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**An evaluation of indicators of knowledge-based FDI
and the MNE-host country relationship**

By

Ross Anderson, B.A.

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Faculty of Graduate Studies & Research
in partial fulfilment of
the requirements for the degree of

Master of Arts

in International Affairs

Norman Paterson School of International Affairs

Carleton University
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The undersigned hereby recommend to the Faculty of
Graduate Studies and Research acceptance of this thesis
submitted by Alexander Ross Anderson as partial fulfilment
of the requirements for the degree of Master of Arts.

Professor Maureen Appel Molot, Director
The Norman Paterson School
of International Affairs

Professor Maureen Appel Molot, Supervisor

Abstract

Knowledge is unlike other factors of production -- it is learned rather than transferred. As multinational enterprises (MNEs) and governments seek to learn from each other, they are integrating their knowledge-related activities for greater effect. In this climate of collaboration, theories of MNE-government bargaining within International Political Economy sometimes fail to explain the interests, strategies and interaction between MNEs and the countries in which they invest. Drawing on a diverse literature, advances in theory are put forward in this study through the introduction of a new hypothesis. An independent and dependent variable are suggested that attempt to capture the essence of MNE-host country interaction built around knowledge-related investment. The relevance of the hypothesis as a tool for future case study analysis is probed. The results prove to be mixed which suggests that although there is interest in knowledge-related investment, these interests have not yet been translated into behaviour.

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Introduction

Context

Two of the policy goals governments are embracing in their quest to facilitate economic growth are the promotion of domestic innovation and the attraction of a greater share of foreign direct investment (FDI). In their effort to translate innovation policies and investment policies into growth, governments are looking to the relationships that they are able to facilitate and manage between themselves and firms, as well as other private and public sector institutions. In another respect, the success of innovation and investment policies depends on the extent to which the relationships between these two policies are identified and managed effectively. These two sets of relationships, those between states and firms and those between innovation and FDI, form the basis of this study, particularly, the point at which the two sets of relationships intersect.

Some of the ties between innovation and FDI are obvious. Both innovation and FDI are international in scope. Foreign direct investment, by definition, involves the flow of investment across national borders. Firms that are incorporated and headquartered in one country, their home country, but invest in other countries (host countries) are growing in number and importance within the global economy. Those firms that derive a significant portion of their revenue outside their home country are referred to as 'multinational enterprises' (MNEs) and they are largely responsible for the growth in cross-border investment flows that has outpaced growth in trade.¹ The

¹ Graham Vickery, "The Globalization of Investment and Trade" in John de la Mothe and Gilles Paquet, eds., *Evolutionary Economics and the New International Political Economy* (London: Pinter, 1996), p.97.

international flow of investment is often recognized in terms of cross-border movements of capital or equipment, but increasingly MNEs are also acting as a source of cross-border flows of scientific and technological knowledge.²

Due to their size and geographic scope, MNEs are particularly well positioned to engage in the production of knowledge such as training or research and development (R&D).³ They also have the resources and scope to tap into localized sources of specialized knowledge throughout the world and integrate and internalize that knowledge as part of the MNE's core capabilities.⁴ By locating and participating in various clusters of innovative activity, MNEs play a role in the knowledge-based regional networks of host countries.⁵

The impact of knowledge-related FDI is not limited to MNEs simply acting as one of many sources of technology for a host country. As the production of knowledge becomes more cross-disciplinary and transnational, as the costs of R&D soar, and as the commoditization of technological advances quickens, the unique resources of MNE global networks become increasingly indispensable to host countries.⁶ Host countries

² MNEs act as sources of knowledge not only through subsidiaries, but through joint ventures, alliances, etc., John Dunning, *Multinational Enterprises and the Global Economy* (New York: Addison-Wesley, 1992), p.290.

³ The concept of knowledge and knowledge-related FDI refers to more than R&D or training: it includes MNE activity that involves proprietary technological or organizational capabilities. Dunning, 1992, p.288.

⁴ Dunning, 1992, p.290.

⁵ John Stopford, "The Globalization of Business" in John de la Mothe and Gilles Paquet, eds., *Evolutionary Economics and the New International Political Economy* (London: Pinter, 1996), p.128.

⁶ Michael Gibbons, *The New Production of Knowledge: Dynamics of Science and Research in Contemporary Societies* (London: Sage, 1994). Dunning, 1992, p.290.

that ignore the potential of knowledge-related FDI risk not only losing a source of capital, or a particular technology, but a partner in the on-going race to engineer innovation-driven comparative advantages.⁷

In the case of knowledge-related FDI, investment and innovation objectives overlap for both MNEs and their host countries. This overlap is one of the relationships noted earlier. The second set of relationships noted was that between public and private sector institutions that play an important role in the administration and execution of innovation and investment priorities. The flows of information, the coordination of activities, and the sharing of resources that mark successful government-firm partnerships apply to the MNE-host country relationship. That being said, the benefits of FDI are not guaranteed.

The FDI of MNEs can, but does not necessarily, lead to a virtuous circle of indigenous technological development, greater productivity, economic growth, and more sophisticated MNE investment.⁸ While the benefits of knowledge-related FDI are attractive, the stakes are high. The outcomes of knowledge-related investments are, by nature, highly uncertain.⁹ Investment resources are scarce and technological mistakes can be costly, possibly setting the technological development of the host country backward (e.g., locking it out of future developments).¹⁰ Even when knowledge-related investments

⁷ Lorraine Eden, "Introduction" in Lorraine Eden and Evan Potter, eds., *Multinationals in the Global Political Economy* (NY: St. Martin's Press, 1993).

⁸ Dunning, 1992, p. 316.

⁹ R.R. Nelson and Sidney Winter, *An Evolutionary Theory of Economic Change* (Harvard University Press, 1982).

¹⁰ D. Mowery and N. Rosenberg, *Technology and the Pursuit of Economic Growth* (Cambridge University Press, 1989). p.8. W. Cohen and D. Levinthal, "Innovation and Learning: The two faces of R&D", *The*

succeed, the appropriation and distribution of the benefits can be contentious, making the selection of partners and the management of relationships between the MNE and host countries of some importance to both parties.

The study of host country-MNE relationships

The interdependency between MNEs and host countries is an important relationship within the field of international political economy (IPE).¹¹ The prevailing approach has been to assess the relationship in terms of a bargain which is struck between the MNE and the host country where shifts in bargaining power between the two parties translate into a redistribution of the benefits generated from the FDI. Conflicts arise between the MNE's interests, such as efficiency and profitability, and the goals of states such as employment, and environmental and human rights standards. These issues can directly influence the domestic political support of the host government, making them negotiating points with the MNE.

Yet formal bargaining between the MNE and the host country government is far less prevalent than it once was during the 1970s. Significant changes in MNE foreign

Economic Journal, 99 (September, 1989) p.594.

¹¹ The literature on MNE-host country bargaining is reviewed in Chapter Two: Charles Kindleberger, *American Business Abroad: Six Lectures on Direct Investment* (New Haven: Yale University Press, 1969); Raymond Vernon, *Sovereignty At Bay: The Multinational Spread of U.S. Enterprises* (NY: Basic Books, 1971); Theodore Moran, ed., *Multinational Corporations: The Political Economy of Foreign Direct Investment* (Lexington: Lexington Books, 1985); Richard Newfarmer, ed., *Profits, Progress and Poverty* (University of Notre Dame Press, 1985); Barbara Jenkins "Re-examining the Obsolescing Bargain" in *International Organization* 40, Winter, 1986; Stephen Kobrin "Testing the bargaining hypothesis in the manufacturing sector in developing countries" in *International Organization*, 41, Autumn, 1987; John Stopford and Susan Strange, *Rival States, Rival Firms* (Cambridge University Press, 1991); Lorraine Eden and Evan Potter, eds., *Multinationals in the Global Political Economy* (NY: St. Martin's, 1993).

investment strategies, as well as changes in the policies and attitudes of host countries, have led to a more liberalized and cooperative environment.¹² No longer active ‘gatekeepers’ to inward direct investment, host countries are now competing to attract MNE investment by offering incentives such as tax breaks, subsidies and tailored government programs such as training. Rather than bargaining with MNEs over conditions of entry, host countries are encouraging FDI and hoping to entice further re-investment and higher value-added activity over time.

Where MNE-host country relationships do develop, they are increasingly part of a web of bargains between the MNE and sub-national governments, unions, supplier companies, customers, special interest groups, public sector institutions and private sector alliance and joint venture partners.¹³ MNE relationships with host countries are more complex and dispersed -- particularly as MNEs seek to link with host site institutions and networks.¹⁴ There are a larger number of stakeholders, greater linkages across policy agendas, new competitive pressures, unforeseen market developments, differences in competitive strategies -- all leading to less predictable outcomes in MNE investment activity and host country returns on that investment even for bargains struck in the same sector of the same country.¹⁵ In these instances, it is more accurate to refer to the MNE-host site relationship rather than the MNE-host country bargain. Since the bargaining

¹² John Dunning, “Governments and Multinational Enterprises: From Confrontation to Cooperation?” in Lorraine Eden and Evan Potter, eds., *Multinationals in the Global Political Economy* (NY: St. Martin’s Press, 1993) p.72.

¹³ Kobrin, 1987, p. 615.

¹⁴ Dunning, 1992, p. 470.

¹⁵ Stopford and Strange, 1991, p.29.

framework remains the dominant model of MNE investment in host countries within IPE, it has been suggested that it be updated so that it captures the essence of the MNE-host site interdependency.¹⁶

Research question

The bargaining framework arose out of an investment scenario that is now less common. Shifts in bargaining power to the host country were predicted based on the host country's ability to threaten the MNE with the loss of control over its capital investments, through, for instance, nationalization of the MNE's production facilities. With the increase in capital mobility and footloose manufacturing, such a threat no longer has the same impact and in the case of knowledge-related investments, scarcely has any meaning.¹⁷

With fierce competition among countries for the same MNE investment, host sites need to promote the features that are most attractive to MNEs and take best advantage of the partnerships that do develop. Similarly, the location and management of the MNE's foreign investments are in its strategic interest. This begs the question of how to ascertain which assets (and their associated benefits) are most highly valued, such as technology, labour, or capital, how the assets of the MNE and host site interact, and the degree to which MNEs and host sites can influence this interaction.

¹⁶ Lorraine Eden, "Bringing the Firm Back In: Multinationals in International Political Economy" in Lorraine Eden and Evan Potter, eds., *Multinationals in the Global Political Economy* (New York: St. Martin's Press, 1993), p.33.

¹⁷ Kobrin, 1987, p.613.

Assets and interests can vary by sector, even by firm. In the case of pharmaceutical MNEs, MNE-host relationships may hinge on intellectual property rights versus the MNE's performance with respect to investment in host country R&D. In the case of services firms it may be taxation versus repatriated earnings and transfer pricing. In the auto sector it may be tariff barriers versus the retention of jobs. Given the political salience of unemployment in many host countries, there is good reason to believe that job creation will dominate the investment calculus.

While a broad framework is necessary to incorporate the range of FDI relationships and outcomes, there is growing evidence that host countries and MNEs are focusing their attention on knowledge as the asset from which their competitiveness is derived.¹⁸ Previous work on updating the bargaining framework has taken the initial step of identifying knowledge as the primary factor of production.¹⁹ Using this as the starting point, the next steps are to define knowledge assets, measure their value, and determine how knowledge assets are reflected in bargaining power and bargaining outcomes.

Hypothesis

Just as is the case with tangible assets, the value of the MNE's knowledge assets is determined by the level of demand for those assets by the host country. The same is true in the other direction: the value of host country knowledge assets is set by the demand for them by the MNE. Although valuations are made for knowledge assets in the

¹⁸ John Dunning, 1992, p.313.

¹⁹ *Ibid.*, p.33.

same manner as traditional assets such as labour, capital or natural resources, there are significant differences between knowledge and other factors of production. The unique characteristics of knowledge-related FDI stem from the way knowledge is produced and exchanged.²⁰

Due to the tacit nature of knowledge, it is not exchanged like any other economic commodity. It is learned rather than transferred.²¹ The tacit quality of knowledge means that knowledge is often specific to the firm and the location in which it is developed or adapted. It can reside in the minds of employees or the routines and organizational structures of firms. Learning tacit knowledge requires shared experiences between individuals or firms.²² The learning process is not linear and independent, it is increasingly transdisciplinary and cumulative -- it stems from the combination and re-combination of previous knowledge drawn from a variety of different disciplines and locations. The commercial application of knowledge requires several iterations based on feedback and firm-specific modifications.²³ The consequence of these characteristics is that MNEs and host countries seek to combine related capabilities and assets, so that they can learn from, and with, each other.

²⁰ These characteristics are detailed in the literature review found in Chapter One.

²¹ Michael Polanyi, *The Tacit Dimension* (London: Routledge, 1966).

²² John Cantwell, "The Theory of Technological Competence and its Application to International Production" in D. McFetridge, ed., *Foreign Investment, Technology and Economic Growth* (University of Calgary Press, 1991), p.36.

²³ G. Dosi et al., eds., *Technical Change and Economic Theory* (London: Pinter, 1988).

The characteristics of knowledge-related FDI suggest that learning is the primary objective for both MNEs and host countries.²⁴ The challenge is to identify the variables that influence MNE-host country learning -- those features that distinguish the MNE-host country relationship from traditional MNE investment activity.

Innovation depends on shared practices and extensive information flows across functional groups and organizational boundaries. Since learning occurs when knowledge assets, particularly human resources, combine and interact, then each MNE-host country relationship may be unique and highly dependent on the quality and degree of cooperation and integration that occurs between the MNE and the network of public and private sector institutions within the host site.²⁵ The term 'complementarity' will be used to represent some of the factors that dictate the fit between the assets of the MNE and the host country. In other words, complementarity will be used to signal the learning potential the MNE and the host country perceive in each other.

Since bargaining power rests on the relative demand for each other's assets, it follows that judgements by the MNE and host country about their degree of complementarity will influence bargaining positions.

It is hypothesized that the value given to bargaining assets will be increased by the perceived complementary fit of those assets with the knowledge-related strategies and assets of the other partner.

²⁴ It is assumed that the commercialization of technological opportunities is one of the consequences of 'learning'. Cantwell, 1991, p.36.

²⁵ The reference to a network of public and private sector institutions is drawn from the literature on 'systems' of innovation. This concept will be described in more detail in Chapter Three. See, for instance, B.Å. Lundvall, ed., *National Systems of Innovation: Toward a Theory of Innovation and Interactive Learning* (London: Pinter, 1992); R.R. Nelson, ed., *National Innovation Systems* (NY, Oxford, 1993); John de la Mothe and Gilles Paquet, *Local and Regional Systems of Innovation* (Boston: Kluwer, 1998).

This hypothesis extends to shifts in bargaining power. For instance, the rate at which one partner learns from the other will raise its bargaining leverage over the course of the relationship.

Methodology and outline

In a departure from past case studies and statistical analyses of MNE-host country bargaining, new dependent and independent variables are developed in this study. The hypothesis emphasizes the dynamic character of MNE-host country relationships where both parties seek to upgrade their capabilities. While formal bargaining by host countries with MNEs may be declining in importance, a new frontier in the MNE-host site relationship is emerging as host sites and MNEs become increasingly active in creating, combining and managing the interaction of their technology systems. Specifying learning as the outcome of the interaction to be studied and complementarity as the independent variable that affects this outcome, is an attempt to capture a key factor in the interaction between the technology systems of MNEs and host sites. The study proceeds in four parts.

First, economics and international business studies literature are used to identify the implications of knowledge production and exchange. Chapter One outlines changes in the production structure which have a direct bearing on the strategy and foreign operations of MNEs. The rise of knowledge as the primary resource within developed

economies and the strategic role of learning are highlighted. The chapter consists of three sections, the first dealing with knowledge, the second with organizational learning, and the third with the new competitive environment.

The second chapter reviews the bargaining theory within IPE. The perspective developed in Chapter One allows for an analysis of bargaining theory and its limitations.

Chapter Three expands on the theoretical framework provided within the IPE literature by advancing several propositions. Insights from business and economics literature regarding the characteristics of knowledge are explored in relation to bargaining theory. Relationships that are aimed at the joint exercise of learning are judged to require greater integration and collaboration than typical economic transactions. Consequently, resort to technological alternatives (e.g., on the open market) may not be viable, increasing the sensitivity of partners to each other. Based on these propositions a new dependent variable (learning) and independent variable (complementarity) are selected. To assess the assets of the MNE and their interaction with a host site, a theory of MNEs by John Cantwell is used. To assess the assets of the host site, cluster analysis, now under development within the OECD, is used.

