framework needs to be adapted to explain Canada's successful resource-based multinationals, foreign subsidiaries and access to the triad market of the United States through the Free Trade Agreement. A new “double diamond” framework is developed to achieve this.

Key words

- Porter's single diamond model works for large triad economies but needs to be adapted for smaller countries like Canada.

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Introduction

The influential Porter (1990) study on the determinants of international competitiveness suggests that the home country “diamond” is the source of competitive advantage for domestic firms. The competitive advantage of a firm depends upon one, or more, of the four key determinants of the nation’s international competitiveness. The successful domestic firms build upon this home base and can then export or engage in outward foreign direct investment. In short, Porter’s model states that a global firm needs to have a sustainable competitive advantage based on the successful utilization of components of its home country diamond.

The thesis of this article is that Porter’s diamond framework explains the success of U.S., Japanese and E.C.-based multinationals, i.e. the triad. However, Porter’s model is not applicable to small, open, trading economies which are not parts of this triad. For example, Rugman and D’Cruz (1991) have demonstrated that Canada’s international competitiveness is not explained by the Porter home country diamond. They show that substantial modifications of the Porter framework are required to analyze the nature of Canada’s foreign-owned firms and institutional arrangements, such as the Canada-U.S. Free Trade Agreement. The latter arrangement suggest that the Canadian diamond need to be considered jointly with the U.S. diamond, i.e. that the Canadian managers needs to operate in this “double diamond” framework. Indeed, Rugman and D’Cruz propose that a “North American diamond” be used by Canadian managers and policy makers in searching for useful answers to the question of how to improve Canada’s international competitiveness.

A similar insight emerges from the work of Cartwright (1991) in his assessment of the application of the Porter model in the New Zealand study. A team headed by Porter used the Porter single diamond theory as a benchmark for a study of the international competitiveness of New Zealand, see Crocombe, Enright and Porter (1991). In his critique, Cartwright demonstrates, using empirical judgemental impact scores, that a “double diamond” framework has much greater explanatory power in a New Zealand context than does Porter’s home country diamond model. Cartwright concludes that his results “cast serious doubt on the ability of the Porter diamond theory to account satisfactorily for the international competitiveness of land-based industries that must export a high proportion of their production” (Cartwright 1991, p. 7).

In a related, but independent, development Cho (1991) has also adapted the Porter diamond in order to better explain the role of inward foreign direct investment into Korea. Cho extends Porter’s six factor model into a nine factor model and tests it to explain Japanese FDI (that by Japanese sogo-shoshas) in Korea, in relation to the performance of Japanese sogo-Shoshas in Korea,

whereas the methodology of Porter (1990) would require the use of the Japanese diamond, not the Korean.

How, then, should Porter's model be modified to explain the international competitiveness of small, open, trading nations such as Canada, New Zealand, and Korea? Here it is demonstrated that each country needs to set its own home-country diamond against the relevant "triad" diamond. In general, most Asia-Pacific nations will set theirs against Japan's. Canada, Mexico, Latin America and most Caribbean countries will consider theirs against the U.S. diamond. Finally, European nations such as Finland and Poland, outside of the E.C., will set theirs against the E.C. Porter did not recognize that there was an E.C. diamond, instead treating the member states as independent nations. This is obviously a faulty viewpoint, given the interdependence of intra-industry trade and foreign direct investment, especially as the E.C. 1992 measures come into effect.

In the study for Canada, Porter (1991), put his entire focus upon the manner in which the domestic firms in home country "clusters" develop competitive advantages from relevant elements of the home country diamond and use this as a base to become successful in global business. This thinking is potentially correct for large "triad" nations or blocks like the United States, Japan, and the E.C. It also explains special cases, such as South Korea, which had a low wage, high-tech, export-led development strategy.

The home base diamond analysis, however, is incorrect for small, open economies such as Canada, Finland, and New Zealand. These countries are highly interdependent with one or more of the triad blocks. They are characterized by two way flows of trade and investment. For example, in Canada the auto sector accounts for one third of both Canada's exports and its imports. Porter's diamond is also inaccurate for smaller nations such as Denmark, which is in the E.C.; or Switzerland which is closely affiliated to it. These E.C.-related countries harbour firms who have secured access to the large "triad" market of the E.C.

Porter's Single Country Diamond

The Porter model is based on four country-specific "determinants" and two external variables, chance and government, see Porter (1990), especially Chapters 3 and 4. Porter's four determinants and two outside forces interact in the "diamond" of competitive advantage, with the nature of a country's international competitiveness depending upon the type and quality of these interactions. The four determinants for a nation "... shape the environment in which

local firms compete and promote or impede the creation of competitive conditions", see Porter (1990), p. 71. The four determinants are:

1. Factor conditions:
the nation's factors of production, including natural resources and created factors, such as infrastructure and skilled labour.
2. Demand conditions:
the nature of home demand for products or services and the degree of sophistication of buyers.
3. Related and supporting industries:
the presence or absence of supplier and related industries that, themselves, are internationally competitive.
4. Firm strategy, structure and rivalry:
the domestic rivalry of firms and the conditions governing how companies are created, organized and managed.

None of these determinants is new or unexpected. Porter's principal contribution is to bring them together in a manner useful for business and government strategy. As an example of the lack of originality in the elements of the Porter diamond it is useful to discuss the Canadian case. There is an extensive literature in Canada on the components of the diamond.

For example, a key aspect of the first determinant, labour productivity in Canada, has been calculated for over 30 years by scholars at the Economic Council of Canada; for a survey of recent results see Daly (1990). The critical nature of Canada's natural resources as a source of value added has similarly been recognized, see Rugman and McIlveen (1985).

Determinant two is covered by extensive work by Canadian micro economists on the nature of consumer demand and by macro economists and the Department of Finance on the management of the Canadian economy.