Chapter Four probes the plausibility of the hypothesis and the theoretical propositions developed in Chapter Three. The objective is to find empirical evidence that supports the claim that MNEs play a significant role in the development of host site innovatory capabilities through their investment activity. Both statistical and case study evidence are reviewed. In both cases there are significant limitations to the data.

The theoretical arguments that are developed leading up to Chapter Four are drawn from an extensive and international literature. In Chapter Four that changes somewhat as secondary sources and primary material are largely drawn from Canada. Statistical and case study research of MNE activity in Canada, particularly knowledge-related MNE activity, is relatively sparse and somewhat dated. Moreover, a large portion of the case study evidence that supplements the statistical references is drawn from only two publications, one dealing with the US and the other with the Canadian auto sectors. The applicability of the empirical evidence is constrained by its ties to one country and one industrial sector.

Generalizations from such a limited base are problematic, but the purpose of this empirical research was not to support generalizations. Rather, the auto sector was selected precisely because it was not an obvious candidate. The auto sector is global in reach, it is a significant economic contributor, and it is not always considered to be knowledge-intensive (sometimes considered a mature industry). First impressions may be that knowledge-related FDI is essentially limited to 'hi-tech' sectors dominated by R&D, but knowledge is often tacit in nature and held within the organizational structures or routines of a factory assembly line. The auto sector was deliberately selected to illustrate that knowledge-related FDI can play a role in a variety of sectors and firms. It was also selected to supplement the limited statistical data that is dependent on measures related to R&D activity which under-represents the role of MNEs in the production and diffusion of knowledge.

The review of statistical and case study evidence establishes the basis of the hypothesis (the potential contribution of MNEs to knowledge production and local innovatory activity). Once established, the next step is a probe of the relevance of the variables that make up the hypothesis. It is investigated whether complementarity has an impact on the valuation of assets, and thus MNE-host site interaction. Government promotional material is used to indicate the priority being placed on this issue by both MNEs and host countries. Telephone interviews with government and private sector sources familiar with MNE-host government negotiations in Canada supplement the published sources and provide empirical evidence of the relevance of this inquiry. Interviews were used to determine whether ‘complementarity’ and the assessment of knowledge-related assets has entered into the investment calculus of either host sites or MNEs. Site selection consultancies are used as a proxy for MNEs. They were asked whether MNEs assess:

- if there are suitable ‘learning’ partners within the host site (including other firms, government and universities)
- the nature of knowledge flows within the system or cluster;
- if the indigenous base is adaptable in terms of administrative and organizational capabilities, interfirm relations, and institutional structure.

Canadian national and provincial government officials responsible for FDI policy and investment promotion were asked whether they assess, in their negotiations with potential MNE partners:

- if the R&D intensity of the foreign activity of the MNE is high;
- if the MNE exhibits competencies that fit with the domestic competitiveness and development of the indigenous base;
- if the MNE demonstrates administrative and organizational capabilities and an institutional character that values learning and information flows.

Evidence that confirms that MNEs and host countries are assessing the complementarity of each other's knowledge assets would suggest that bargaining power is being derived from these assets. If this is the case, the independent variable selected in this study and the methods outlined to measure it may have value as tools for case study research of MNE-host country bargaining.

The use of cluster and diffusion analysis offer potential tools for MNEs to assess the knowledge-related bargaining assets of host sites. This type of analysis also offers potential tools for host countries to assess the complementarities specific MNEs may be seeking from host sites. Based on this analysis, host countries would be in a better position to promote their (possibly unique) technological attributes, thus strengthening their bargaining position.

Dunning (1994) has argued that MNEs are increasingly attracted to investment sites with low transactional and coordinating costs. In addition to the macro-economic and organizational policies cited by Dunning that influence these costs, this study examines whether micro-economic policies focused on the absorptive and transfer capacity of indigenous clusters also play a part in the MNE-host country relationship.

I. Literature review: Knowledge and learning

This chapter reviews some relevant economic and management literature regarding the characteristics of knowledge and its implications for firms and governments. The next three sections examine: knowledge as an economic commodity; the process of acquiring knowledge (i.e., learning); and the implications of knowledge for the operating environment of business. The conditions which are outlined will serve as a base from which to examine IPE theory.

Knowledge as an economic commodity

The term 'knowledge' is used in this study to refer to technical and organizational capabilities and expertise. Technology, on the other hand, refers to the output of technological and organizational capabilities.²⁶ Technology can take the form of physical hardware such as new products or new forms of transport and communications, and it can take the form of soft assets such as organizational improvements and more efficient inventory control techniques. The capabilities (knowledge) from which technology is produced can be possessed by an individual or embedded within the routines of an organization.²⁷ Despite common use of the terms 'technology' and 'R&D' in reference to competitive advantage and economic growth, these terms are not always perceived to include organizational or managerial capabilities, yet these aspects of knowledge can be more important to the success of an enterprise than the technical elements.

²⁶ Dunning, 1992, p.289.

²⁷ Mowery and Rosenberg, 1989, p.8.

When knowledge or technology are conceived broadly, they include business functions such as R&D, design, engineering, advertising (brands), marketing (knowledge of customers), human resources (training, personal creativity), and management²⁸. When the full range of activities is considered, knowledge becomes a fundamental and widespread characteristic of the economy.

The production and application of knowledge is critical for new high technology industrial sectors. It also drives the growth and competitiveness of many firms in “low-technology”, traditional sectors as well. In fact, with the introduction of flexible manufacturing, new production and marketing methods and other technological advances, by the 1980s, firms in nearly every industry were knowledge-intensive.²⁹

The current “information revolution” depends on the widespread application of knowledge in the same way technological knowledge in textiles in the late 18th and early 19th century spurred productivity growth.³⁰ While this may be so, neoclassical economic models have been woefully inadequate tools to measure the extent and value of knowledge.³¹ Unfortunately, as a result, empirical data is limited:

[B]ecause of our inability to measure properly the inputs and outputs to the creation and use of knowledge, standard measures of GNP and productivity give a misleading

²⁸ Dunning, 1992, p.289.

²⁹ Michael Porter, *The Competitive Advantage of Nations* (NY: The Free Press, 1990), ft. 39, p.777.

³⁰ Peter Howitt “On Some Problems in Measuring Knowledge-Based Growth”, in Peter Howitt (ed.), *The Implications of Knowledge-Based Growth for Micro-Economic Policies* (Calgary: University of Calgary Press, 1996), p.3.

³¹ Financial statements do not recognize as assets the knowledge and skill level of the employees, training, technological development, technology licensing agreements or marketing and distribution investments. Robert McLean, *Performance Measures in the New Economy*, Premier’s Council, March 1995, p.14.

picture. In particular, our failure to include a separate investment account for knowledge the way we do for physical capital means that much of an economy's annual output is simply missed.³²

Notwithstanding the limitations of neoclassical models, there is a substantial literature which details the characteristics of knowledge, the processes which make up its production, and the implications for innovation and commercialization.³³

One characteristic of knowledge, from which several important implications follow, is that the technical and organizational expertise which firms apply for technological advantage can take two forms. Knowledge can be codified, which is the case with computer language, manuals, and blueprints. Knowledge can also be tacit, which means that it is experiential -- the product of learning-by-doing, shared experiences, and routines which evolve over time.³⁴ Firms seek not only the "know-how" of a new technology, production method, or organizational structure, they seek to acquire the "know-why": the underlying understanding and management competency which drives the innovation.³⁵

³² Howitt, 1996, p.2-3.

³³ See for instance, R.R. Nelson and Sidney Winter, *An Evolutionary Theory of Economic Change* (Harvard University Press, 1982); Roy Rothwell and Walter Zegveld, *Industrial Innovation and Public Policy* (London: Pinter, 1983); G. Dosi et al., eds., *Technical Change and Economic Theory* (London: Pinter, 1988); D. Mowery and N. Rosenberg, *Technology and the Pursuit of Economic Growth* (Cambridge University Press, 1989); W. Cohen and D. Levinthal, "Innovation and Learning: The two faces of R&D", *The Economic Journal*, 99 (September, 1989); John de la Mothe and L. Ducharme, eds., *Science, Technology and Free Trade* (London: Pinter, 1990); Michael Gibbons, *The New Production of Knowledge: Dynamics of Science and Research in Contemporary Societies* (London: Sage, 1994).

³⁴ Polanyi, 1966.

³⁵ Cohen and D. Levinthal, 1989, p.593.

The tacit dimension of knowledge means that it cannot be easily transmitted or reproduced by firms.³⁶ They can imitate technology, but they must learn the tacit elements themselves. As such, tacit knowledge is often what comprises the core competence of firms. Most knowledge that makes the difference between success and failure for a firm is tacit.³⁷ The tacit nature of knowledge and the requirement that it be learned leads to several implications for the manner in which the production of knowledge is managed.

Organizational learning

The diffusion of knowledge is not like the diffusion of information. Information flows freely. In the case of knowledge, it is not simply a matter of transmission; rather, the process requires the re-creation of knowledge by the recipient:

What is commonly thought of as costless imitation is, in fact, a costly process that resembles, in many ways, the process of innovation. Any time an individual sets out to learn something, some of it will come from observing what others have done, and some of it will be novel.³⁸

The costs of diffusing and “re-creating” knowledge are compounded when it is tacit.

Unlike codified information which can be transmitted under licensing agreements, tacit knowledge requires that firms make special efforts to absorb and learn the tacit components by working closely together over time.

³⁶ Howitt, 1996, p.11.

³⁷ John Baldwin and Joanne Johnson, *Human Capital Development and Innovation*, (Ottawa: Statistics Canada, 1995), p.5.

³⁸ Howitt, 1996, p.11.

When knowledge exists within the organizational routines of a firm, it presents particular problems for the process of diffusion and learning. Organizational routines may reside in a disaggregated form among a number of individuals, with no one individual having a comprehensive understanding of the entire production method. In these cases, it is the organization that possesses the knowledge, though the firm may not know exactly where it exists.³⁹

Insofar as firms learn tacit knowledge in conjunction with, and from, other firms, they must adjust their processes, routines, and methodology (i.e. their behaviour) in accordance with the shared understandings they develop with their partners. Where external knowledge is complex, less targeted to the needs of the firm and unfamiliar to what is known to the firm, a greater internal effort is needed for the external knowledge to be assimilated.⁴⁰ The learning effort is eased to the extent that the firm holds prior related knowledge. The failure of the firm to possess knowledge related to the external source can lead to phenomena such as “not-invented-here” syndrome, where external ideas are rejected because external ideas are too distant from the firm’s existing absorptive capacity to be either appreciated or assessed.⁴¹

Prior related knowledge, which may result from manufacturing experience, R&D investment or human capital development (e.g., training), provides a language through which a firm can interpret external technology and signals regarding future technological

³⁹ *Ibid.*, p.12.

⁴⁰ W. Cohen and D. Levinthal, 1989, p.594.

⁴¹ W. Cohen and D. Levinthal, “Absorptive Capacity: A New Perspective on Learning and Innovation”, *Administrative Science Quarterly*, 35, (March 1990), p.137

developments. It provides a knowledge base with which new knowledge can be combined for creative extrapolation and associations. In many cases, knowledge is cumulative. It builds on a previous framework existing within the organization. The more that research in a field of technological development builds on prior findings, the more necessary is an understanding of prior research to the assimilation of new, subsequent findings. Prior knowledge provides the firm with the ante necessary to stay in the technological game.⁴² If a firm is not constantly seeking to update and develop its knowledge resources it can be “locked out” of future technological developments and product markets.⁴³

As the organization places more effort on accumulating knowledge it learns how to learn.⁴⁴ The exploitation of external research findings (spillovers from rivals, basic research from public institutions) requires active assimilation.⁴⁵ The success of reverse engineering, technology monitoring, and technology transfer (all commercialization activities which skip direct investment in research) hinges on a dynamic and growing stock of knowledge within the firm. The absorptive capacity of a firm therefore becomes an important part of a firm’s ability to succeed, even for firms using a “follower” technology strategy.⁴⁶

⁴² W. Cohen and D. Levinthal, 1990, p.129-131.

⁴³ Ibid., p.140.

⁴⁴ Ibid., p.130.

⁴⁵ Ibid., p.141.

⁴⁶ John Baldwin et al. *Strategies for Success* (Ottawa: Statistics Canada, 1994), p. xv.

This is true for countries as well. It may not be wise for firms or countries to concentrate on developing radical innovations and breakthroughs in technology, when resources are limited. Rather, they can excel by commercializing discoveries made elsewhere. Even so, both firms and countries must develop an absorptive capacity that allows for monitoring, learning and innovating, even if these activities are largely directed at externally generated knowledge. For countries without the resources needed to bet on massive and/or very uncertain technological projects, a focus on commercialization of proven innovation may be more prudent. But such a focus does not lessen the importance of indigenous absorptive capacity and knowledge production for these purposes.

The maintenance of a body of technological and organizational expertise within firms provides them with knowledge assets that are critical in building competitive advantages. In order for these assets to keep from stagnating and becoming obsolete, firms benefit from the ability to learn (and adapt) which allows them to renew, apply and manage their knowledge assets through relationships with external sources of knowledge.

Relationships with external sources of knowledge are critical for two reasons. They allow firms to find new applications for their knowledge as well as expand their knowledge and the organization of that knowledge in new directions. In fact, the production of knowledge is more and more widely distributed and transdisciplinary in nature. It is no longer limited to a relatively small and established set of institutions (universities, large firms) -- it involves a growing variety of individuals and organizations

with specialist knowledge that come together temporarily in networks.⁴⁷ The economies of scope that can be exploited from a firm's knowledge base often depend on the addition and application of complementary external knowledge.⁴⁸ The result of these trends is the need for firms to be able to configure and manage their knowledge with knowledge resources held in other organizations.

Given the complexity of the technological environment in which firms compete (new combinations of unrelated technologies, very short design periods, rapid product obsolescence, high research costs, and high degrees of uncertainty regarding future technological developments), firms look to strategies of organizational learning as a survival response.⁴⁹ If substantial numbers of firms compete on the basis of technological renewal, within technologically intensive industries, there are significant implications for the competitive environment as a whole.

The new competitive environment

Innovation and technological development can outpace the in-house capabilities of some firms. Not only can products and markets shift rapidly, but processes, managerial

⁴⁷ Gibbons, 1994, p.14.

⁴⁸ Ibid., p.64.

⁴⁹ Claudio Ciborra, 'Alliances as learning experiments: Cooperation, competition and change in high tech industries' in L.K. Mytelka, *Strategic Partnerships: States, Firms and International Competition* (London: Pinter, 1991), p.51.

practices, competencies and even identities of firms can also be made irrelevant.

Technological developments can be competence-enhancing and they can be competence-destroying.

Management theory has focused on the means through which firms can identify and build durable competitive advantages. These advantages are generally seen to be the result of innovation:

Firms create competitive advantage by perceiving or discovering new and better ways to compete in an industry and bringing them to market, which is ultimately an act of innovation. Innovation here is defined broadly, to include both improvements in technology and better methods or ways of doing things...It results from organizational learning as much as from formal R&D. It always involves investment in developing skills and knowledge, and usually in physical assets and marketing effort.⁵⁰

As the pace of knowledge creation and diffusion continues to accelerate, there is some doubt whether competitive advantages can ever be durable in the sense that they are protected from rapid obsolescence. Since aggressive, innovative competitors can move into markets easily and rapidly, eroding the advantages of established players, strategies based on protecting these advantages may themselves be obsolete.⁵¹

Given the rise in technological intensity and the flux this and other forces have created in the market place, it has been suggested that a new type of competition has emerged, characterized by constant disequilibrium and unsustainable advantages.⁵² As

⁵⁰ Porter, 1990, p.45.

⁵¹ Ian MacMillan, "Preface" in R. D'Aveni, *Hypercompetition: managing the dynamics of strategic maneuvering* (NY: The Free Press, 1994), p.ix.

⁵² R. D'Aveni, *Hypercompetition: managing the dynamics of strategic maneuvering* (New York: The Free Press, 1994), p.xiii.

firms continue to create advantages for themselves, these advantages increasingly have a secondary effect of “creatively destroying” the advantages of rivals. In fact, this secondary effect, has in cases, become the primary objective as firms seek to neutralize and make obsolete the advantages of competitors.⁵³ Strategy now focuses on developing a continual series of temporary advantages that disrupt the status quo.⁵⁴

The consequence is that firms may actually suffer and stagnate if they rely solely on the same set of assets or competencies. They must instead renew and redirect their knowledge base through constant learning. Efforts to sustain existing advantages may actually hinder the firm, re-enforcing and limiting its knowledge base, blinding the firm to new learning opportunities. The basic condition of the competitive environment is the constant need to renew and exploit the firm’s knowledge base and abilities:

The key to longevity in dynamic, knowledge-intensive industries, then, is to be in a position to control the transformation of the market, rather than merely respond to changes in it. From this perspective, it appears that competitive advantage in such industries is more a function of the rate of increase in knowledge than of an absolute increment to the stock of knowledge.⁵⁵

This review has profiled three premises. First, knowledge, particularly tacit knowledge, is a key resource of firms. The production of this resource is subject to a high degree of risk, uncertainty, costs, time constraints, and complexity. Second, firms succeed by pursuing strategies of innovation, which means that they must have resident knowledge

⁵³ *Ibid.*, p.1.

⁵⁴ *Ibid.*, p.7.

⁵⁵ L.K.Mytelka, “Knowledge-Intensive Production and the Changing Internationalization Strategies of Multinational Firms” in J. Caporaso, *A Changing International Division of Labour* (Boulder: Lynne Rienner Publishers, 1987) p.50.

and they must learn by combining their knowledge with external sources. Third, in technologically intensive industries, innovation is a series of dynamic strategic interactions which are considered and undertaken relative to the actions of competitors.⁵⁶

⁵⁶ D'Aveni, 1994, p.17.

II. Literature review: IPE theory

The previous chapter outlined some of the characteristics of knowledge-based competition and the importance of active learning to business success. The intent of Chapter One is to establish a connection between knowledge, business strategy directed toward organizational learning, and success within the new competitive environment. This connection informs a reading of IPE literature dealing with the interaction of foreign MNEs and host governments that will be undertaken in this chapter. In the review of literature that follows, care will be taken to identify the extent to which it acknowledges the implications of technology (which is often left undefined) including the implications of knowledge as a factor of production.

The bargaining approach

A branch of IPE literature which has focused on the interaction between MNEs and host governments depends heavily on assumptions about the activity of MNEs. For the most part, a single model, the “obsolescing bargain”, has been used to predict the outcome of host government-MNE interaction. The model is based on an understanding of the MNE’s bargaining position which requires assumptions to be made regarding MNE activity, MNE invested assets, and MNE strategy.

The activity, assets and strategy of MNEs have evolved since the 1970s when the obsolescing bargain was initially developed and applied to MNE investments in the extractive sector of developing countries. In the mid-1980s, a test of the model indicated

that it lost its predictive power when applied to manufacturing firms due to changes in MNE activity evident in the manufacturing sector. In the early 1990s, case study research revealed that discrepancies between MNE activity, assets and strategy existed not only between MNEs in the manufacturing and extractive sectors, but between MNEs investing in different countries, different sectors and even MNEs investing within the same country and sector:

...the outcomes of the bargaining have been markedly divergent. Indeed, divergence is a leitmotif of this book -- divergence between continents, between countries in the same continent or region, even within countries over time and among sectors and finally, divergence between firms -- not necessarily in accordance with their national origin. Hardly surprising that, with so many intervening variables, there has been so much variety in the opportunities for change and in the speed with which moves could be made....Implicit in these arguments is a general concern about the adequacy of existing theory to explain what has been happening. By working at the micro-level of individual firms and investment projects, we found many instances where we could not have anticipated the outcomes had we predicted them using received wisdom. Our concern is not that the theories are wrong, but incomplete and insufficient to reflect the changes we observe.⁵⁷

While Stopford and Strange stop short of discarding the theoretical concept of the bargain, they note significant problems with the obsolescing bargain and the bargaining power model generally. They concur that the obsolescing bargain recognizes an important characteristic of the MNE-host government relationship: that relative bargaining power changes over time. But they also confirm the finding of Kobrin (noted below) that the obsolescing bargain does not accurately predict changes in relative bargaining power when applied to the manufacturing sector.⁵⁸ Moreover, Stopford and

⁵⁷ Stopford and Strange, 1991, p.29-30.

⁵⁸ *Ibid.*, p.24.

Strange argue that existing theoretical models do not constitute a general explanatory theory of why and when the balance of bargaining power shifts, nor why outcomes differ, nor why and how the bargaining process gets started.⁵⁹

Stopford and Strange provide a critique of bargaining theory without offering an alternative, they go so far as to suggest that formal modelling will not be successful. They argue that structural changes in the global economy have led to an increased interdependence between states and firms and that, in turn, this interdependence affects the options open to each. At best, it is possible to build “frameworks” which provide some structure to the options available to states and firms: “...the criteria they use for choice and action can only usefully be considered in the framework first of the triangular nature of bargaining and second of the matrix of multiple but related agendas affecting their relationships.”⁶⁰ Stopford and Strange only provide illustrative examples of these two frameworks; they do not attempt to modify the bargaining power model nor do they attempt to fashion their own predictive model, suggesting instead that each case may have to be assessed on its own merits.

The framework of triangular bargaining refers to the fact that MNEs and states are parts of extensive networks of contracts, affiliations and other bargains that affect their behaviour. A weakness of bargaining theory is its inability to capture this complexity:

There are bargains between ministers within government; there are bargains between political parties supporting government; there are bargains with labour unions; with

⁵⁹ *Ibid.*, p.134.

⁶⁰ *Ibid.*, p.29.

business associations, with religious groups and ethnic minorities. There are also bargains which interlock all these with foreign corporations, foreign governments and the international organizations.⁶¹

Similarly, the second framework, the matrix of multiple but related agendas, refers to a second complexity that bargaining theory does not address. The range of policy objectives and issue areas that relate to the operation of a foreign affiliate of an MNE within the boundaries of a state is so broad and so enmeshed with domestic interests that the state's position cannot be rationally summarized and prioritized.

Bargaining theory is not promising, in the view of Stopford and Strange, since it must assume that the state acts as a rational actor. The assumption that the state will select a rational course of action and seek to realize it, is not easily applied in practice:

Why bargaining theory helps so little should be clear enough from our evidence. A state has objectives that are multiple, often conflicting, always shifting. It cannot in reality be a rational actor in the game-theory sense of having a fixed order of priorities in its policy goals. It always wants incompatible, conflicting values. It wants autonomy and the freedom to choose its own path to economic development and access to advanced technology overseas. It is playing a trade-off game in which the variables are never constant.⁶²

Through case studies, Stopford and Strange provide evidence to support the criticism that existing bargaining theory is inadequate. Without explicitly addressing the bargaining power model, Stopford and Strange identify a number of propositions that reflect the

⁶¹ *Ibid.*, p.136

⁶² *Ibid.*, p.135.

complex reality of bargaining and which suggest new intervening variables which need to be assessed:

- the number of competitors to the MNE (the degree of competition and concentration in the sector). The more competitors, the more options the host government has in terms of possible bargaining partners (i.e., more alternative bargains) (p.27)
- the level and pace of change of the technology involved (Mytelka, 1979; Milner, 1988; Grosse, 1989) (p.133). How firms react to bargaining pressure depends on the characteristics of the industry and the firm's position in the industry -- whether it is a leader, defending an established position, or a weak competitor, or a newcomer.
- the attitudes and values of the firm and its strength and resilience (p.96). The choice of the "right" partner may be as crucial to survival as skill in bargaining...A central question is whether the firm that is permitted to invest in the country really will deliver the future benefits promised and prove capable of enhancing its own competitiveness worldwide to ensure survival. (p.213). Anticipating future sources of competitiveness (and the durability of advantages offered) is at the heart of successful negotiations (p.66). These characteristics explain much of the seemingly disparate bargaining outcomes (p.154);
- the degree of global linkage, the strength of alliance networks and the strength of alliance partners (p.27);
- the MNE's calculation of advantage not just relative to the national factor costs and demand function in the host country, but relative to all existing plants of the investor's network (p.10) determination of the long-term purpose of the project, changes in that purpose and participant expectations (p.27);
- determination of how states and firms evaluate the worth of a project. For firms this is represented by its minimum return on investment (ROI) hurdle rate. For states -- the social rate of return (p.150);
- relative power comes from the mastery of the data that lie behind the numbers used for calculation (e.g. negotiating skill and information: does the firm really know it business better than a government?) (p.152).

The trouble with identifying so many possible variables is that it requires the model to be nearly as complex and detailed as reality. In their efforts to model the propositions they derived from their field work (like those above) Stopford and Strange found that they

could not cope with the complexity of the triangular framework. They were forced to concentrate on the direct relations between states and firms: “leaving considerations of state-state and firm-firm bargaining as modifying factors in specific circumstances”.⁶³

In the same way, they narrowed the multiple agendas that MNE-state negotiations straddle. A proxy had to be selected for the various issues in which the parties engage in order to represent the outcome of the bargain which is struck. Stopford and Strange selected trade as that proxy since export creation is now one of the most urgent needs of developing countries.⁶⁴ In the end, and despite their reservations, Stopford and Strange returned to the process of working from the standard model of MNE-state bargaining.

The warning from Stopford and Strange is that industry-level analysis can be misleading due to extreme variation in firm-level responses. Following this advice, the project ahead is to examine the bargaining power model in terms of firm-specific bargaining. While a range of intervening variables may come into play, the first step is to determine any fundamental, structural factors that establish basic bargaining positions, i.e., to clarify what “really” conditions the behaviour of both states and firms.⁶⁵

Technological change is identified as the primary structural variable that has driven change in the world’s production systems and competitive environment.⁶⁶ MNE investments in competitive innovation have proved decisive in determining who gains leadership on the world stage and who loses.⁶⁷ This finding is then reflected in the

⁶³ *Ibid.*, p.24.

⁶⁴ *Ibid.*, p.24.

⁶⁵ *Ibid.*, p.168.

⁶⁶ *Ibid.*, p.35.

⁶⁷ *Ibid.*, p.66

propositions (listed above) that states, if they are to bargain successfully, must be able to determine the nature of competitive advantage of the MNE with which it is negotiating, the strength of MNE's strategic alliances, and its competitive position (since advantages are less durable).

Similarly, technological change and the new competitive environment have altered the notion of national competitive advantage. Firms can divorce their performance from traditional national factors of production such as cheap labour or natural resources. At the same time, states can create a different type of national advantage through enlightened public policy:

The importance of the shift for the purposes of this book is that the growing competition among states-as-suitors means that government has shed some powers, but taken on others. Their role in fostering education and R&D assumes far greater proportion than hitherto in conditioning their success in attracting those foreign firms who might assist in achieving national aims. This is the basis of our earlier argument that states are being drawn, willy-nilly, into a new game with more complex rules and far greater demands on the skills of public servants.⁶⁸

Throughout their work, Stopford and Strange build on the implications of technological change for both host countries and MNEs, but these implications are not systematically applied to the bargaining theory model. The next section examines various contributions to the development of bargaining theory. In particular, attention is paid to the impact of technological change on the model.

⁶⁸ *Ibid*, p.56.

The obsolescing bargain

The obsolescing bargain identifies the distribution of benefits between the MNE and the state as the key outcome of the relationship. The distribution of benefits, in very general terms, is the dependent variable by which the relationship is assessed. This dependent variable is specified by the terms of the agreement between the host country and the MNE. The theoretical challenge is to determine the variables which influence this dependent variable.

Kindleberger (1969) argues that outcomes of the bargaining process are a function of the relative bargaining power of the MNE and host country.⁶⁹ The basic formulation of the bargaining power model put forward by Kindleberger assumes that there is:

1. conflict between host country and MNC objectives;
2. a possibility of joint or shared gains;
3. bargaining over the actual distribution of joint gains;
4. a larger share of the benefits goes to the party with greater bargaining power.⁷⁰

Micro-structural factors, like the nature of the assets of each party, are used to approximate bargaining power. The relationship is modelled on a bilateral monopoly where the foreign investor has control over the capital, technology, and management skills needed to launch the project successfully. The host country has a monopoly over access to the investment location site before the investment is made and over conditions for operation at that site afterwards.⁷¹

⁶⁹ Kobrin, 1987, p.611.

⁷⁰ *Ibid.*, p.611.

⁷¹ Moran, 1985, p.5.

A criticism of this model is that such approximations can vary considerably from actual outcomes due to a number of factors related to the actors and the bargaining process. The model assumes a narrow definition of bargaining power by examining structural characteristics regarding the bilateral monopoly which are assumed to be static. This perspective excludes uncertainty, politics and other variables which affect the translation of potential bargaining power into actual power and outcomes.⁷²

Additional assumptions were added to the model that refine the notion of relative bargaining power and which take into account constraints which can influence the utilization of potential power. Raymond Vernon included the assumptions that:

1. each party possesses assets valuable to the other.;
2. each party has the ability to withhold these assets, giving it potential bargaining power with regard to the other;
3. each party is constrained in its exercise of this power;
4. the party with the larger actual bargaining power negotiates a larger share of the benefits.

These assumptions cover both structural as well as behavioural aspects of the bargaining process. The second assumption refines the notion of relative bargaining power such that it is defined by relative scarcity and demand for the assets of each party. The third assumption includes a role for factors such as internal coherence, the will to bargain, negotiating skills, and the use of coercion.⁷³ The fourth assumption clarifies the notion of bargaining power by defining it as “actual” rather than potential bargaining power.

⁷² Kobrin, 1987, p.611. This criticism mirrors that made within IPE generally. See Robert Keohane and Joseph Nye, *Power and Interdependence* (NY: HarperCollins, 2nd edition, 1989).

⁷³ *Ibid.*, p.617.

Based on these assumptions, the model remains widely applicable, but does not provide specific predictions regarding the state-MNC relationship, other than the straightforward relation that the party with the greater bargaining power wins a greater share of benefits. Vernon builds on these assumptions using empirical detail regarding the nature of MNE activity and foreign direct investment (FDI) in order to develop the predictive element of the bargaining model in the form of additional assumptions:

5. there is a shift in bargaining power and the distribution of gains between states and MNEs over the course of the bargain;
6. “initial” bargains reflect a marked asymmetry of power held by MNEs;
7. initial agreements are quickly rendered obsolete in the eyes of the state as bargaining power shifts in their favour, leading to renegotiation.⁷⁴

Vernon argues that one can assume that prior to the entry of the MNE, the host government is in a weak bargaining position, due to the fact that the host country must overcome the uncertainty MNEs have of investing in a new country. They also must attract MNEs which have a number of locational options. Another assumption is that once the investment is made, bargaining power shifts to the host state due to the fact that:

- uncertainty dissipates and the high risk of the venture diminishes;
- the immobile investments made by the MNE in the host country become hostages;
- the host country becomes less dependent on the MNE for capital, technology and access to markets as the FDI resource package diffuses throughout the economy and the assets of the MNE become more widely available on the open market.⁷⁵

⁷⁴ *Ibid*, p. 612-613.

⁷⁵ Eden, 1993, p.30.

Consequently, the model predicts that the host country is likely to renegotiate the agreement for a greater share of the benefits. The concluding argument of the model is that the MNE is faced with three options: it can keep the host country dependent on it for new technology, products or access to export markets, it can give in to state demands, or it can exit.⁷⁶

Testing the obsolescing bargain

With the addition of the assumptions, noted above, the bargaining power model gains predictive strength. It also gains complexity and a potentially more narrow application. Questions have been raised regarding the general prediction of obsolescence and, particularly, the assumptions that support this prediction.

A case has been made that assumptions and associated arguments of the obsolescing bargain do not hold when applied to MNEs from the manufacturing sector. The strongest cases of the obsolescing bargain have taken place in the natural resource sector. Cases have also been identified in the manufacturing sector as well, where host country objectives have been more complex.⁷⁷ Host countries have sought to direct manufacturing MNEs toward the host country's goals of economic development. Using

⁷⁶ *Ibid.*, p.31.

⁷⁷ Moran, 1985, p.9.

performance requirements, host countries have pressured MNEs to produce more value-added domestically, expand their linkages into the domestic economy, and give host country operations worldwide marketing and export mandates.⁷⁸

Case studies of MNE-host country bargaining in this area have focused on MNE investment in mature manufacturing technology. The results have been less clear than case studies in the extractive sector: “[s]till, the evidence of host country advances in forcing international corporations in mature technology industries to create more value-added locally and to expand the export of indigenously produced products and components is clear.”⁷⁹ The question then, is whether the same dynamics apply to investments in high technology sectors.⁸⁰

A statistical study of MNE investments in the manufacturing sector directly addresses this question. It identified significant differences between previous case studies used to test the obsolescing bargain and more recent cases of international production and FDI. Changes in the structure and organization of international production and investment activity have been identified which impact on the operation of the obsolescing bargain.⁸¹ Differences in technology, MNE flexibility, global integration, and domestic integration characterize MNE investment to a greater extent today than was the case during the case studies of the 1970s and early 1980s.

⁷⁸ *Ibid.*, p.9.

⁷⁹ *Ibid.*, p.9. The cases studies in the volume by edited by Moran do not answer this question.