Determinant three was explicitly discussed by Rugman and D'Cruz (1990) where the critical lack of an international mindset in some of the service sectors was classified in a matrix framework. It is good to see that Porter also stresses this; most other studies have ignored the role of services in international competitiveness. The ability of firms to develop external economies through clusters and networks of suppliers has also been studied by international business scholars in relation to the Japanese system and joint venture activity, for example, see Contractor and Lorange (1988).

A rich tradition of work in Canada using industrial organization models has attempted to handle determinant four. Indeed the nature of the tariff and industrial concentration in Canada has led to the development of such theories as the Eastman and Stykolt (1967) conditions for pricing and performance of foreign-owned and domestic manufacturing companies in Canada under conditions of domestic tariffs and high concentration ratios. Further, these studies of

the nature of inter-firm competition in Canada probably better reflect the reality of foreign ownership than those of most other economies, especially those of the United States.

Porter's two outside forces, chance and government, present interesting contrasts. Government is clearly of critical importance as an influence on a home nation's competitive advantage, for example, it can use tariffs as a direct entry barrier penalizing foreign firms or it can use subsidies as an indirect vehicle to penalize foreign-based firms; in both cases "domestic" firms benefit in terms of short-run competitive advantages. However, Rugman and Verbeke⁹ develop models in which these types of discriminatory government actions can lead to "shelter" for domestic firms, where shelter is defined to prevent the development of sustainable (long-run) competitive advantages. In contrast, work on "chance" has been minor. It is probably confined to those economists who inject "shocks" into a model system, such as the OPEC oil crises, to forecast aggregative responses. Porter, itself, uses it to refer to events such as wars.

To conclude, while there is a certain lack of originality in the components of Porter's diamond model, it has exactly the correct perspective by its focus on the strategies of firms rather than nations. It is vital to recognize that "... firms, not nations, compete in international markets" (Porter 1990, p. 33). To the extent that Porter brings together the firm-specific linkages between the four determinants and the two outside forces, his model is useful and, potentially, predictive. Porter's policy recommendations to restrict the nature of government industrial and strategic trade policy, and to instead open markets and have no arbitrary restrictions applied on foreign investment, are also to be welcomed.

Porter's Empirical Analysis

To operationalize the model Porter constructs 16 industry "clusters" and tests the model across ten countries, although only eight are reported. The eight are: West Germany, Italy, Japan, South Korea, Sweden, Switzerland, the United Kingdom, and the United States. In addition, Denmark and Singapore are listed, but are not discussed in the book.

The testing is almost entirely statistical analysis which relies on aggregate data on export shares for national industry groups for 1985, as collected by the United Nations. These data are inferior to those used by Rugman and D'Cruz (1990) since their study used a cleaner data set, with 1989 data. They have already computed Canada's international competitiveness for ten manufacturing sectors in 1989, using data from the IMD's *World Competitiveness Report*, of which D'Cruz is a contributing editor.

For each of the eight countries reported, Porter breaks down the analysis of their industries into 16 clusters. These incorporate a conventional grouping into four “upstream” clusters, six clusters for industries and supporting sectors, and six clusters for final consumption of goods and services. The four “upstream” clusters consist of Materials and metals, Forest products, Petroleum and chemicals, and Semiconductors and computers. The six “industry and supporting” sector clusters include Multiple business, Transportation, Power generation and distribution, Office, Telecommunications, and Defense. The six industry clusters for “final consumption expenditure” include Food and beverages, Textiles and apparel, Housing and household, Health care, Personal, and Entertainment and leisure. While these 16 clusters are quite useful for international comparisons they are probably not a set of clusters that is relevant, for small, open trading economies such as Canada’s.

One of the most peculiar features of Porter’s book is the “league tables” on pages 536 and 537. This is a classic case of comparing apples and oranges. A competitive industry is defined as one whose export shares are above that for the country as a whole. The United States has a world export share of 15 percent, Canada, 4 percent and Korea 1 percent. Obviously Korea ends up with more industries above 1 percent than the United States – so what? The Porter book does not have a table showing these critical cut off points. This sloppy and unprofessional scholarly reporting is a characteristic of Porter. Another absurd mistake occurs in the discussion of R and D on p. 633. In this table on R and D spending, Korea does not appear. The reason? It is not a member of the O.E.C.D. Why did Porter not send his research assistant to find Korea’s R and D from another source?

Smaller nations will have weak components in their home diamonds (especially in demand conditions) when compared to large nations. But smaller nations are not condemned to a second rate status for their clusters, as the empirical measurements of competitiveness by Porter purport to reveal. This is because Porter’s measure of international competitiveness is export shares. Yet much of the business of smaller countries is conducted abroad (through foreign direct investment), within the larger triad markets of the United States, E.C. and Japan – where the action is.

In his Canadian study Porter (1991) does not count the sales abroad by the foreign subsidiaries of Canadian-owned multinationals in the (Canadian) export share data, nor is any serious effort made to adjust the study for their importance. In the study Porter has “league tables” across nine countries. These show that Canada performs poorly in exports except in forest products and minerals. These tables ignore FDI. Porter also states that foreign-owned firms in Canada do not benefit Canada, although (paradoxically) his data would include any exports of such foreign-owned subsidiaries.

In contrast, the Porter (1991) data exaggerate the export shares and league ranking of U.S. and E.C.-based businesses because many of these have elements of foreign ownership, which are ignored in their data (it is assumed that the U.S. export data, for example, on chemicals reflect no foreign ownership, although this sector is over forty percent foreign owned). Thus the relative rankings of Canadian industries and clusters are biased downwards in the Porter league tables.

There are also four historical industry case studies described in the book. The first is on the German printing press industry, the second is on the U.S. patient monitoring equipment industry, the third is on the Italian ceramic tile industry, while the fourth is on the Japanese robotics industry. In addition, there is a chapter on service industries, with several case studies. Again, none of these seems to be particularly relevant for small, open economies.