⁸⁰ *Ibid.*, p.10.

⁸¹ Kobrin, 1987, pp.613-614.

These differences matter because the operation of the bargaining power model (not just the prediction of obsolescence) depends on evaluations of relative bargaining power and shifts in that power. Relative bargaining power, in turn, is tied to the nature of MNE strategy and activity. If MNE activity differs by sector or evolves over time, the model loses relevance.

The active element of the bargaining power model is the fourth assumption. It states that the party with the larger actual bargaining power negotiates a larger share of the benefits. In order to test this part of the theory, “actual bargaining power” needs to be defined and measured against the distribution of benefits specified by the terms of the agreement. Actual bargaining power is defined as (i) the demand for resources supplied by the other party; (ii) constraints on the implementation of potential power; and (iii) negotiating skills.⁸² The first step toward determining actual bargaining power is assessing part (i) the demand for resources supplied by the other party.

The demand for resources is a function of the value placed on the assets of the other party and the structural characteristics of the MNE and host country. Firm-specific advantages of MNEs have been identified and categorized in the literature (technology, managerial skills, capital, access to markets, advertising intensity, product differentiation, and employment).⁸³ Some studies have gone the additional step of testing the bargaining value of certain classes of assets. Of interest is whether the assets noted in previous studies remain reliable indicators of bargaining power.

⁸² *Ibid.*, p. 618.

⁸³ *Ibid.*, p. 619.

In this regard, technological complexity, technological intensity and the rate of technological change have been found to correlate positively with bargaining power. The managerial complexity of the MNE has also been determined to be a source of bargaining power.⁸⁴ Given the discussion in Chapter One which highlights the emerging importance of knowledge to the activity and growth of MNEs, this finding is not surprising.

Kobrin found that technological intensity, measured by the MNE parent company's R&D spending as a percent of total sales, dominates the bargaining power model. It had by far the strongest effect on the bargaining outcome, compared with the other variables.⁸⁵ While the framework of the bargaining power model (actual bargaining power translates into a greater share of the benefits) is confirmed by Kobrin's test, the prediction of obsolescence is found to be limited in scope. Shifts in bargaining power to host countries are only likely in relatively low technology industries that are not integrated globally.⁸⁶

Kobrin concludes from his study that: "Given the importance of manufacturing investment to MNCs and the developing countries, we must increase our understanding of the process and the determinants of relative bargaining power."⁸⁷ This statement could be more appropriately worded: given the importance of knowledge and technology to MNE-host country interaction, its impact on the determinants of relative bargaining power needs to be better understood.

⁸⁴ *Ibid.*, p. 620.

⁸⁵ *Ibid.*, p. 633.

⁸⁶ *Ibid.*, p. 634.

⁸⁷ *Ibid.*, p. 636.

The emphasis should not be on manufacturing investment per se (as a sector), but on the influence of knowledge on MNE activity generally. The characteristics used by Kobrin to differentiate manufacturing from the extractive sector are becoming less sector-specific over time. Changes in the production structure related to technology which may be more apparent in the manufacturing sector, are nonetheless occurring in other sectors as well. Similar effects are being realized (at different rates) in the resource, processing, and services sectors. Host government and MNE activity, driven by a strategy focused on the accumulation of technological capacities, cut across sectoral lines, although it is clear that sectors, and individual firms, are affected at different rates.

Similarly, it is important to note that distinctions made between industrialized and developing countries, based on sectoral differences (i.e., manufacturing vs extraction), are also becoming less relevant over time. State-MNE bargaining over wealth generating activity (knowledge production) may be more prevalent in developed countries, but the difference between developed and developing host countries is only a matter of degree. The critique of the obsolescing bargain is not limited to the manufacturing sector and thus developed economies.

It is also important to note that an investigation of the impact of knowledge on relative bargaining power should not be limited to structural variables related to the demand for assets such as the single variable of technological intensity. This represents only one of three elements that make up actual bargaining power. Kobrin notes that constraints on the implementation of power and negotiating skills also play a role. These variables are supported by a case study by Barbara Jenkins who argues that proponents of

the obsolescing bargain have not adequately considered intervening variables such as domestic politics, the commitment and power of the host government.⁸⁸ Similarly, Kobrin acknowledges that an estimate of bargaining outcomes needs to take into account MNC and host country objectives, individual firm strategy, host country ideology and policy choice.⁸⁹ The case studies of Stopford and Strange indicate that firm and host country strategic objectives can directly affect bargaining dynamics and bargaining outcomes.

Technological intensity and bargaining power

Several studies have profiled changes in the production structure and MNE investment patterns that have been driven by technological change. The application of technology has been described as becoming more intense and dynamic, so much so that the pace and complexity of R&D may be beyond the capability of a host government. Technological intensity has expanded to the point where national markets may be too small to support efficient manufacturing or generate even minimally competitive research and development budgets. The application of technology within manufacturing has evolved to the point where MNEs have gained considerable flexibility in their operations, their resources are more mobile and the speed with which they can transfer their assets within their network has increased. They have consequently gained considerable choice

⁸⁸ Jenkins, 1986, p. 143.

⁸⁹ Kobrin does not include these factors in his analysis because they would require longitudinal analysis. Kobrin, 1987, p. 627.

in their response to host country demands (e.g., they may move a new activity or product and reshuffle their activities within their global network).⁹⁰

Greater flexibility and choice for the MNE in the structure of its global network enhances its bargaining position which, in turn, mitigates the predicted shift of bargaining power to the host country. MNEs have also adapted their investment schedules to further reduce the shift in bargaining power. By spreading out investments over time, the MNE renews its leverage.⁹¹ It is also noted that manufacturing investments are more thoroughly integrated into the local economy than extractive sector investments. A network of relationships develop with labour, suppliers and customers which may actually enhance the MNE's bargaining power over time.⁹²

Bargaining power within this environment arises from the relative demand for resources and this demand stems from differences that exist between the parties in terms of their capabilities and the availability of substitutes.⁹³ For instance, the demand for MNE assets by the host country is a function of host country capabilities and the availability of substitutes for the assets of the MNE. The determination of relative demand is not a simple calculation based on an objective value assigned to the total assets held by each party. Inter-subjective demands take into account the particular value of resources in relation to their fit with the strategic needs of the other party.

⁹⁰ *Ibid.*, p. 613.

⁹¹ Jenkins, 1986, p. 164.

⁹² Kobrin, 1987, p. 613.

⁹³ *Ibid.*, p. 617.

Two aspects of assessing relative bargaining power are stressed here. The first is the need to assess the complementarity and substitutability of the resources of the MNE and the host site. The second is the need to assess the strategies of the MNE and host country in order to appreciate their needs, expectations and valuation of bargaining assets. These two aspects of interdependency are the starting point for the hypothesis which is developed in Chapter Three.

The technological interdependency between MNEs and host sites was noted by Kobrin who argued that the demand for the assets of MNEs is affected by the availability and nature of technological and managerial assets within the host country: "The administrative capability of the government and its specific industry knowledge, as well as the technological and managerial capabilities of local nationals, must be taken into account."⁹⁴ From this perspective, the demand for MNE resources is a function of the need for complementary assets not available within the domestic market. This conclusion foreshadows the case study findings of Stopford and Strange. Like Kobrin, they found that the demand for assets by the MNE and host country can only be determined in the specific context of their development paths and the complementarity between their resources. This requires an understanding of the competitive position of the MNE in order to gauge the value and durability of the assets, the degree of competition which indicates the availability of substitutes and the degree of integration the MNE achieves in terms of global markets which constrains the potential power of the host country.⁹⁵ While

⁹⁴ Kobrin, 1987, p. 620.

⁹⁵ *Ibid.*, p. 621.

Kobrin and Stopford and Strange recognize the importance of complementarity, the notion is not fully explored in the context of knowledge. This limits their assessments of host country-MNE bargaining. Two examples illustrate this point.

The first is the need for a clearer understanding of the nature of substitutes when examining relative bargaining power. The effect of substitutes is subject to an understanding of the nature of knowledge production and acquisition. Kobrin argues that changes in international markets for technology can affect relative bargaining power by allowing host countries to purchase capabilities they lack on the international market. But this substitution effect would seem to hinge on the technology being discrete and marketable on the open market. Where knowledge is tacit recourse to spot transactions on international markets may be a poor substitute. Evidence provided in Chapter One indicates that knowledge is not a commodity that is easily purchased. The implication is that substitution becomes even more difficult and the complementarity of the knowledge related assets of each party that much more valuable.

Turning to the relative power of states, Kobrin argues that the major host country power resource is the access it provides to the domestic market. The value of this access is a function of the market's size, its rate of growth (as an indication of future potential), and its development in terms of income per capita. Other factors related to the relative power of states include control over natural resources, the availability of inexpensive and productive labour, and the provision of government incentives such as subsidies.⁹⁶

⁹⁶ *Ibid.*, p. 621.

Although Kobrin finds mixed evidence about the value of these indicators⁹⁷, he does find that the variable which represents host country capabilities relative to industry technology is highly significant.⁹⁸ Despite this finding, details regarding the interaction between host country and MNE capabilities are left unexplored.⁹⁹ Kobrin merely states that the demand for MNE resources will be a function of the need for complementary assets not available within the domestic market. Yet, presumably the complementarity runs in the other direction as well. The insight gained from Kobrin appears to stem from complementarity as it relates to substitutability, rather than the intrinsic need for assets to complement and combine with each other in order for them to perform maximally.

Update to the model

Attempts have been made to update the understanding of MNE activity and state-MNE interaction, following the work of Kobrin in the mid-1980s. It has been argued that the nature of MNE activity continues to be underestimated within analyses of state-MNE relations:

The international business studies literature calls for more attention to the specificities of global MNEs: their goals, strategies, structures and locational patterns. The key characteristics of the new style MNEs are their clusters of equity and non-equity relationships, the increasing importance of access to foreign knowledge rather than

⁹⁷ *Ibid.*, p. 631.

⁹⁸ *Ibid.*, p. 631.

⁹⁹ Host country capabilities, specified by Kobrin as technological and managerial capacity, are measured by the educational level of host country human resources (i.e., skilled workers). Kobrin, 1987, p. 627.

resources or labour inputs, and their complicated patterns of international value chains. From the brief outline presented here, we conclude that more work on upgrading the five faces is necessary.¹⁰⁰

The “five faces” of the MNE developed within the IPE literature fail to sufficiently recognize how the ownership assets of the MNE combine with the locational advantages of the host country for the purposes of building technological competencies.¹⁰¹ These terms are drawn from the OLI paradigm (Ownership, Locational, and Internalization advantages) noted below.

Based on advances in the theory of MNEs from business studies literature, Eden extends the analysis of Kobrin in three ways. First, Eden’s review explicitly acknowledges the role of knowledge production within MNE activity. The ownership assets of MNEs are noted as largely intangible and the core competencies require identification and continuous investment to prevent their dissipation.¹⁰² Second, it suggests the use of the OLI paradigm to assess ownership and locational advantages (and their complementarity). Third, it recognizes the role of MNE strategy in the determination of relative bargaining. Eden notes that the choice of overall strategy for the MNE affects its choice of investment location and type of activity.¹⁰³

¹⁰⁰ Lorraine Eden, “Bringing the Firm Back In: Multinationals in International Political Economy” in Lorraine Eden and Evan Potter (eds.), *Multinational in the Global Political Economy*, (NY: St. Martin’s Press, 1993), p. 53.

¹⁰¹ The five faces include three developed by Raymond Vernon (the product life cycle, sovereignty at bay, the obsolescing bargain) and two by Stephen Hymer (the law of uneven development, the international division of labour). Eden, 1993, p.27.

¹⁰² *Ibid.*, p.36.

¹⁰³ *Ibid.*, p.40.

Although MNEs internationalize for many reasons, Eden narrows the list to three categories: securing natural resources, reducing costs, and gaining access to foreign markets.¹⁰⁴ As a later qualification it is noted that: “In the 1990s, knowledge-intensive production requires world-wide access to knowledge and this is replacing the search for cheap labour as the driving force behind MNE’s foreign location strategies.”¹⁰⁵ Eden points the way toward the next step in the analysis: that of examining the new “driving force” behind MNE’s foreign location strategies.

Eden suggests that the competitive edge for locations seeking to attract MNE investment shifts to areas suitable to knowledge-based production, which are cities in industrialized countries with universities and research institutes. Less developed countries may have difficulty retaining their current share of MNE manufacturing activity unless they increase their country-specific advantages as a location for knowledge-based manufacturing.¹⁰⁶ What are then, the country-specific advantages that draw knowledge-based manufacturing? Eden notes that the rapid adoption and diffusion of information technology and just-in-time manufacturing methods may be essential for Canadian firms in the 1990s if they expect to retain their share of American operations and upgrade their technological functions.¹⁰⁷ Industrialized cities near universities and research institutes

¹⁰⁴ *Ibid.*, 1993, p.42.

¹⁰⁵ *Ibid.*, p.46.

¹⁰⁶ Lorraine Eden, “Multinational responses to trade and technology changes: Implications for Canada” in D. McFetridge, 1991, p.153.

¹⁰⁷ *Ibid.*, p.157.

and the rapid diffusion and adoption of information technology and just-in-time manufacturing processes are two attributes suggested by Eden that will increasingly affect the location of knowledge-based manufacturing.

Using the OLI framework, Eden draws some implications for MNE-host country relations. It is argued that MNEs are moving to organizational structures that more effectively promote global planning objectives. As a result, the tension between the national objectives of states, both home and host governments, and the global goals of MNEs is more likely to increase in the 1990s.¹⁰⁸ On the other hand, the arguments provided in Chapter One indicate that in the case of knowledge-related investments, local autonomy is often required in order to facilitate the acquisition of knowledge (a decentralizing force) and that MNEs are seeking cooperative partnerships to better facilitate learning.¹⁰⁹

The characterization of MNE-host country relationships as one of increasing tensions needs to be reconsidered in light the new basis of interaction between MNEs and host sites. The character of the MNE-host country relationship may change if both MNE and host country are pursuing parallel objectives based on growth through knowledge. The move by MNEs toward local integration in order to participate and learn interactively, dispels the prevalent image of MNEs as simply vendors of technology.

¹⁰⁸ Eden, 1993, p.42.

¹⁰⁹ Eden also recognizes these developments. Eden, 1991, p.160.

Eden notes that when an MNE sells access to its core competencies to host countries, the divergence of interests between the MNE and the host state is profound since the two are effectively locked in a bilateral monopoly. As an investor however, the MNE has a shared interest with the host state in maximising the overall profit on the project, even though they differ over the relative gains.¹¹⁰ Eden's insight into the evolution of MNE-host country interaction is helpful, but it can be extended further. When MNEs integrate with host sites they are not "selling" a core competence. An MNE may "sell" access to knowledge, but more likely, it will seek partners to complement its assets so that its core competencies can be refined and applied more effectively. In these cases, the MNE is less a seller or investor than a partner and co-developer. As a partner it has a shared interest with the host site that has less to do with maximizing profit than benefiting from learning.

Kobrin argues that global integration and technological advances in production provide the MNE with greater flexibility and choice. It is also noted that MNEs are integrating into local economies to the point where a network of relationships may be established. These two, potentially conflicting, points require elaboration. Not only does the MNE develop a global network, but to differing degrees, MNEs integrate themselves into local networks. Both networks may provide it with flexibility and choice thereby reducing its vulnerability, but the opposite is possible as well, the networks may increase its vulnerability. As MNEs source local clusters of activity and knowledge, they may

¹¹⁰ Eden, 1993, p.51-52.

become dependent on a high degree of participation within this local site. As tacit knowledge is often site specific and difficult to reproduce, continued participation by the MNE may become a strategic priority.

There are a number of factors which influence the decision of MNEs to internationalize their activities and the subsequent decision of where to locate those activities. There are cases, which are the focus of this study, which require a more detailed analysis of the locational advantages directly related to 'foreign innovatory activity'. This focus is based on the argument that the priority for both the investing MNE and the host country is the value added which is generated from the combination of the MNE's technological capabilities with the technologies and capabilities of the firms, institutions and clusters of the host country:

...although technological competence is often a firm-specific asset, its creation and sustenance is often dependent on the innovating capabilities and market characteristics of the countries in which the firm locates its production. It is also likely to vary according to the extent of a firm's multinationalization and its strategy towards the cross-border organization of its R&D activities. The path of international production, then, requires an appreciation of the interaction between the technological assets of firms and the specific endowments of countries over time, as well as at a given moment of time.¹¹¹

¹¹¹ Dunning, 1992, p.87.