Finally, Porter describes four stages of "national competitive development": factor driven; investment driven; innovation driven; and wealth driven, see Porter 1990, p. 546. The last stage is associated with a decline in international competitiveness. At several points in the book Porter makes the classic mistake of stating that Canada is stagnating in Stage 1, due to its reliance on resource industries e.g. Porter 1990, p. 548.

Based on conventional statistical analysis of export shares Rugman (1991) already predicted that Porter will find that Canada's most successful and internationally competitive industry clusters will be:

- a. Materials/metals,
- b. Forest products,
- c. Petroleum, chemicals, and
- d. Transportation.

The first three upstream industry clusters (a), (b) and (c) for Canada will be determined by its natural resources in minerals, timber, and energy. However, it is likely that there is substantial value added due to managerial and marketing skills in these areas. The Transportation cluster's competitiveness will be determined by an institutional factor; the Canada-U.S. Autopact. Indeed, nearly one third of Canada's exports (and imports) are in autos and auto-related products. This factor alone will explain much of Porter's data on international competitiveness, as they are based on exports and world market share. While Canada's Telecommunications sector should show up as a successful cluster, the role of Northern Telecom's U.S. operations may be missed in Porter's national data for Canada, but may perhaps be captured by an industry study. Other clusters which might be close to inclusion, but probably will not make it based on their global market shares, are: Power generation and distribution; and, Food and beverages. In the other nine clusters Canada is highly unlikely to be internation-



ally competitive, according to Porter's approach, although there may be successful segments within some of these clusters.

Rugman's predictions were confirmed by the Porter (1991) study, a synopsis of which was released in October 1991. Although the October synopsis did not contain much analytical detail, several drafts of the study were widely circulated throughout 1991, with little change being made in any of the statistical figures.

Porter's Diamond is Flawed

The model developed by Porter fails to explain key issues in Canada's international competitiveness, on its own terms, for a variety of interconnected reasons which we will now discuss.

A major conceptual problem with Porter's model is due to the narrow definition that he applies to foreign direct investment (FDI). Porter defines only outward FDI as being valuable in creating competitive advantage. He then states that foreign subsidiaries are not sources of competitive advantage (p. 14) and that inward FDI is "not entirely healthy" (p. 671). He also states that foreign subsidiaries are importers, and that this is a source of competitive disadvantage, p. 18.

All of these statements are questionable and have long ago been refuted by Canadian-based scholars, e.g. see Safarian (1968), Rugman (1980), and Crookell (1990). They have demonstrated that the research and development undertaken by foreign-owned firms is not significantly different from that of Canadian-owned firms. Rugman (1990) shows that the largest 20 U.S. subsidiaries in Canada export virtually as much as they import (the ratio of exports to sales is 25 percent while that of imports to sales is 26 percent).

The work by Porter actually reveals a branch plant mentality. He sees foreign firms in Canada as simply micro-replicas of their parents, which only exist because of unnatural entry barriers, for example the tariff. While he states that "judgement" is used in examining the competitive performance and "managerial autonomy" of foreign-owned subsidiaries (p. 21) he does not specify how this is to be done and then indicates that it does not apply to "production subsidiaries of foreign companies" (p. 25). This thinking then rules out the broader nature of the foreign-owned subsidiaries' contributions to the development of Canada's manufacturing base.

A real weakness in Porter's book is its flawed understanding of the nature of two way FDI. In the Canadian context, seventy percent of Canadian trade is done by fifty multinationals, with half of these being foreign-owned, see Rugman (1990). The methodology used by Porter permits only an examination

of the exports and outward FDI of Canada's "home" industries. Yet there is as much inward FDI as outward and the imports of the foreign-owned subsidiaries are matched by their exports. Indeed, Canada runs a slight surplus on the intrafirm trade of the sum of U.S. firms in Canada plus Canadian-owned firms in the United States. This demonstrates that foreign-owned firms act and play as significant a role as do the domestic owned Canadian corporations.

The views expressed in Porter on the role of natural resources is old fashioned and misguided. It argues that reliance on natural resources is as bad as reliance on unskilled labor or simple technology (e.g. pp. 13, 28, 564, 740). In fact, Canada has developed a number of successful megafirms which have turned Canada's comparative advantage in natural resources into proprietary firm-specific advantages in resource processing and further refining. These are sources of sustainable competitive advantage, see Rugman and McIlveen (1985). Case studies of Canada's successful multinationals like Alcan, Noranda, Nova, etc., illustrate the methods by which value added has been introduced by the managers of these resource-based companies. Studies by D'Cruz and Fleck (1987) and by Rugman and D'Cruz (1990) demonstrate that, over time, Canada's resource based industries have developed sustainable competitive advantages.

Porter Misunderstands Foreign Ownership

In an attempt to incorporate the vital role of multinational activity and overcome some of the flaws in Porter's framework, Dunning (1990) has adapted some of Porter's model. Dunning adds multinational activity as a third outside variable (the others being chance and government). This is an ingenious idea but itself raises problems, especially in a Canadian context. The role of multinationals is so widespread in Canada that it is difficult to believe that these firms can be assigned a role equal to that of chance.

It is a serious criticism of Porter's framework when the world's leading scholar in international business finds that the role of multinationals is not covered adequately by the diamond framework. Porter's thesis is that firms in global industries are actually multinational enterprises and that nations prosper when firms in such global industries are successful. Yet if one were to accept Dunning's basic premise, namely that multinationally is missing from Porter, where else could it be put?

Perhaps the most logical place is in the determinant called "firm strategies, structure and rivalry". To some extent Porter is already trying to include it here, especially in his attempts to deal with "global" industries. Yet his diamond is

also supposed to explain “multidomestic” industries. However, it does not make sense that the same rivalry determinant can both include multinationality for global industries yet exclude it for multidomestic industries. This may be an explanation as to why Dunning wants multinationality to be laid across the four determinants in the diamond in a broad and even manner, like chance and government.