Summary

Of the findings reviewed in the literature it is worth noting that divergence in outcomes among MNE-host site relationships is presenting acute problems for bargaining theory. There is an abundance of macro-level variables that are influencing trade and investment patterns (e.g., exchange rates and trade agreements). There are factors influencing the industrial organization of sectors and subsectors (concentration, vertical integration, network alliances). And there are factors affecting the production and marketing strategies of MNEs (new management techniques, regionalization). At the same time, there are several micro-level variables that are influencing the investment decisions of individual firms and the investment policies of host sites. For many of these factors there appear to be contradictory trends at play (e.g., centralization versus decentralization in organizational structures).

Given the complexity of the investment environment, it is essential for bargaining theory to select the appropriate units of analysis and address the key determinants of their behaviour. Case studies indicate that the MNE-host site relationship is often several ‘bargains’ struck between the MNE and a variety of host site institutions. Without a clear understanding of the priorities behind MNE locational strategies and host site investment policies, theory can provide little guidance.

The arguments in Chapter One were intended to inject IPE theory with an updated perspective. The review of IPE literature in this chapter highlights promising leads, but also limitations in the existing approach to MNE-host country bargaining. Statistical

(Kobrin) and case study (Stopford and Strange) evidence point to the affect of factors related to knowledge on MNE-host country interaction. The question of just how these characteristics can be assessed in terms of the host country-MNE relationship is left unresolved in the literature. The next chapter builds on existing IPE theory by extending the use of the OLI paradigm in order to focuses on these characteristics.

III. Hypothesis: Knowledge, MNEs, Host Countries

The concluding argument of the obsolescing bargain is that the MNE is faced with three options. It can keep the host country dependent on it for new technology, products or access to export markets, it can give in to state demands, or it can exit.¹¹² But if the relationship between the MNE and the host site is such that it is not based on the transfer of a discrete technology package (the value of which decays over time), the MNE may not be faced with these choices. The bargain may be more durable as both the MNE and the host site engage in the production and application of knowledge (i.e, learning).

The literature review in Chapter Two identified complementarity as a factor in the evaluation of bargaining power, but it stemmed from the idea of substitutability, rather than the intrinsic need for assets to complement and combine with each other for innovation and commercialization. This chapter explores the notion of complementarity by extending the OLI approach to focus on how the O advantages of MNEs combine with the L advantages of host countries. Insights regarding this aspect of the MNE-host country relationship are needed since MNE investment in knowledge becomes a recognized aspect of competitiveness: "...inbound MNE activity is being increasingly evaluated by its likely effect on domestic innovatory capabilities, and on the upgrading of human skills and competencies."¹¹³

¹¹² Eden, 1993, p.31.

¹¹³ Dunning, 1992, p.562. See also David Teece, "Foreign Investment and Technological Development in Silicon Valley" in D. McFetridge, 1991, p.231.

As MNE investment is evaluated in terms of its positive impact on domestic innovatory capacity, a more conciliatory attitude by governments towards foreign MNEs has resulted, whereby they are being increasingly viewed as partners in their pursuit of mutually consistent goals.¹¹⁴ Dunning suggests that two scenarios are developing in the 1990s that are part of the “more conciliatory” attitude of governments. One is the non-interventionist scenario where there is general encouragement of inward direct investment with few performance requirements or controls. Dunning argues this scenario best describes most OECD countries.¹¹⁵ The second scenario is characterized by the deliberate attempt by governments to incorporate both inward and outward direct investment into their structural adjustment and upgrading goals and strategies (particularly the upgrading of domestic resources and capabilities). Examples of countries pursuing such policies are Japan, Korea and Taiwan.¹¹⁶

Dunning may be right that most OECD countries are following a non-interventionist approach toward foreign MNEs, nonetheless, given the strategic interest of OECD host countries in developing their competitiveness, policies directed at upgrading domestic innovatory capabilities are becoming more popular. There is little reason to believe that the linkages with investment policies and the role of MNEs will not also be recognized and coordinated with innovation policy.

¹¹⁴ *Ibid.*, p.562.

¹¹⁵ *Ibid.*, p.565.

¹¹⁶ *Ibid.*, p.565.

Policies designed to influence inward direct investment include conditions of entry (ownership controls, sectoral protection); performance requirements (the purchase of local capital goods, raw materials, intermediate goods and services, recruitment, employment and training practices, the proportion of output exported, the type of value-added undertaken by the affiliate, intra-firm pricing practices); fiscal incentives (tax holidays, rebates, accelerated depreciation allowances); and location incentives (investment and regional development grants).¹¹⁷ An assessment of the MNE-host country relationship, from the perspective of knowledge and learning might then focus on policy levers used by governments to entice, then direct, the technological value-added of MNEs.¹¹⁸

These levers reflect the host government's attempts to affect the distribution of benefits from the relationship. Since governments appear to be dropping performance requirements in favour of merely attracting MNE investment through investment incentives, the degree to which host governments refrain from offering such incentives would be an indication of their relative bargaining power. Put another way, the host government's and the MNE's bargaining power directly affect the investment incentives offered and the resulting distribution of benefits.

There is merit in this approach to assessing MNE-host country relations, particularly to the degree that investment incentives continue to play a role in inward investment flows in knowledge related activities. Yet, there is evidence that performance

¹¹⁷ Dunning, 1992, p.559.

¹¹⁸ See Appendix A.

requirements and investment incentives are not a significant factor in determining inward investment flows in knowledge related activities:

Research by Root and Ahmed (1978), Lim (1983), O'Sullivan (1985) Guisinger (1985, 1986), Balasubramanyam (1991) and OECD (1989) reveals that while, in some instances, MNE-specific incentives have played an important role in influencing the location of FDI, they have not, in general, been a major determinant of such investment...Incentives are likely to have their greatest impact where a foreign firm is undecided about its choice of a number of economically viable locations, and where they are not counteracted by performance requirements (Siggel, 1986). They have generally been less successful in attracting the kind of investment drawn by the unique assets and competences of the host country.¹¹⁹

The last point is important. Investment incentives are less successful when attracting investment drawn by the unique assets and competencies of host countries -- which is the very type of investment under study here. Investment incentives are relevant, but not pivotal.

The key to analysing MNE-host country relationships in knowledge related activities is the interaction of the MNE in the local knowledge networks within the host country. Host countries may continue to offer incentives in the competition for MNE investment, but the MNE-host country relationship is more complex than the game of enticing MNEs with cash, then working to re-jig the bargain by reducing the subsidies or seeking upgrades in the value-added from the MNE. The strategic, technological interests of host countries and MNEs dictate that they pay attention to getting the technological partnership right in the first place (i.e., finding a good match) and maximising that partnership.¹²⁰

¹¹⁹ Dunning, 1992, p.560.

¹²⁰ Dunning, 1992, p.564.

Several factors have been identified that influence the integration of MNE affiliates with their host sites.¹²¹ The linkages and spillovers, particularly knowledge spillovers, that occur can be affected by internal and external factors to the relationship, but it is the relationship itself which would appear to be of primary importance. Dunning notes that it is difficult to generalize about the effects of MNEs on the innovatory capacity of host countries since so much depends on the investment and technological strategy of the MNE and the response of indigenous firms to them.¹²² This point underlines the importance of the complementarity between MNE and host site. The next two sections look separately at the approach of MNEs and host countries to their knowledge assets.

MNEs and their capabilities

Since comparative advantage is increasingly based on the organization and application of knowledge, MNE theory has begun to explicitly address the advantages that arise from owning and organizing intangible assets.¹²³ The OLI model includes analysis of the accumulation of knowledge, the market failures associated with it, and the strategic role it plays in determining MNE foreign activity.¹²⁴ Theory included under the OLI umbrella goes so far as to focus exclusively on technological capabilities as an explanation of MNE activity.¹²⁵ This approach differs from that outlined in Eden which

¹²¹ See Appendix B for a list.

¹²² Dunning, 1992, p.327.

¹²³ Dunning, 1992, p.71.

¹²⁴ See Dunning, 1992, chapters 4, 6, 10-12.

¹²⁵ It is important to remember that technology is a subset of the broader concept of knowledge. Knowledge, as it is defined in this paper, includes organizational and managerial capabilities which extend

cited three main motivations which drove MNE locational strategies (securing natural resources, reducing costs, and gaining access to foreign markets).

It is argued that only by comparing the technological competence of a firm against others will the reasons for any firm's success and growth be understood. The drive to accumulate, learn and apply, often requires the international reach of an MNE:

By this means it is better able to integrate its own unique technological characteristics with local systems, and more effectively transfer the fruits of this combination to other parts of its international network. Of course, MNEs also establish less sophisticated assembly types of production elsewhere, and carry out acquisitions for reasons other than the enhancement of technological competence. However, the growth of the firm as a whole depends on the more technologically advanced competence-building parts of its network.¹²⁶

The accumulation of knowledge and technology is a series of adjustments and refinements made over time and across national boundaries. Due to each firm's unique OLI configuration and its strategic responses, a "path" develops, each step of which needs to be learned and coordinated with the last. In addition to technology being firm-specific, in many cases, due to its tacit nature, it can be location-specific. The location-specific aspect of technology encourages MNE production across a variety of international locations to support its "innovatory capacity".¹²⁷

As they seek to build and renew their knowledge base, MNEs look to external sources, not to buy technology or knowledge, but to learn and gain flexibility. Firms seek sources of technological opportunities, where: "...technological opportunity refers to the

well beyond research functions. Technological capacity refers to this larger set.

¹²⁶ Cantwell, 1991, p.54.

¹²⁷ Cantwell, 1991, p.47.

quantity of extraindustry technological knowledge, such as that originating from government or university labs, that effectively complements and therefore leverages the firm's own knowledge output."¹²⁸

Previous research has identified the rationale for alliance formation as transaction cost efficiency, but the benefits of efficiency appear to be most relevant in static environments and routine situations.¹²⁹ In the competitive environment described in Chapter One, alliances are better explained by the resources they provide such as learning, technological opportunity, and capital.¹³⁰ Contrary to transaction cost arguments, in highly uncertain situations, firms seek, rather than avoid alliances: "Consistent with Ghoshal and Moran (1995), this suggests that strategic and social factors may dominate transaction costs, especially in high-velocity industries and innovative processes."¹³¹

Often a local presence may be required in order to absorb and learn through a combination of research and related production skills and routines:

The tacitness of much of the knowledge, its indivisibility in use, the uncertainty of its values in different contexts, its proprietary nature and the fact that much of what is known is jointly produced by the firm's activities, and indeed decays if the activity ceases, means that innovation-related capabilities cannot easily be augmented through trade and market relationships.¹³²

¹²⁸ Cohen and Levinthal, 1990, p.139.

¹²⁹ K. Eisenhardt and C. Schoonhoven, "Resource-based View of Strategic Alliance Formation: Strategic and Social Effects in Entrepreneurial Firms", *Organization Science*, vol.7, #2, March-April, 1996, p.137.

¹³⁰ *Ibid.*, p.137.

¹³¹ *Ibid.*, p.147.

¹³² J. Metcalfe and N. Diliso, "Innovation, Capabilities and Knowledge: the Epistemic Connection" in John de la Mothe and Gilles Paquet (eds.) *Evolutionary Economics and the New International Political Economy* (London: Pinter, 1996) p.70.

The more closely firms depend upon the complementary efforts of other firms, on network externalities and on their links with other local institutions, the more locationally differentiated that technological activity becomes and the more difficult it is to transfer between locations.¹³³

Four insights from this theoretical perspective are worth repeating. First, knowledge can be locationally-specific and difficult to transfer. Second, due to these difficulties, knowledge is learned in a cumulative process, rather than transferred, and this learning extends beyond R&D to include production skills, routines, organizational relationships and managerial practices. Third, the ability of firms to combine their core assets with those acquired externally is a crucial competitive advantage in its own right.¹³⁴ And fourth, inter-firm cooperation facilitates long-term, cumulative learning and the combination of complementary assets.¹³⁵

Complementarity between the assets of the MNE and the assets of the host country cannot be properly assessed looking only at the degree to which resources can be substituted in an open market. Complementarity requires that O and L assets combine in a cumulative, positive, learning process that may require shared understandings and the generation of tacit knowledge. The demands of locational learning mean that the MNE's competitive position and strategy can hinge on its ability to learn from the right partners

¹³³ Cantwell, 1991, p.55.

¹³⁴ Dunning, 1992, p. 606.

¹³⁵ Dunning notes: "...if technological advances encourage MNEs to specialize in similar activities across national boundaries, but that engaging in these activities requires their particular [ownership] advantages to be combined with a different, but complementary, set of intangible assets, then inter-firm cooperation may be the preferred organizational form to maximize the value-added from the inputs required for these activities. Dunning, 1992, p.91.

in the right location. Locational choices, the form of investment, and the degree of interaction with host country institutions all follow.

The foreign activity of MNEs which is related to their efforts to acquire, build and utilize knowledge can be influenced by several factors. Research into this type of MNE investment decision has tended to focus on the location of MNE R&D activity. Table 1 summarizes some of the relevant factors.

Table 1

Conditions and circumstances considered to have most influenced recent decisions with regard to development of subsidiary R&D units include:

- a distinctive local scientific, educational or technological tradition conducive to certain types of research (on the spot R&D desirable, e.g. tropical diseases)
- presence of a helpful local scientific environment and adequate technical infrastructure
- availability of, and favourable wage rates for, research professionals
- provision of technical services to local production unit
- modification/standardization of products for overseas markets
- product development for the local market (differences in local materials and local testing)
- technical support for other parts of the multinational group
- large and growing market share where R&D is seen to play a critical role
- forestall entry of another firm
- match local R&D of a competitor
- acquire new technological assets or specialized skills and talents
- scan and monitor R&D activities of foreign firms
- satisfy host government pressures or regulatory instruments
- raise the quality of output of subsidiaries

source: Pearce and Singh (1992) in Dunning, 1992, p.312.

The knowledge-related activities of companies extend well beyond their R&D activities, but as a rough indication of their investment decision-making process, the factors noted

in Table 1 indicate a significant consideration of the character, quality and abundance of local knowledge assets.

There are other factors that affect the location of R&D activities within an MNE network, not the least of which is the extent and location of its other foreign value-adding activities. On the whole though, MNEs are attracted by clusters of innovative activity and complementary assets. They look to form close relationships with local firms and institutions. This is best achieved by creating a local research centre of genuine innovative capacity which can interact fruitfully with the local or national scientific community.¹³⁶ Similarly, local clusters need the requisite skills and experience to be able to adapt, evolve and relate their capabilities to those of the MNE.

The MNE acts as a coordinator of a number of separate value-added activities, each of which requires different (but often related) technologies.¹³⁷ The MNE is, in effect, a technological system which looks to develop in foreign jurisdictions by tapping into the innovation systems of host countries. The next section examines the complementarity from host country perspective.

¹³⁶ Dunning, 1992, p.309.

¹³⁷ Dunning, 1992, p.314.

Host countries and the development of capabilities

A model developed to assess the assets of nations is the competitiveness theory of Michael Porter.¹³⁸ The theory is a well-regarded general framework, but its strengths are not the detailed examination of technological competencies and the role of inward investment. The model includes four country-specific, internal variables that interact as a system. Two contributions of this model have been a detailed description of factor endowments and clusters of firm activity, both of which affect competitiveness. In both cases the role of knowledge is highlighted.

Knowledge resources are noted as one of the factor conditions that support national competitive advantage.¹³⁹ Not all factors rank equally; knowledge-related factors and innovation are argued to be essential to the development of advanced, specialized factors which are more important for competitive advantage than basic or generalized factors.¹⁴⁰ Porter also notes that the existence of endowments is not sufficient to explain success, since advantages stem from how efficiently and effectively endowments are employed.¹⁴¹ The key issue then is how well knowledge resources are employed within a particular location site. It is in this regard that additional theoretical work is needed to extend the competitiveness theory of Porter.

¹³⁸ Michael Porter, 1990.

¹³⁹ *Ibid.*, p.75.

¹⁴⁰ *Ibid.*, p.77.

¹⁴¹ *Ibid.*, p.76.

The notion of clusters is used to describe networks of upstream, downstream and horizontal linkages where the four variables of the model interact to drive competitiveness.¹⁴² As a unit of analysis, clusters provide an environment in which to observe the specific influence of knowledge and innovation as well the influence of foreign MNEs. At the basis of clusters is the: "...exchange and flow of information about needs, techniques, and technology among buyers, suppliers and related industries."¹⁴³ Porter identifies mechanisms that facilitate interchange within clusters. They fall into two general categories: mechanisms that help information flow more easily and those that encourage goal congruence, coordination and computability.¹⁴⁴

Although knowledge is identified, the micro-economic processes dealing with its creation and diffusion within clusters are not developed beyond references to mechanisms that facilitate the flow of information. In addition to the four country-specific variables that make up the diamond, two external variables are included within the model, the role of chance and the role of government.¹⁴⁵ Inward investment is not a focus of the study, in fact, it is generally regarded as an indication that the process of upgrading domestic competitiveness is not entirely healthy.¹⁴⁶

Porter's model has been criticized for the failure to take better account of the role of FDI in the creation of competitive advantage and competitiveness. In the case of Canada, Porter's inadequate treatment of inbound foreign direct investment has been argued to

¹⁴² *Ibid.*, p.149.