On another point Dunning may be quite correct in his insight that: “. . . there is ample evidence to suggest that MNEs are influenced in their competitiveness by the configuration of the diamond in other than their home countries, and that this, in turn, may impinge upon the competitiveness of home countries” (Dunning 1990, p. 11).

Dunning cites the example of Nestlé having 95 percent of its sales outside Switzerland; therefore the Swiss diamond of competitive advantage is less relevant than that of foreign countries in shaping the contribution of Nestlé to the home economy. If that is true for Switzerland then it is just as applicable in a Canadian context. Virtually all of Canada’s large multinationals rely on sales in the United States and other triad markets. Indeed, it could be argued that the U.S. diamond is likely to be more relevant for Canada’s industrial multinationals than is Canada’s own diamond, since over 70 percent of their sales take place there, on average. The Canada-U.S. Free Trade Agreement reinforces this point. However, it rather devalues the entire approach of Porter’s book to dismiss Canada’s diamond in this manner.

What we can conclude from this, however, is that tensions arise in Porter’s model as soon as a serious effort is made to incorporate the true significance of multinational activity. It is questionable that multinational activity can actually be added into any, or all, of the four determinants, nor included as a third exogenous variable.

This weakness in Porter’s model would not only apply to Canadian based ones but to multinationals from all small open economies, i.e. over 90 percent of the world’s nations potentially cannot be modelled by the Porter diamond. Besides Canada, other nations with their own MNEs based on small home diamonds include Australia, New Zealand, Finland, and most, if not all, Asian and Latin American countries, as well as a large number of other small countries. The small nations in the E.C., like Denmark, have been able to overcome the problem of a small domestic market by gaining access to one of the triad markets – a point somewhat neglected in Porter. Obviously “triad-based diamonds” need to be constructed and analyzed.

Porter on Autos: Out of Gas

An application of Porter's work to Canada would also have some serious methodological problems. Three of these problems, for example, can be identified in the following statement on methodology for assembling clusters.

"We also excluded a few industries from the list when their trade was almost exclusively with neighbouring nations. For example, U.S. automobile chassis exports are heavily skewed toward Canada. A preponderance of trade with neighbours indicated that the nation's competitive advantage was not significant in international terms and trade solely reflected geographic proximity, unless we had indicators of significant foreign direct investment by the nation's firms in the industry. In the latter case, the industry was left off the list," Porter 1990, p. 740.

The first of these methodological problems relates to the fact that over seventy percent of Canada's exports and FDI go to the United States, a trend recognized by the Canada-U.S. Free Trade Agreement, which is an attempt by Canada to maintain a market already developed but which has come under increasing pressure from protectionists to close out foreign competition. As the United States' largest trading partner, this has direct ramifications for continued access by Canadian businesses to their U.S. markets. Porter's model dismisses these seventy percent of Canada's exports and argues that they do not reflect a competitive advantage since they go to a neighbouring state. Canada's "diamond" is therefore not supportive of industries which are internationally competitive, i.e. Canada needs to export to somewhere else other than the nearby U.S. triad market. This ignores the fact that these U.S. sales take place in a competitive, foreign market to Canada's. This indicates that Porter's model is not particularly useful in capturing the nature of Canada's trade and investment relationships with the large U.S. market.

Second, the example chosen, of automobile chassis trade, is actually a case of the successful creation of competitive advantage. The huge economic success of the Canada-U.S. autopact over the last quarter century, with benefits to both nations in terms of output, employment and wealth creation, is precisely due to this negotiated international treaty; one which builds upon the geographical proximity of the Windsor-Detroit corridor. Canada has developed skilled human capital and satisfied industry and national requirements through the value added and local context provisions of the autopact, see Fuss and Waverman (1991). As stated earlier, trade in autos and auto-related inputs, in fact, account for about one third of all U.S.-Canadian trade. Yet Porter dismisses this based on a definition that is clearly inapplicable to the Canadian context.

Third, Porter's inability to reconcile his model with all aspects of foreign direct investment appears again. As stated earlier, he only defines *outward* FDI as being valuable, Porter, pp. 55, 779. The vast bulk of Canada's auto industry (and all of it for Porter's 1986 data) is U.S. owned; the big three (General Motors, Ford and Chrysler) all have substantial FDI in Canada. They are making valuable contributions to Canada's manufacturing sector and international competitiveness. While there is no FDI by Canadian auto assemblers in the United States, there are exports of autos and auto parts to the United States by U.S. owned firms in Canada. Porter's approach would lead us to discount the latter.

The lack of internal consistency in Porter's model should now be apparent; it is not operational in a world of intra-firm and intra-industry trade. Today there are two way flows of exports and imports across national borders. These have little to do with a nation's home country diamond and cannot be measured by exports alone. Instead, multinationals operate across borders and the sources of international competitiveness stem from successful global corporate strategy.

Another example of the lack of robustness of Porter's model and its inability to describe the current Canadian situation comes from Porter's neglect of the auto-industry in his discussion of data on robots in Canada, Porter, p. 230. These are drawn from one of Porter's firm industry case success stories – robotics in Japan. Here Porter actually reports data showing that Canada has a sizeable number of robots. Many of these are in the auto industry, which, at the time of these data (1980 and 1983) were entirely foreign-owned. Yet, as noted previously, Porter suggests repeatedly that foreign-owned firms are not sources of competitive advantage. Porter cannot have it both ways.

The main point of this criticism of Porter's methodology is that a clear recognition of the need to model multinational activity correctly in a Canadian context is necessary if policy prescriptions and activities are to be properly defined and undertaken. This requires a deep and consistent understanding of the nature of the multinational enterprise in Canada, coupled with a rich empirical and practical understanding of the actual performance of multinationals in Canada. Porter's book does not demonstrate mastery of these twin requirements. This weakness of Porter would be generalizable to many other smaller, open, trading nations.