¹⁴³ *Ibid.*, p.152.

¹⁴⁴ *Ibid.*, p.153.

¹⁴⁵ *Ibid.*, p.127.

¹⁴⁶ *Ibid.*, p.671.

distort the application of the model.¹⁴⁷ Porter states that inbound direct investment is not a source of competitive advantage, which runs counter to the emphasis being placed on MNE investment by some host countries (see Chapter Four) as well as the experience in Canada.¹⁴⁸ It is argued that Porter's model must be amended in order to model multinational activity correctly.¹⁴⁹

Amendments to the Porter model have been made which explicitly acknowledge the potential contribution of inbound FDI to the upgrading of host country competitiveness. As is argued in this Chapter, foreign MNEs have the potential to support host country R&D, introduce new technology and organizational techniques, accelerate the learning process among indigenous firms, and encourage co-operative alliances, technological systems and inter-firm networking.¹⁵⁰

With these potential benefits in mind, which may, in cases, be solely available from foreign MNEs, Porter's model has been modified so that FDI is included as an external variable that, like government, can influence the other elements of the model.¹⁵¹ The two external variables highlighted in the modified model, government and foreign MNE investment, have a direct and important relationship with each other. It is argued that while the precise contribution of a particular investment will be activity- and firm-specific, the potentially most important factor influencing the contribution of the foreign

¹⁴⁷ Alan Rugman, "Diamond in the Rough" *Business Quarterly*, Winter, 1991, p.61.

¹⁴⁸ *Ibid.*, p.64.

¹⁴⁹ *Ibid.*, p.64.

¹⁵⁰ John Dunning, "Re-evaluating the benefits of foreign direct investment" *Transnational Corporations*, 3, 1 (February, 1994), p.31.

¹⁵¹ *Ibid.*, p. 34.

investment is the organizational strategies and economic policies adopted by the host government.¹⁵² MNEs are increasingly locating their investments and activities in countries that offer the most cost-effective complementary assets and the quality of infrastructural support their investments require.¹⁵³ A specific focus on innovation policies, learning, and interaction with MNE assets is needed.

Within the broad framework of the Porter model, more selective examinations are being undertaken. In an effort to better appreciate the impact of their policies, host countries are examining their 'national systems of innovation'. This concept is a way for governments to identify and assess the relationships between public and private organizations and firms within the economy which are involved in innovation. For instance, Statistics Canada has begun a series of data collection efforts directed at the national innovation system (NIS). The agency notes that:

The innovation process depends on the structure of national institutions. A national system of innovation involves those institutions that determine the rate and direction of technological learning in a country and the rate at which inventions are commercialized. The institutions include firms, governments, universities, and other public and private institutions. The strength of the national system of innovation depends on the efficiency of each individual component and the degree to which they interact with one another to foster a climate of inventiveness and commercialization.¹⁵⁴

A literature has emerged with respect to the definition and study of innovation systems.

Bengt-Åke Lundvall has argued in favour of a perspective that assumes the most

¹⁵² *Ibid.*, p.38.

¹⁵³ *Ibid.*, p. 42.

¹⁵⁴ Stewart Wells, "Preface" in John Baldwin and D. Sabourin, *Technology Adoption in Canadian Manufacturing* (Ottawa: Statistics Canada, 1995), p. 3.

fundamental resource in the modern economy is knowledge, and the most fundamental process is learning.¹⁵⁵ Learning is recognized as an interactive, socially-embedded process that occurs within a dynamic system. The aim is to identify the elements and relationships that comprise the system.¹⁵⁶

Because the focus of inquiry is as much on the process of learning as it is on the output (knowledge), the relationships between the actors involved become as important as the actors themselves. This means that in addition to looking at the economics of the host site, one must look at the institutional infrastructure which affects the relationships, communication and behaviour of the actors. Institutions, defined as regularities of behaviour (e.g., routines, norms, rules, laws) directly affect patterns of communication, interaction and ultimately learning, within individual firms as well as between firms.¹⁵⁷

The performance of the NIS and the implementation of host country policy directly affect the complementarities between the MNE and host site. From the perspective of the host country, the issue is the degree of linkages the MNE achieves within the host country NIS and their positive impact. The impact of MNE activity on innovatory capacity may follow two possible scenarios, one positive, the other negative. The negative implication of the path dependent nature of technology is that firms and countries may be locked into a specific course of technological development.¹⁵⁸ In countries with a competitively weak indigenous base, MNE activity through acquisitions

¹⁵⁵ Lundvall, 1992, p. 1.

¹⁵⁶ Lundvall, 1992, p. 2.

¹⁵⁷ Bjorn Johnson, "Institutional Learning" in Bengt-Åke Lundvall, ed., *National Systems of Innovation: Toward a Theory of Innovation and Interactive Learning*, (London: Pinter, 1992), p. 34.

¹⁵⁸ Cantwell, 1991, p.46.

or competition from foreign affiliates may drive out local competitors and suppliers, reducing the country's ability to accumulate new technology.¹⁵⁹

The influence of MNE activity may encourage virtuous innovatory circles and welfare-enhancing asset accumulation and restructuring.¹⁶⁰ A virtuous circle can develop when scale economies, knowledge spillovers, improvements in labour productivity, and decreased transaction costs result from MNE activity. These conditions then help indigenous firms develop their own ownership assets.¹⁶¹ In turn, advanced innovatory capabilities and ownership assets of indigenous firms which complement the ownership assets of MNEs make the location attractive to more technologically advanced MNE activity.¹⁶² The circle can also be enhanced by the backward investment of outward investors that strengthen local suppliers.¹⁶³ Together, spillovers, innovation and fierce rivalry make the domestic base more competitive and attractive.

The key pre-condition is a relatively competitive and adaptive cluster of indigenous firms and institutions that offer complementary assets. In order to capitalize on the circular reinforcement, countries need a relatively sophisticated indigenous base and absorptive capacity to attract MNE assets. This is true for inter-firm relationships as well. Firms must possess valuable assets before they can attract alliance partners that help build and exploit those assets.¹⁶⁴

¹⁵⁹ Dunning, 1992, p.316.

¹⁶⁰ *Ibid.*, p.281, 317.

¹⁶¹ *Ibid.*, p.88.

¹⁶² *Ibid.*, p.154.

¹⁶³ *Ibid.*, p.317.

¹⁶⁴ Eisenhardt and Schoonhoven, 1996, p.147.

Since governments compete with each other to attract MNE investment, they must make the most of the MNE activity that they are able to capture. For there to be a positive impact on the host country, it is not enough that the MNE do its part by attempting to transfer technologically advanced assets: “The theory of technological competence implies that host-country benefits depend upon having the domestic competence to attract spillover generating activities and to appropriate the spillovers.”¹⁶⁵ This point is reinforced by Freeman who argues that the empirical research is unequivocal that innovation depends on a combination of in-house experience, learning and development with a wide variety of external sources of information and advice, i.e., formal or informal networking within national systems of innovation.¹⁶⁶

The challenge for host countries is to identify and address weaknesses in the technological competence of their indigenous clusters. Without doing so, even if they were to attract MNE investment, they would be unable to maximize the resulting benefits. A review of best practices in technology and innovation policies by the OECD has identified programs that improve the adaptation of technologies and the receptor and

¹⁶⁵ Cantwell, 1991, p.55.

¹⁶⁶ Freeman uses national systems of innovation to explain the contrast between Latin America and East Asia in their adoption and commercialization of new technologies. Chris Freeman, “Catching Up and Falling Behind: The Case of Asia and Latin America” in John de la Mothe and Gilles Paquet (eds.) *Evolutionary Economics and the New International Political Economy* (London: Pinter, 1996) p. 174.

absorptive capacity of firms as a key focus of recent government initiatives.¹⁶⁷ The purpose is to improve the ability of clusters of firms to acquire technology, either domestic or foreign, and to absorb it on a continuing basis.¹⁶⁸

An aspect of absorptive capacity is the ability to adapt to the requirements presented by the MNE:

Absorption indicates the competence of an economy which acquires technology to utilize or adapt it to its advantages. The lack of complementary assets, particularly administrative and organizational capabilities of some countries to assimilate foreign technology efficiently, is often as important an obstacle to economic development as the failure of these countries to acquire or obtain the technology in the first place.¹⁶⁹

In Norway, the government has instituted a program which directly addresses this concern.¹⁷⁰ The Business Development Using New Technologies (BUNT) program develops the problem-solving capacities of firms and their organizational ability to incorporate technology.

Complementary assets consist of technology that is different, but related to the technology owned by the MNE. Complementary assets may also take the form of administrative, organizational and transactional advantages, such as the ability of indigenous firms, based on past experience and knowledge, to conclude productive and cooperative inter-firm relations.¹⁷¹ The adaptability of locational assets can become a

¹⁶⁷ OECD, *Diffusing Technology to Industry: Government Policies and Programs* (Paris: OECD, 1997), p.5

¹⁶⁸ OECD, *The Knowledge-Based Economy* (Paris: OECD, 1996a), p. 42.

¹⁶⁹ Dunning, 1992, p. 289.

¹⁷⁰ OECD, 1997, p. 10.

¹⁷¹ Dunning, 1992, p. 81.

competitive advantage, in its own right, in relation to less open and more demanding investment locations.¹⁷²

Foreign assets interact with local ones through direct transfer or through indirect spillovers.¹⁷³ In cases of direct transfer, MNEs may attempt to prevent transfers of their most valuable assets (e.g., core knowledge).¹⁷⁴ This protective response may occur despite the necessity to share knowledge with external partners in order for effective synergy and learning. A strong absorptive capacity will help maximize transfers, despite protective measures MNEs may take.

It is also the case that it is often more difficult to transfer unadapted soft technologies (organizational structures and work practices) across national boundaries than hard technology since the transaction costs of overcoming ingrained tradition and business practices are considerably higher than those of replacing a faulty machine.¹⁷⁵ The transaction costs of international technology transfers decrease as the experience of MNEs and indigenous firms with such transfers increases. An associated finding is that transaction costs decrease as the capabilities of the host country increase.¹⁷⁶ The more experience indigenous firms have with inter-firm cooperation and the greater their capabilities, the lower the transaction costs.

¹⁷² *Ibid.*, p. 298.

¹⁷³ Magnus Blomstrom, "Host country benefits of foreign investment" in D. McFetridge (ed.) *Foreign Investment, Technology and Economic Growth* (Calgary: University of Calgary Press, 1991), p.104.

¹⁷⁴ *Ibid.*, p.94.

¹⁷⁵ Dunning, 1992, p.298.

¹⁷⁶ Blomstrom, 1991, p.95.

The ability to absorb intangible assets become more important when knowledge is transferred indirectly by spillover. The influence of MNE activity goes well beyond their expenditure on R&D through local affiliates, which in fact, can be low relative to spending by indigenous firms.¹⁷⁷ Economic literature indicates that a substantial portion of the influence of MNEs comes through indirect spillovers. The benefits of knowledge spillovers, such as leaks of productivity improvements, are not costless.¹⁷⁸ They require a major investment by the recipient in the search for information, reverse engineering, and training in new production methods.¹⁷⁹

In an attempt to maximize the benefits of MNE activity, governments have introduced a variety of performance requirements and subsidies aimed at encouraging MNEs to increase local content and local R&D. Even though such incentives may be made, the spillovers from MNE R&D within the host country still largely depend on the absorptive capacity of indigenous firms. A more productive strategy may be to concentrate on supporting the ability of domestic firms to attract MNE activity and to learn from it.¹⁸⁰

MNEs should be interested with the specific characteristics of clusters, particularly regarding knowledge flows and innovation. Work is now underway regarding studies of regional innovation centres and the analysis of clusters from the

¹⁷⁷ For instance, in Canada, US affiliates of MNEs spend less than Canadian counterparts. Studies have also indicated that foreign ownership is negatively correlated with R&D performance. Dunning, 1992, p.304.

¹⁷⁸ Other examples include the competition the MNE activity generates or through human capital improvements the MNE may bring through training. Blomstrom, 1991, p.95.

¹⁷⁹ *Ibid.*, p.98.

¹⁸⁰ *Ibid.*, p.101.

perspective of national innovation systems.¹⁸¹ The analysis of clusters continues to be refined for the purpose of investigating processes and policies related to knowledge. Clusters can be categorised as science-based (e.g., aerospace), scale-intensive (vehicles), supplier dominated (forestry) and specialised supplier (computer hardware and software).¹⁸² In addition to this categorisation, clusters can be assessed according to the nature and extent of knowledge flows within them.

There are four basic channels that conduct knowledge flows that are outlined in Table 2.

Table 2

Joint industry activities: technical collaboration and informal interactions. In addition to direct knowledge flows, these associations provide indirect outcomes such as an increase in competences and skills such as networking capabilities and the ability to identify and adapt useful technology.

Public-private interactions: the quality of public research institutions, the nature of their output (pure or applied science) and the linkages with the private sector as measured by joint research activities, co-patents and publications etc.

Diffusion: embodied technology diffusion such as the adoption of advanced machinery as well as direct diffusion through user-supplier relations and cross-sector adoption.

Personnel mobility: the networking capabilities of staff and the exchange of personnel measured by labour market statistics.

source: adapted from OECD, 1996, p.27.

¹⁸¹ OECD, 1996a.

¹⁸² Based on Pavitt (1984) in OECD, 1996a, p.27.

Finland has characterised the innovation performance of its forestry cluster of industries by measuring the embodied knowledge flows between forest-related industries and machinery suppliers, the number of firms conducting co-operative research, the increased skill levels of employees through training, the purchase of technology in the form of patents and licenses and links to the public research infrastructure.¹⁸³ Rather than strictly directing technology and investment policy toward subsidies and investment incentives, governments are devising policy that directly address the scope and quality of their innovation systems. The analysis which is necessary for this type of government action is the same type of analysis which host governments and MNEs would need to undertake in order to gauge the complementarity of their assets. The notion of national systems of innovation and the new indicators being developed within the OECD provide a qualitative assessment of complementarity.

Implications for studying MNE-host country relationships

The obsolescing bargain predicts a shift in bargaining power due to obsolescence which results from the fact that MNE investment in immobile plant and equipment is a significant sunk cost which translates into a “hostage” value for the host country. Obsolescence is spurred further by the erosion of the value of the O advantages of the MNE through involuntary leakages or competition.¹⁸⁴ These events cause a shift in bargaining power toward the host country which then demands a renegotiation of the

¹⁸³ OECD, 1996a, p.27.

¹⁸⁴ Dunning, 1992, p.553.

distribution of surplus benefits from the MNE's activity. The nature of MNE activity today, dictated, in large part, by the pursuit of technological competencies, mitigates both these events:

It is, then, difficult to generalize on the nature and direction of the obsolescing bargain as the O and I advantages of MNEs and the L advantages of countries are constantly shifting, as indeed are the respective opportunity costs of the bargaining parties. This, of course, presupposes a dynamic view of the upgrading of both firm- and country-specific resources and capabilities. The original concept of the obsolescing bargain was rather more static (or comparatively static) in its orientation.¹⁸⁵

If one takes a dynamic view of the interaction of firm and country specific capabilities, what insights follow regarding MNE-host country behaviour? Dunning notes that:

...government action to affect the level and pattern of value-added activities by MNEs will, first and foremost, be a function of the interaction between the configuration of the L-specific assets under their jurisdiction and the O-specific advantages of MNEs. Second it will depend upon the government's evaluation of the likely impact of this interaction on their economic and other goals, as well as on the strategies they adopt to achieve these goals.¹⁸⁶

The policies adopted by the host country which are aimed at the inward investment activity of MNEs will depend on the relative bargaining strengths of the MNEs and the host countries.

Dunning argues that relative bargaining power, in turn, depends on the opportunity costs for the MNE and host country.¹⁸⁷ For instance, a host country will be in a weak bargaining position when it needs a technological capacity that an MNE is

¹⁸⁵ *Ibid.*, p.553.

¹⁸⁶ *Ibid.*, p.548.