Despite these conceptual and data-based flaws, it is not impossible to modify Porter's model and test it on Canada. A new study has in fact been released by the federal government and the B.C.N.I., see Porter (1991). It was done by Porter's consulting group, the Monitor Corporation, and it examines Canada's competitiveness position using Porter's diamond. In this new work Porter made a few changes but he did not modify substantially the methodology used in his book. Indeed, he rejects the three points made here, i.e. the need to correct for the nature of foreign direct investment in Canada, the value added in Canada's

resource industries, and the relevance of Canada's home country diamond in an integrated North America economic system.

The "Double Diamond" Framework in Canada

Rugman and D'Cruz (1991) have adapted Porter's model to make it relevant in diagnosing Canada's international competitiveness. Their approach should not be viewed as a substitute for Porter; instead, it builds upon his central theme of the focus on corporate strategy and process as a source of competitive advantage for a nation. Canada's home country diamond does not have the answers to explain Canada's international competitiveness. Instead, as Canada is highly integrated already with the United States, it is much more useful to conceive of a "North American" diamond for Canada. Once individual Canadian managers and workers perform to North American standards they can take the next step which is to perform at a global standard. The Technical Appendix explains and develops the conceptual framework for this North American diamond.

Most Canadian manufacturing is already being forced to compete globally. Therefore the North American diamond is much more relevant for both FDI into Canada as well as Canadian FDI into the United States. Some small, multidomestic, businesses are not globalized. In sharp contrast to manufacturing, most of Canada's service sectors are not globalized; they still rely on Canada's own diamond. The few globalized service sectors include banking and business services.

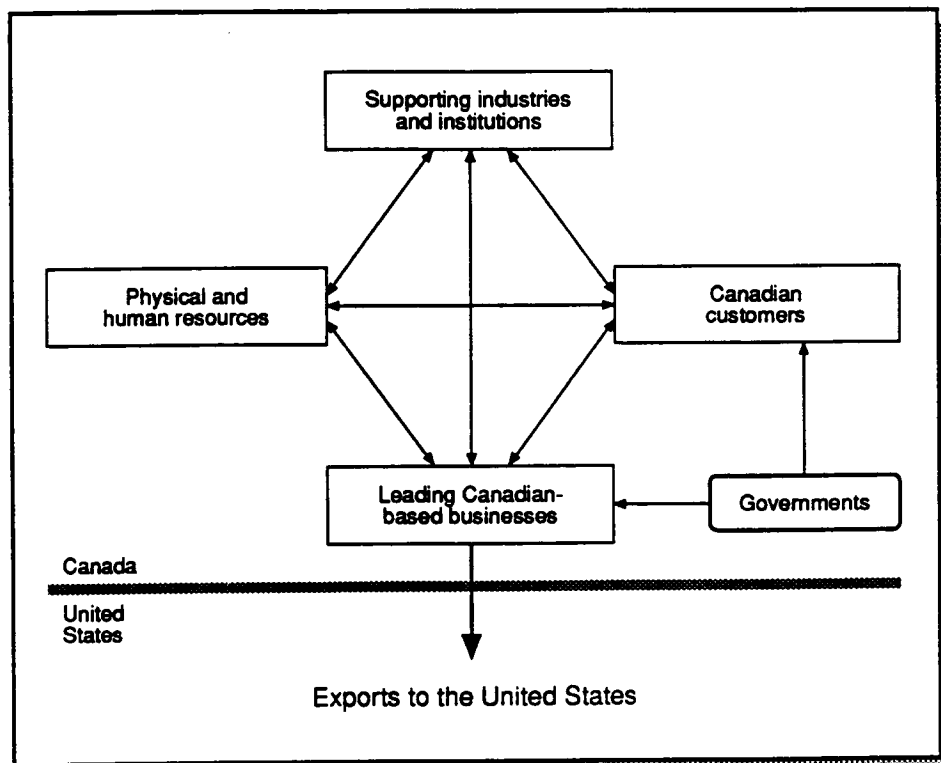
The Canada-U.S. Free Trade Agreement did not suddenly make the Canadian diamond obsolete; instead it was an institutional device which recognized the high degree of economic integration already in place. How ironic it would be if, despite the FTA, business and government leaders in Canada still attempt to apply Canada's home country diamond instead of working towards an understanding of the emerging North American diamond.

Porter will only work in a Canadian context when the North American diamond is used instead of Canada's "home" diamond. Canada needs to play in the big leagues of international competition and this means having the North American diamond as the basic unit of analysis for Canadian business decisions. Success in North America can then be used as a base for success in the global economic system. Thus the North American diamond must be interpreted as an intermediate step in the development of globally competitive Canadian business. Without success in the North American diamond, survival is unlikely for any Canadian business subject to global competition. Virtually all Canadian manufacturing firms and most service sector organizations are now subject to this form of competition. In the next section these points are illustrated.

The Porter Diamond Applied to Canada

Building on Rugman and D'Cruz (1991) Figure 1 illustrates the application of Porter's concepts. Figure 1 has Porter's four diamond components, with Canadian governments affecting these components as an overlay, although the major impact is on customers and leading firms. For simplification, chance is left out. In addition, the Canada-U.S. border is shown to illustrate that over 70 percent of Canada's exports go to the United States. The Canadian market is too small to support the development of the economies of scale that are required in many manufacturing product lines, and in services, in modern industry. Hence, it has been the practice in Canada to view the U.S. market as a set of export opportunities to provide the base for developing large-scale industrial businesses in Canada. These businesses have been largely designed to exploit the base of natural resources found in Canada. Emphasis has been placed on commodity products that have been developed in isolation from major customers.

Figure 1. Porter's Home Country Diamond says treat the United States as an Export Market



Source: Adapted from Porter (1990).

In the Porter (1991) study he states that the role of government has been protectionist. Canada has lived off its resources in an "old economic order". Government has seldom paid attention to the simultaneous development of the supporting industries and infrastructure, or to the upgrading of physical and human resources. According to Porter, policy use of the Canadian diamond has been excessively inward looking, content to rely on the extent and quality of the country's factor endowment as the base for wealth creation.

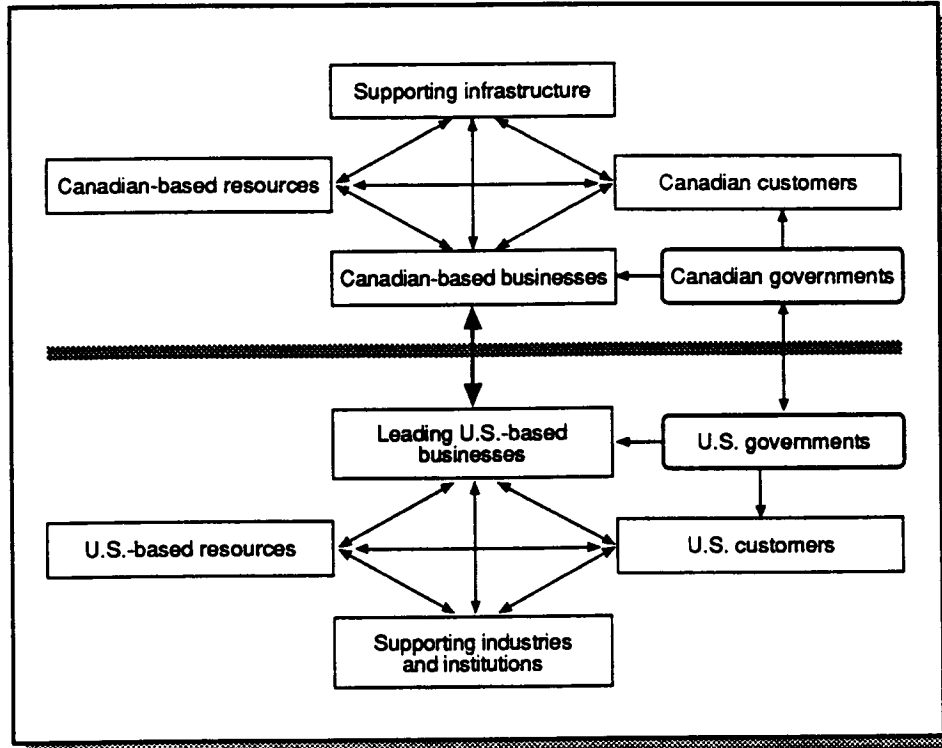
The North American Diamond

The Canada-U.S. Free Trade Agreement (FTA) marked the culmination of a long drawn-out debate to recognize that Canada's former protectionist approach was no longer viable. The border between the two countries has become less and less of a factor in the development of Canadian business strategy and industrial policy. Instead of seeing the U.S. market solely as a set of export opportunities, Canadian-based businesses now recognize that they are in direct competition with businesses operating in the U.S. diamond. These leading U.S. businesses are created in a home base where the markets are considerably larger than those of Canada, where there are more customers who are more demanding than Canadian customers, and where supporting industries and institutions are more competitive.

To survive in rivalry with the leading U.S.-based businesses, Canadian-based businesses need to develop competitive capabilities of a high order. This requires that they link the Canadian and U.S. diamonds, as illustrated in Figure 2. This diagram was first developed by Rugman and D'Cruz (1991), especially in Chapter 3. No longer can Canadians rely solely on a home country diamond and Canada's natural resource base. In particular, today, innovation and cost competitiveness are especially important, and this requires access to the U.S. diamond.

The FTA has brought about some changes in the nature of the Canadian market that have been painful in the short run. Canadian customers now have better access than ever before to products and services made in the United States. As the importance of the border as a factor in business dealings diminishes, Canadian customers are becoming more and more like U.S. customers. Canadians become spillover targets of "made-in-the-USA" strategies aimed at the domestic U.S. market. In the long run, this can be of significant benefit to Canada, because Canadian customers are learning to be as demanding as U.S. customers. Canadian-based businesses that learn to serve these customers well will be to hone their competitive skills to better serve their customers in the United States.

Figure 2. The Free Trade Agreement Links the Canadian and U.S. Diamonds into a "North American Diamond"



The FTA has also created a unique set of pressures on the Canadian subsidiaries of U.S. multinationals. For a few, the rationale for setting up operations in Canada was based on a desire to gain access to Canada's natural resources. However, many were based originally on the impulse to overcome the tariff barriers erected by Canadian governments to encourage the development of secondary manufacturing. The integration of the Canadian economy with that of the United States has rendered such "tariff factory" businesses unviable. If they are scaled only to serve the Canadian market, they will find themselves in direct competition with their parents' U.S.-based businesses for mandates to serve the Canadian market. Several recent plant closures have been the result of the Canadian subsidiary's losing the battle for that mandate to a business unit of the U.S. parent. This is based on the U.S. plant's ability to serve the Canadian market at a lower cost because of its superior scale, lower labour rates or other competitive advantage.

Rivalry for mandates is not limited to Canadian subsidiaries of U.S. multinationals; similar conditions apply to Canadian-owned multinationals. Their Canadian-based operations are in rivalry for mandates with their U.S.-based operations. If their U.S.-based operations are better able to mobilize the resources in the local U.S. diamond, then the mandate for development of future business will go south of the border.

It must be emphasized that while these decisions are driven by many considerations, wages are the principal determining factor in industries that are labour intensive. In those cases, the most significant threat to Canadian businesses comes, not from the United States, but from Mexico and other low-labour-cost countries. In other industries, considerations such as proximity to key customers and the depth and effectiveness of the local support network weigh more heavily. Thus, the attraction of U.S. locations for future mandates for Canadian-based businesses must not be regarded solely as an attempt to gain access to low-wage labour.