¹⁸⁷ *Ibid.*, p.319.

uniquely able to supply. If that MNE can exploit its technological capacity from a variety of foreign locations, it is not similarly vulnerable to the host site and is in a comparatively stronger bargaining position. If, on the other hand, the host country has a strong indigenous capacity to disseminate and absorb the foreign technology, or it can produce the technology itself or buy it from the open market, then it is in a comparatively stronger bargaining position.¹⁸⁸ The bargaining position of host countries to optimize the terms on which they acquire technology will therefore depend on whether they understand the technology being supplied and:

- how easy it, or substitutes, may be to obtain from other sources;
- how costly it is to produce;
- the alternatives open to the MNE to sell or engage in the technology capacity of other countries;
- the terms and conditions offered by other countries for the same technology.

These issues regarding the technological bargaining position of the host country hinge on the host country's vulnerability, in other words, whether alternatives are open to the host country regarding other sources of technological competence.¹⁸⁹ This insight provides a new basis from which to assess MNE-host country investment relationships directed toward technological advancement. The analysis undertaken earlier in this chapter into MNE and host country capabilities suggests that this insight can be carried further.

¹⁸⁸ *Ibid.*, p.319.

¹⁸⁹ The use of the term 'vulnerability' (and sensitivity) are taken from the discussion of interdependence in Robert Keohane and Joseph Nye, *Power and Interdependence* (NY: HarperCollins, 2nd edition, 1989), p.13.

The vulnerability of an MNE to a host country and vice versa can be assessed according to the complementarity of the O and L assets of the MNE and host country. Given the tacit nature of many of the fundamental product and process technologies, many of the MNE-host country relationships may be unique in terms of complementary fit, thereby limiting the application of “vulnerability” analysis. It is also necessary to supplement analysis of vulnerability with an in-depth look at complementarity and the sensitivity the MNE and host country have to each other.¹⁹⁰

The MNE-host country relationship, based on the goal of shared experiences, information, routines, and learning, is characterized by a high degree of uncertainty which defies the specification of responsibilities and obligations under the terms of a formal agreement. Less significance is placed on the distribution of formalized benefits derived from the terms of a static bargain struck at the time of entry by the MNE:

Although negotiation and bargaining over the share of the benefits from inward investment may remain as fierce as ever, the primary focus is being directed increasingly towards obtaining the right kind of MNE activity in the first place, and then to ensuring that the activity fulfills its proper role in advancing domestic competitiveness.¹⁹¹

The literature on MNEs has concerned itself with the intermediate form or impact of technology transfer in a static framework, rather than the unfolding dynamic process which it opens up.¹⁹²

¹⁹⁰ Sensitivity reflects the responsiveness of each party within a relationship. Keohane and Nye, 1989, p.12.

¹⁹¹ Dunning, 1992., p.564.

¹⁹² Dunning, 1992, p.317.

The benefits of the relationship between the MNE and the host country are no longer simply defined by tangible outcomes such as the number of jobs, the level of wages and the periodic transfer of technology from an MNE-owned production facility located within the host country: "...governments are now evaluating inward investment less for the new resources it provides and more for the way in which it can integrate their economies into the global marketplace and help upgrade the quality of indigenous human and physical capital."¹⁹³

If the bargain is considered as a dynamic partnership, the specification of the dependent variable -- the benefits of the relationship -- is more difficult to specify. It is the distribution of the value-added of the MNE in relation to the upgrading of technological competencies: it is the outcome of learning by both the MNE and host site. In this environment, the complementarity between the MNE and host site, and their judgements about that complementarity, reflect their positions within the relationship and their relative bargaining power.

A disproportionate share of learning by one of the partners may affect the complementarity of the relationship. The learning potential of the relationship may consequently decrease for that partner and its bargaining leverage increases as it becomes less sensitive to the demands of the other partner. This shift in bargaining power has been argued to be a key factor in explaining the instability of international joint ventures: "We argue that the primary factor contributing to instability, and a factor that can be

¹⁹³ Dunning, 1992, p.564.

controlled by firms in IJVs, is a shift in partner bargaining power associated with the acquisition of knowledge and skills that allows a firm to eliminate a partner dependency.”¹⁹⁴ This premise is supported by the argument of Hamel that learning is the most important element in determining relative bargaining power.¹⁹⁵

The basis of the relationship is now one of learning which requires extensive sharing, consensus and trust between the MNE and indigenous institutions. The competitive advantages derived from participating in regional clusters of specialized knowledge, related skills and routines, depend on the quality of knowledge flows and absorptive capacity of the individual institutions working together as a network. The system, in turn, depends on collaboration and a certain degree of trust.¹⁹⁶ Although the potential exists for MNEs to access and integrate local sources of knowledge on a global basis, in practice the act of exchanging ideas and tacit knowledge has proven enormously difficult for MNEs.¹⁹⁷ These difficulties emphasize the importance of the quality of the local cluster and the level of participation the MNE is able to achieve.

¹⁹⁴ Andrew Inkpen and Paul Beamish, “Knowledge, Bargaining Power, and the Instability of International Joint Ventures”, *The Academy of Management Review* Vol.22, #1, January 1997, p.179.

¹⁹⁵ Inkpen and Beamish, 1997, p.184.

¹⁹⁶ Stopford, 1996, p.126. See also Zoltan Acs et al., “Local Systems of Innovation: In search of an enabling strategy” in P. Howitt, 1996, p.343.

¹⁹⁷ *Ibid.*, p.127.

Summary

Theory provides an explanation of the strategy and structure of MNE FDI based on a detailed reading of the characteristics of knowledge. It is argued that as a result of the imperatives of knowledge production, innovation-related capabilities cannot easily be augmented through trade and market relationships. It is also argued that due to these difficulties, knowledge is learned in a cumulative process, rather than transferred, and this learning extends beyond R&D to include production skills, routines, organizational relationships and managerial practices.

These conditions suggest that host site investment incentives may not serve as an appropriate measure of bargaining power. Studies indicate that such incentives are generally less successful in attracting investment that seeks the unique assets and competencies of a host site. The strategic interests of host countries and MNEs dictate that they pay attention to their technological partnership. It is argued that this aspect of the MNE-host country relationship drives their investment decisions and bargaining positions.

A dependent and independent variable are selected that characterize the interests and positions of the MNE and host site with respect to their technological partnership. Possible measures of the independent variable are reviewed (e.g., elements of cluster analysis). Bargaining theory is adjusted in light of the arguments presented in the chapter. Within the bargaining framework, it is argued that the dependent variable (learning) reflects the mutual objective between MNEs and host sites regarding their

interaction. The independent variable (complementarity) reflects their bargaining power and influence over the intended outcome.

The hypothesis states that increases in the value of bargaining assets (and hence bargaining power) depend on the extent that they are perceived by the other party to be complementary to its assets. Thus, measurements of complementarity reflect the value of bargaining assets and potential bargaining power. Changes in the perception of complementarity will signal shifts in bargaining power and behaviour. The arguments developed in this chapter do not suggest any generalizations regarding the balance of bargaining power between MNEs and host sites. Indeed, the literature strongly suggests that generalizations are increasingly susceptible and that analysis will need to be applied at the micro-level to individual cases. It is at this micro-level that the utility of the theoretical case made in this chapter may be realized. The hypothesis suggests an approach to the evaluation of MNE-host site relationships in future case studies. It is argued that analysis of the independent variable in this context will indicate bargaining intent and behaviour.

For instance, if a host site is able to generate complementary assets or enhance the complementarity of existing assets (revealed by the character of its knowledge base and the quality of its knowledge flows and organizational learning), it will raise its attractiveness as an investment partner, raise its bargaining leverage and increase the likelihood of creating a virtuous circle of related investment activity. The host site will be in a better position to generate further local economic development without offering investment incentives.

As a step toward substantiating the theory reviewed in this chapter, the next chapter probes the plausibility and relevance of the hypothesis as an approach to examining MNE-host site interaction.

Appendix A

Policy options to influence technological impact of MNEs

1. Do nothing
 - may result from confidence or a weak bargaining position
 - host country may have an inadequate indigenous capability to develop an alternative to inbound investment
 - a variant is to give fiscal incentives without using penalties or requirements
2. Limit certain sectors to domestic ownership
3. Limit the amount of inward investment
 - a variation of infant industry trade protection used to promote the dynamic comparative advantage of location bound resources
 - a less severe variant is to monitor and guide inward investment to promote indigenous clusters
4. Specify performance requirements
 - set entry conditions for new and/or existing foreign investors
 - set specific performance requirements for MNE affiliates (e.g., training obligations)
5. Encourage indigenous production of technology and technology transfer
 - encourage market structure most conducive to an efficient inflow of technology -- encourage cross-border collaborative R&D and alliances
 - encourage development of clusters of supporting or related activities, and also interaction between universities, cooperative research associations and private firms
 - support industrial restructuring and educational and other policies to facilitate the upgrading of indigenous human capital
6. Influence terms and conditions of technology transfer
 - discourage restrictive clauses on technology transfer, eliminate restrictions on use of technology supplied by MNEs, e.g., intellectual property rights
 - give incentives to MNEs to set up R&D facilities, procurement choices
7. Improve understanding of costs and benefits of technology: improve negotiating abilities
 - solicit competitive bids from alternative technology suppliers
 - look at the alternative of purchasing knowledge on the open market

Appendix B

Factors influencing MNE linkages with host sites

Inter-firm linkages and externalities associated with the presence of MNE activity are likely to depend on eight main factors:

- 1) the extent and nature of the particular O advantage associated with MNE activity
- 2) host and home government developmental and macro-organizational strategies (including those policies specifically directed to MNEs or their affiliates)
- 3) the existing supply characteristics and absorptive capabilities of indigenous firms in host economies, and their reactions to inbound direct investment
- 4) the L-specific environment for absorbing, disseminating, and accumulating new knowledge, technology, management skills, etc.,
- 5) the competitive position and market structure of the sectors in which there is foreign participation prior to that participation
- 6) the characteristics of the markets for intermediate products
- 7) the type of foreign investment (e.,g., import substitution, resource based)
- 8) the global strategies of the MNEs

IV. Evidence

The limits of bargaining theory have been identified with respect to the mutual interests of MNEs and host countries to combine and develop their knowledge assets. The previous chapter reviews theoretical support for an approach that explains the interests of MNEs and host countries when their investment priorities coalesce around knowledge acquisition. It identifies characteristics of knowledge that impact on the interdependency between MNEs and host sites, it proposes an hypothesis about the MNE-host site relationship in terms of the bargaining framework and it explores an approach to measuring this interdependency. This chapter gathers empirical support for this approach and the propositions that support it. Empirical evidence is brought to bear in three parts.

First, trade and investment statistics are used to substantiate the emphasis on knowledge-related FDI. Although statistical evidence from secondary sources exists regarding MNE knowledge-related FDI, it does not present a complete picture. The value of the MNE's knowledge assets located in the host country is not as easily assessed as is the case with physical assets. Further, the essence of the MNE-host country relationship, learning, may not be revealed by aggregate statistics. There is a temptation to examine knowledge-related FDI too narrowly, for instance, strictly in terms of MNE R&D (e.g., through R&D expenditures or patent counts). Some of the most significant spillovers (e.g., tacit knowledge) may not be captured by R&D measures. For sectors that are mature and without obvious R&D activity, this omission may lead to the misperception that knowledge is not a significant factor of production.

The second part reviews research drawn from two previously conducted case studies to illustrate that knowledge-related FDI applies to a cross-section of firms and sectors. The case studies also support arguments regarding the consequences of FDI-related learning for the MNE-host site relationship. The case studies are of the Canadian and US auto sectors and they are selected precisely because they prove difficult tests for the hypothesis which may seem better suited to sectors more widely regarded as “high-tech”.

The case studies are drawn from a single industry, with a particular focus on two countries. Moreover, the evidence is somewhat dated. Other case studies are cited which provide more recent corroboration from the US and Europe. While the case study literature is very limited, particularly with respect to Canada, it is reasonable to assume that the trends outlined in the case studies continue to hold. It is important to reiterate the purpose for which the case study evidence is reviewed. It is not to support generalizations that knowledge-related FDI and the consequences for MNE-host country relationships apply universally.

The objective is to illustrate that knowledge-related FDI can have a significant role in a variety of sectors, even those sometimes considered mature or ‘low-tech’. The objective is also to substantiate the theoretical arguments that organizational learning extends well beyond the R&D lab to encompass MNE and host site interaction on the shop floor and inter-firm learning particularly of process and organizational techniques. The example of the auto sector illustrates the influence of new production techniques (e.g., just-in-time delivery) and the process of learning (continuous improvement) on

MNE-host site relations. The case studies indicate that the propositions supporting the hypothesis are relevant, even for firms and sectors that may not seem suitable at first glance.

The third element of the empirical evidence draws on a series of interviews with Canadian government officials and MNE 'site selection' consultancies in order to assess the relevance of the hypothesis and theoretical approach. It is argued that the degree of complementarity influences the valuation of bargaining assets, which determines bargaining power, which, in turn, affects behaviour and outcomes (learning). The plausibility of the hypothesis is probed by investigating whether 'complementarity' and the assessment of knowledge-related assets has entered into the investment calculus of either host sites or MNEs.

If complementarity is a factor, it will be signalled by promotional material that highlights knowledge assets used by host countries to attract MNEs. Positive evidence that would support further investigation and testing of the hypothesis would be whether MNEs and host sites include the characteristics of complementarity and the goal of learning in their investment priorities. This would be demonstrated by: one, the use by MNEs and host sites of analytical tools to assess complementarity and learning; two, whether these characteristics figure in the partner selection process; and three, whether they are part of subsequent investment decisions and activity. It will also be reflected in adjustments the MNE and host country may make to optimize the learning benefits associated with the FDI.

A lack of evidence or negative evidence would indicate either that the hypothesis is flawed or that rhetoric indicating the importance of knowledge-FDI has not yet translated into investment behaviour.

In order to probe whether complementarity is having an impact on the valuation of assets, and thus MNE-host site interaction, secondary sources are used to indicate the priority being placed on this issue by both MNEs and host countries. Telephone interviews with government and private sector sources familiar with MNE-host government negotiations in Canada supplement the published sources. Questions were posed to both MNEs and host site governments to determine whether their evaluation of potential investment partners considered the characteristics of complementarity and the potential to learn (see Introduction for a list of questions).

Trade and investment statistics

MNEs are estimated to be responsible for four-fifths the world's trade in technology and managerial skills among market economies during the mid-1980s.¹⁹⁸ They are also estimated to account for 80 percent of the privately undertaken R&D in the world.¹⁹⁹ Despite the MNE's huge share of R&D activity and trade in knowledge-related technology, only about 12 percent of the innovative activities of the world's largest industrial companies are undertaken outside their home country boundaries, whereas about 30 percent of their total activities occur outside their home country. A

¹⁹⁸ Dunning, 1992, p.14.

¹⁹⁹ Dunning, 1992, p. 290.

disproportionate share of the MNE's R&D is done in their home country. That being said, FDI is becoming more R&D intensive; the trade and transfer of technology continues to be managed largely within MNE networks; and individual cases of foreign-based MNE R&D can be significantly above the norm of 12 percent.²⁰⁰

A survey of foreign-affiliated R&D laboratories in the US also provides evidence of the direct role of MNE R&D activity in host country innovation systems. The national survey found that foreign R&D investments are directed toward actively integrating into the US scientific community rather than merely serving to provide technical support to manufacturing investments or modifying existing products for the local market. R&D investment was aimed at harnessing scientific and technological capabilities and generating new technological assets, rather than "market-oriented" activities.²⁰¹ Specifically, R&D investments were directed toward developing links to the scientific and technical community and attracting valuable human capital.²⁰² Further, foreign-affiliated labs were found to possess considerable autonomy in developing their research agendas, rather than being subject to central control from the MNE home country.

Another study of the global research networks of 32 US, Japanese and European MNEs found that approximately 45 percent of the 238 foreign R&D sites were 'home-based augmenting sites' where the objective is to absorb new knowledge from the local

²⁰⁰ Dunning, 1992, p. 304.

²⁰¹ Richard Florida, "The globalization of R&D: Results of a survey of foreign-affiliated R&D laboratories in the USA", *Research Policy*, Vol. 26, #1, March 1997, p.85.

²⁰² Florida, 1997, p.86.

scientific community and create new knowledge.²⁰³ To tap and absorb new sources of knowledge, the study found that MNE foreign R&D sites should be located in regional 'knowledge clusters' and they should be headed by a prominent local scientist whose primary responsibility is to nurture ties between the new site and the local scientific community.²⁰⁴

On the other hand, there is evidence that suggests that the importance of large firms in national systems of innovation is exaggerated. Patel and Pavitt contend that this is especially the case in Canada.²⁰⁵ Contrary to one estimate that 80 percent of the R&D undertaken by firms is accounted for by MNEs, Patel and Pavitt find that it is only about 60 percent when measured by patenting in the US.²⁰⁶ Patel and Pavitt also found that international differences in the volume, trends and sectoral patterns of technological activity correlate with those of large nationally-based firms, indicating that the influence of foreign-based firms may be negligible. Moreover, they found that the technological performance of a country determines the domestic performance of these large firms -- rather than the reverse, indicating that large firms, either foreign or domestic, do not

²⁰³ Walter Kuemmerle, "Building effective R&D capabilities abroad", *Harvard Business Review*, March-April, 1997, p.61-62.