A North American Diamond Is a Step Towards Becoming Globally Competitive

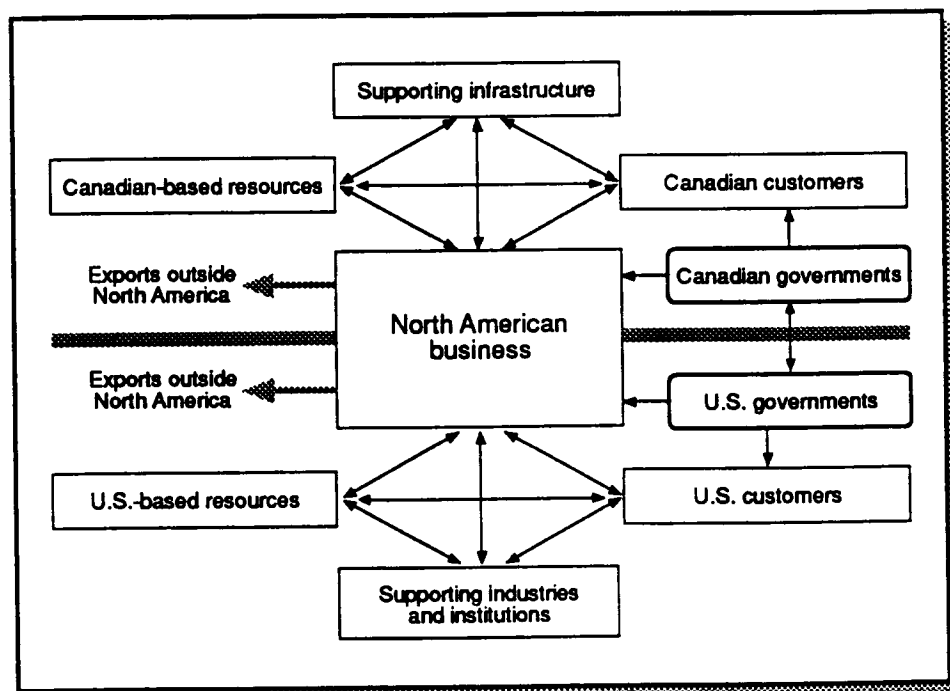
One way out of this dilemma is for Canadian businesses to operate with a North American mindset; managers need to lay the groundwork for becoming globally competitive (see Figure 3). This would involve treating the United States and Canada as a single market, and integrating the use of the U.S. and Canadian diamonds as a single home base for the development of their forward strategies. The four components of the Canadian diamond plus the four in the U.S. one add up to seven.

In particular, a North American diamond strategy would require:

- developing innovative new products and services that simultaneously meet the needs of U.S. and Canadian customers, recognizing that close relationships with demanding U.S. customers should be used to set the pace and style of product development;
- drawing on the support industries and infrastructure of both the U.S. and Canadian diamonds, realizing that the U.S. diamond is likely to possess deeper and more efficient markets for such industries; and
- making free and full use of the physical and human resources in both countries.

The goal of this strategic approach must be to develop businesses that are capable of competing effectively by exporting outside North America. Success in the integrated U.S. and Canadian market must be regarded only as an intermediate step for the firm, otherwise it risks making the strategic error of

Figure 3. The North American Diamond helps Canadian Businesses to Become Globally Competitive



remaining content with being competitive only with its domestic rivals and ignoring the danger of being outpaced by rivals from other parts of the world. Thus, while these strategic approaches will have a North American focus at the outset, it is vital that they be executed by managers who have highly developed skills in international business. This requires managers who can anticipate the form and intensity of competition from businesses based outside North America.

Using North America as a base for developing global competitiveness is very different from the "Fortress America" mindset that is responsible for the decline of so much of U.S. industry. In this regard, Canadian managers may take some comfort from the fact that, living in a relatively small economy, they have less temptation to slip into the complacency that has led many U.S. managers to believe that their domestic market is large enough to sustain success against global rivals by using strategies which are strictly North American in their market scope. In contrast, Japanese and South Korean managers have a deep conviction that their countries must export and succeed globally to survive. It is time that Canadian managers came to the same realization. The difference is

that they should now regard sales to U.S. destinations as domestic sales, not exports; and eventually focus on markets outside North America.

This approach applies both to multinationals owned by Canadians and to foreign-owned multinationals that have a significant business in Canada, with a global mandate and capability. In particular, this applies to businesses of U.S. multinationals operating with Canada as a home base. The stock of U.S. foreign direct investment is higher in Canada than in any other part of the world. Therefore, U.S. multinationals have a great deal at stake in their Canadian businesses. In order to protect their stake, U.S. multinationals need to take vigorous measures to make these businesses globally competitive.

Above all, Canadian governments, and the public at large, must show that they are willing to treat these foreign investments as if they were "domestic" to Canada. They must be willing to support these businesses in their efforts to develop new, globally competitive products and services in the same manner and to the same degree as support is provided to Canadian-owned businesses. Then it is up to Canadian managers to design and implement strategies for the firm-driven global success which is the basis of a nation's international competitive advantage.

Strategic Clusters in the North American Diamond

The advantage of using a North American diamond is that it forces business and government leaders to think about management strategy and public policy in a different way. No longer is the domestic Canadian diamond useful as the unit of analysis. Neither managers nor politicians can ignore global competition; both need to recognize that doing well in North America is the first step towards global success. The correct perspective for Canadian strategies for international competitiveness is to identify successful and potentially viable "strategic clusters" of industries within Canada, and to examine their linkages and performance across the North American diamond.

A strategic cluster is defined as a network of businesses and supporting activities located in a specific region, where the leading flagship firms compete globally and the supporting activities perform to international standards. In the case of a Canadian-based strategic cluster the flagship firms will be based in Canada, but they can be either foreign-owned or Canadian-owned. Their economic performance is of more significance than their ownership. Most of the supporting activities will be Canadian-based, but some of them can be foreign-owned. In addition, some of the critical business inputs and skills may come from outside of Canada; their relevance and usefulness is determined by the membership of the strategic cluster.

For example, a successful strategic cluster, based in Canada will have one or more large multinational enterprises at its centre. Whether these are Canadian-owned, or foreign-owned is irrelevant, despite Porter who argues that the former are the only sources of competitive advantage. These large multinationals are flagships on which the strategic cluster depends. They should operate on a global basis and plan their competitive strategies within the framework of global competition. A vital component of the strategic cluster will be a group of companies with related and supporting activities. This will include both private and public sector organizations. In addition, there will be think tanks, research groups and educational institutions characterized by the excellence of their work rather than their quantity. Clearly, some parts of this network will be based outside of Canada; what is important to understand is the nature of the linkages across the border and the leadership role of the Canadian flagships. These are all world class, competitive, multinationals.

What is being described is a regionally-based strategic cluster in Canada of large multinationals with related and supporting industries and services making up a network of economic and commercial activity across North America. While the lead multinationals perform at global standards the other members of the network need to perform at least to North American ones. The reason is that there will be competing clusters at other locations across North America. Therefore, a Canadian-based and Canadian-led strategic cluster cannot afford to have any component of its network performing at "domestic" rather than international levels.

Canada's Strategic Clusters

Rugman and D'Cruz (1991) discuss the ten strategic clusters in Canada. One is the auto assembly and auto parts industry in southwestern Ontario, led by the big three U.S. auto multinationals with their related and affiliated suppliers and distributors. There are linkages to various high-tech firms and research groups; these linkages span the border, as does the auto assembly industry itself. Other strategic clusters are based on the banking and financial services in Toronto; the advanced manufacturing and telecommunications strategic cluster in Toronto; the forest products industries in Western and Eastern Canada; the energy strategic cluster in Alberta; the aerospace and electronics strategic clusters in Montreal and Ottawa and, possibly, a fisheries strategic cluster in Atlantic Canada. Some of these strategic clusters are led by flagship Canadian-owned multinationals such as Northern Telecom, Nova or Bombardier; others are led by, or include, foreign-owned firms like IBM Canada and DuPont Canada.

Many of the Canadian-based clusters will be resource based. The challenge for managers in these strategic clusters is to continue to add value and eliminate

the commodity nature of Canada's resource industries. One way is to develop a global marketing strategy, building on the North American diamond, instead of remaining as the extractor or harvester of the resource. To implement such a global strategy will then require a large investment in people to develop not just marketing skills but a global intelligence network in which the different tastes and preferences of customers can be identified and serviced. Here there is a role for smaller knowledge intensive marketing research and consulting firms to participate in the resource-based strategic cluster. There is also the potential for collaborative ventures, provided that a sound governance structure for the joint ventures can be constructed.

Further research is required to investigate Canadian-based strategic clusters and their competitive advantages compared to rival clusters within North America, and also the world. This requires two types of work. First, the intra-firm competition of clusters within North America requires new data which ignores the nature of foreign ownership and whether U.S. and Canadian foreign direct investment by sector is inbound or outbound. Instead, foreign direct investment in North America must be regarded as "domestic" and be contrasted with "external" direct investment from Japan and the E.C. Similarly, trade flows between Canada and the United States must be thought of as intrafirm when they occur between components of a cluster, or even between and amongst clusters.

This approach is so radical that many existing concepts must be rethought. For example, the level and extent of subsidies available to clusters located in the United States must be related to those paid by provinces in Canada. Yet there is little or no published work on state or provincial subsidies; even the work on federal subsidies in either country is extremely thin.

Finally, the real sources of competitive advantage are to be discovered not only by statistical analysis but by interviews of managers and officials, i.e. by field work in the strategic clusters. Such "hands on" research is exceptionally time consuming and expensive. To make the task feasible a number of important strategic clusters can be selected for analysis; self audits could be made; conferences held, etc. This paper can only raise the issue and map out the route to be followed in order to improve Canadian competitiveness. It is up to business leaders and government officials to read the map and get moving.

Conclusion

There is a rich vein of Canadian scholarship dealing with the topic of international competitiveness for Canada. This theoretical and empirical research

needs to be built into a greatly revised and modified version of Porter's diamond framework. A mechanical application of the methodology in Porter's book, to the Canadian situation, would result in an erroneous evaluation of the sources of Canada's international competitiveness. It would ignore the role of inbound foreign direct investment, the nature of Canada's foreign-owned autoindustry, the value added in Canada's resource industries, the Free Trade Agreement, and other key related issues.

In particular, the statistical and related empirical work identifying Canada's successful clusters would be too narrow if the logic of Porter's book were to be strictly applied. A focus on Canada's home country diamond alone is unlikely to detect the real nature of Canada's international competitiveness; this is already being determined within a North American diamond. Helped by the Free Trade Agreement, the North American diamond is already forcing Canadian managers, in services as well as manufacturing, to think globally and plan accordingly. At worst, Porter's book, and its identification of a weak home country diamond, would offer support to such closet protectionists as economic nationalists, the science and technology lobby, and advocates of industrial policy. These are people who would seek to subsidize technology and innovation, at the expense of resource industries, and thereby isolate Canada from the realities of global competition.

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Appendix to References

Since this paper was first drafted in early 1991 the "double diamond" framework has become the subject of fierce debate, especially in connection with Porter's Canadian study (Porter 1991). In this study Porter explicitly rejected the double diamond, alleging that Canadians should only "tap into" the U.S. diamond but otherwise build global industries from the single Canadian diamond. He argues that, at best, Canadians can only achieve parity with Americans when operating in the United States, and that their locus of competitive advantage is in Canada. These ideas, and the Porter Canadian study itself, have been roundly criticized by Rugman (1992 a). Armstrong and Porter (1992) have replied, leading to a further dialogue, Rugman (1992 b). These recent references are now listed:

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