²⁰⁴ *Ibid.*, p.64.

²⁰⁵ Pari Patel and Keith Pavitt, "The Limited Importance of Large Firms in Canadian Technological Activities" in D. McFetridge, 1991, p.71.

²⁰⁶ *Ibid.*, p.76.

influence national technological performance.²⁰⁷ Countries like Canada appear to depend heavily on “non-giant” firms, government agencies and individuals for their technological activities.²⁰⁸ While this may be true, the role of MNEs should not be discounted.

Innovation appears to rely heavily on the combination of related and complementary assets and capabilities. MNEs represent a critical source of new and technologically complementary capabilities. Patent data may indicate relatively limited amounts of R&D activity by foreign MNE affiliates, but this activity, and the technological assets of the MNEs, may nonetheless be of strategic importance as a source of complementary capabilities. Similarly, data on patents may be a better representation of technological activity than R&D expenditure, but even so, such data does not capture the range of knowledge-related activities at the heart of modern economies.

The high social rates of return (spillovers), from knowledge-related activities indicate that MNE R&D expenditures and “patent counts” are incomplete measures. Technology diffusion and learning are not necessarily linked to input-output flows or to sources and uses of patents.²⁰⁹

When the broader effects are considered, one estimate for the Canadian manufacturing sector puts the rate of return from foreign R&D at three times the rate of return from domestic R&D.²¹⁰

²⁰⁷ *Ibid.*, p.79.

²⁰⁸ 11 percent of technological activity in Canada was performed by Canadian large firms, 16.9 percent by non-Canadian large firms, and the remaining 72.1 percent by other sources in Canada. *Ibid.*, p.79.

²⁰⁹ J. Bernstein, “R&D Capital, Spillovers and Foreign Affiliates in Canada” in D. McFetridge 1991, p.128.

²¹⁰ P. Mohnen, ‘Discussant’ in D. McFetridge, 1991, p.131.

Statistics regarding the extent of foreign direct investment also underestimate the extent and impact of MNE activity.²¹¹ Given the new forms of investment and the new forms of production in which MNEs now engage, their influence extends well beyond that which is represented by their equity ownership stakes.²¹² Strategic alliances, non-equity affiliations, consortia, as well as cooperative agreements with customers, contractors and governments all extend the influence of MNEs over R&D, production, marketing, distribution and exchange practices.

Trade and investment statistics provide some evidence of the off-shore knowledge-related activity of MNEs, but they do not capture its full extent. It is important to recognize the limitations of trade and investment statistics, particularly those related to knowledge and technology, since significant economic effects can be misjudged or ignored. A reliance on narrow conceptions of technology (e.g., defined by R&D expenditure) can lead to flawed analysis and decision-making. Case studies provide further empirical support for the role of MNE knowledge-related activity, but here too, analysis can be flawed if proper attention is not paid to technology and its effects. This point is illustrated by recent a case study of MNE-host country bargaining within the auto industry.

²¹¹ Measured in terms of related companies in which the MNE holds ownership control.

²¹² New forms of investment and production are non-equity arrangements increasingly used by MNEs, but not captured by FDI statistics and new process and organizational technologies (e.g., lean manufacturing) that provide flexibility and competitive advantage over traditional production methods.

MNE-host country bargaining in the auto industry

The importance of knowledge-related activities outside of firm R&D labs is illustrated by the evolving nature of production within the auto industry. The auto industry is a good case study, since it has been used to support arguments opposite to that made in this study, that, in fact, technology is not an explanatory variable of MNE-host country bargaining.

A study of bargaining power between host countries and MNEs in the auto industry used case studies from Britain, Canada and the US between 1960 and 1994. The study shows that relative bargaining power has shifted to MNEs, not host countries as predicted by the obsolescing bargain. The independent variable which is used to explain this shift is the increasing flexibility of MNEs to choose the location of their production and to withdraw and relocate their off-shore activity.²¹³ The hypothesis re-states a finding already found in the literature; what is remarkable is the dismissal of “technology” as the primary driving force behind changes in the MNE-host country relationship.²¹⁴

The premise that MNEs have gained flexibility in their location decisions is not disputed. The claim however, that this flexibility is the single most important determinant of relative bargaining power of states and MNEs is flawed. Variations in capital mobility do not provide insight into different types of investment activity, which would dictate different MNE-host country bargaining, nor do they provide insight into the

²¹³ K. Thomas, *Capital Beyond Borders: States and firms in the auto industry, 1960-94* (NY: St. Martin's Press, 1997), p.22.

²¹⁴ Kobrin, 1987.

different location decisions and behaviour of MNEs. Just as important, without a clear understanding of the implications of knowledge and technology, the extent of MNE flexibility (i.e. its choice of alternatives/substitutes) cannot be properly determined.

It is acknowledged in the study that states have less bargaining power in technology-intensive industries than in mature industries, but the author states that this is not a factor in the case of the auto industry, which has seen a decrease in the importance of technology.²¹⁵ The author argues that: “Despite certain advances in production technology, such as robotization, auto making has become a more mature industry, as evidenced by the ability of indigenous firms in less-developed countries to successfully compete in the international arena.”²¹⁶ Precisely because the economic impact of knowledge is misjudged, the analysis of MNE-host country bargaining is superficial and open to alternative interpretation.

Other studies of the auto industry have shown that technology, as defined in this paper, plays a significant role on the strategy and operations of auto companies, including the location and operation of their off-shore activities. Although the auto industry had been characterized as mature, with a stable, incrementally evolving technology, it has been evident since the 1980s that new product, process and organizational technologies, predominantly from Japan, are reshaping the world automobile industry.²¹⁷ An analysis of automotive patents shows that engine technologies were active areas of technological

²¹⁵ *Ibid.*, p.17.

²¹⁶ *Ibid.*, p.17.

²¹⁷ Daniel Jones, “Corporate strategy and technology in the world automobile industry” in Mark Dodgson (ed.) *Technology Strategy and the Firm: Management and Public Policy* (Harlow: Longman Group, 1989) p.11.

activity, growing as fast as computers.²¹⁸ In terms of R&D expenditures, technological developments within the auto industry increased rapidly through the 1980s, increasing by 78 percent in real terms between 1973 and 1985.²¹⁹

Within the G7, the R&D activities of the auto industry are even more apparent. Based on statistics available as of 1993, the OECD has ranked the top five R&D performing industries in each country. The motor vehicle industry ranked third in the US, second in Japan, first in Germany, third in France, fifth in the UK, and first in Italy. In the case of Canada, it did not rank in the top five R&D performers, but it did rank first as the top R&D-using industry.²²⁰

Engine technologies represent only a small part of the range of innovations employed in the auto industry (other areas include materials technology, product development and electronics). Perhaps the most significant technological change has come in the organization of production.²²¹ Organizational techniques that stress the knowledge of the shop floor have yielded greater returns than major leaps in production automation pursued by North American auto makers.²²² Not easily recognized by trade and investment statistics or even R&D data, organizational innovations and process technologies are influential effects of MNE knowledge-related activity and they have been documented by detailed case studies of the Canadian and US auto sectors.

²¹⁸ *Ibid.*, p.13.

²¹⁹ *Ibid.*, p.21.

²²⁰ OECD, *Technology and Industrial Performance* (Paris: OECD, 1996b), p.35.

²²¹ Jones, 1989, p.15.

²²² *Ibid.*, p.17.

Innovation mediated production

Based on site visits to dozens of firms, survey research, and personal interviews with hundreds of company officials and factory workers, Martin Kenny and Richard Florida argue that a new model of production organization, developed in Japan, is diffusing throughout the West.²²³ In a study of the Canadian auto sector, a similar finding was made that the 1980s was a decade of intense learning where both North American and Japanese auto firms searched for ways to adapt new manufacturing methods to the North American production environment, which means transferring technology embedded in organizational and inter-organizational relationships.²²⁴ As a result of increased organizational learning capability, the Canadian auto sector is undergoing significant change, where learning is now essential for competitiveness.²²⁵

Both case studies emphasize a new model of production organization, which Kenny and Florida call innovation-mediated production. The organizational and process innovations apply not just in the auto sector but also in related heavy industries such as steel and rubber as well as to high-tech industries.²²⁶ Innovation-mediated production has five basic elements:

- a transition from physical skill and manual labour to intellectual capabilities or mental labour;

²²³ Martin Kenny and Richard Florida, *Beyond Mass Production* (NY: Oxford University Press, 1993) p.8.

²²⁴ Bernard Wolf and Glen Taylor, 'Employee and Supplier Learning in the Canadian Automobile Industry: Implications for Competitiveness' in D. McFetridge 1991, p.288.

²²⁵ Wolf and Taylor, 1991, p.297, 305.

²²⁶ Kenny and Florida, 1993, p.15.

- the increasing importance of social or collective intelligence as opposed to individual knowledge and skill;
- an acceleration of the pace of technological innovation;
- the increasing importance of continuous process improvement on the factory floor and constant revolutions in production; and
- the blurring of the lines between the R&D lab and the factory.²²⁷

With a particular emphasis on developing the knowledge of all workers, not just R&D scientists and engineers, innovation is integrated with the production process and knowledge becomes the fundamental competitive resource and advantage of the firm's activities. This strategy is significant since customary distinctions between the home base and off-shore activities lose relevance as the technological-enhancing activities of MNEs become part of basic production.

The location decisions, operations and the resulting spillovers of Japanese investment activity in the US and Canadian auto sectors, provides evidence of the knowledge-related activity of MNEs. As well as looking at the location and operations of Japanese auto assemblers, it is important to look at foreign and domestic component suppliers in North America and domestic auto assemblers. Since innovation-mediated production involves networks of upstream and downstream linkages designed to exploit knowledge, they should be incorporated in a review of auto industry investment. Similarly, the effects of innovation-mediated production are argued to spillover to the domestic economy, which can be realised through the diffusion of new organizational practices within US and Canadian auto makers.

²²⁷ *Ibid.*, p.14.

Japanese investment in the US has been significant, increasing more than fivefold between 1980 and 1989.²²⁸ The location preference of the Japanese auto sector during this period has been for newly constructed plants in small towns in rural or fringe metropolitan areas.²²⁹ Kenny and Florida argue that these locations allow Japanese auto MNEs to avoid high levels of unionized labour, long histories of industrial conflict, or legacies of fordism.²³⁰ The locations provide access to fresh recruits that can be taught the Japanese production methodology. Kenny and Florida reports that Honda managers indicated that a major factor in the selection of a greenfield site was to avoid experienced manufacturing workers who “have picked up bad habits”.²³¹ These sites are also characterized by low occupational and geographic mobility and low absenteeism -- all of which allow the MNE to fully capture its human capital investment.²³²

The US investment priorities established by the Japanese auto sector led to a pattern that differs from the pattern set by US manufacturers, an outcome not predicted by traditional locational theory. Kenny and Florida argue that Japanese direct manufacturing investment in US heavy industry defies a spatial division of labour as both simple and complex manufacturing and assembly have been co-located, resulting in the creation of an integrated transplant production complex.²³³ As a result, location theory needs to be re-thought in terms of the exigencies surrounding the organization of production (not

²²⁸ *Ibid.*, p.88.

²²⁹ *Ibid.*, p.101.

²³⁰ *Ibid.*, p.101.

²³¹ *Ibid.*, p.101.

²³² *Ibid.*, p.101.

²³³ *Ibid.*, p.207.

strictly profit maximization).²³⁴ MNEs have the ability to actively construct and shape their environment. In the US, Japanese MNEs made investments with the objective of building a transplant complex in which they could institute innovation-mediated production. This pattern has generated some concern in Canada as an increasing number of parts suppliers locate within clusters in the US. Without similar agglomerative effects, Canada becomes less competitive as a location site.²³⁵

Once established, the network of auto manufacturers and suppliers was organized to promote the development and exploitation of knowledge throughout the production process. Evidence of this investment directive includes the organization of teams, the institution of suggestion programs, quality control circles and informal continuous improvement activities. All of the Japanese automotive assembly transplants have organized the work process at the point of production on the basis of work teams. At Honda, Toyota, and NUMMI, teams meet daily to discuss production improvements and redesign of tasks.²³⁶ All of the Japanese auto makers in the US rotate workers.²³⁷ Many of them, especially Honda and Toyota, give workers significant input into the design of their jobs, employ well developed suggestion systems and use quality control circles

²³⁴ *Ibid.*, p.207.

²³⁵ Wolf and Taylor, 1991, p.305.

²³⁶ Kenny and Florida, 1993, p.102.

²³⁷ *Ibid.*, p.103.

extensively.²³⁸ All told, Japanese managers estimate that they have replicated continuous improvement activity in US plants from between 40-100 percent of Japanese plant levels.²³⁹

In the case of Canada, the joint venture GM-Suzuki assembly plant employs fewer and more flexible job classifications than traditional plants, more employee teams, as well as extensive training and exchange programs with Japan.²⁴⁰ These organizational and production innovations, combined with recruitment and training practices employed by Japanese auto makers in the US and Canada, have led to a form of automotive production which employs knowledge as a competitive advantage.²⁴¹

The theory outlined in Chapters One and Three indicates that knowledge diffuses to other companies in the domestic economy. This is the case with Japanese auto sector investment in the US and Canada. A survey of suppliers to Japanese auto makers found that 76 percent used team based production, 87 percent rotated workers, 60 percent of workers were involved in the design of their tasks, 85 percent used a small number of job classifications, and 44 percent used quality control circles.²⁴² In the case of Canada, based on interviews with Japanese parts suppliers operating there, the authors conclude that worker attitudes and aptitudes toward learning are critical to their location and hiring decisions.²⁴³ They also report that suppliers have more selective recruitment practices,

²³⁸ *Ibid.*, p.106.

²³⁹ *Ibid.*, p.107.

²⁴⁰ Wolf and Taylor, 1991, p.290.

²⁴¹ The Canadian experience with transplants parallels the US. *Ibid.*, p.288.

²⁴² Kenny and Florida, 1993, p.131.

²⁴³ Wolf and Taylor, 1991, p.290.

more extensive training programs, extensive use of quality circles, and more team-based employee involvement in decision-making.²⁴⁴ North American parts makers are emphasizing the use of knowledge to facilitate problem-solving on the shop floor and learning from co-workers within natural workgroups.²⁴⁵

Reference to the diffusion of the new organization of production as a spillover is only partly accurate. To some extent it may diffuse as a spillover, but it is also diffused as part of the deliberate efforts of Japanese auto manufacturers, and to a growing extent, US auto makers. In the case of the Japanese, their upstream linkages with transplant and domestic suppliers are more akin to partnerships than arms length transactions. Active efforts are made to diffuse, train, transfer, and cooperate -- in other words, to develop learning capabilities. The efforts of investing MNEs to build technological capacity are clear. So too are the efforts of indigenous firms to build absorptive capacity and to complement the technological strengths of the inward direct investors. It is noted, for instance, that North American suppliers must have the same design and engineering capabilities as suppliers in Japan in order to integrate with the assembler's teams.²⁴⁶

A case in point is a Japanese owned parts manufacturer located in Canada, which frequently transfers technology from Japan while engaging in additional amounts of development work and new materials applications in Canada. It has expended 'considerable effort' educating its Canadian suppliers (e.g., product and process

²⁴⁴ *Ibid.*, p.295.

²⁴⁵ *Ibid.*, p.296.

²⁴⁶ *Ibid.*, p.298.

technology, quality control) thereby upgrading its supply base.²⁴⁷ As more of Honda's product development is carried out in North America, this part manufacturer's design and technological capabilities will need to be sharpened, as will the capabilities of its Canadian suppliers.²⁴⁸ There is evidence of organizational and process technologies diffusing through the "Big Three" US auto makers as they look to create more integrated production complexes. The NUMMI joint venture between GM and Toyota was touted by GM as enormously important in gaining experience with the production techniques of Asian auto manufacturers.²⁴⁹ The lessons of NUMMI have been fashioned into 37 action strategies to guide labour-management quality committees in each plant.²⁵⁰ All three US auto manufacturers operate plants that use the team concept, a smaller number of job classifications, pay-for-performance, and other organizational practices influenced by the Japanese.²⁵¹ As well, GM has instituted supplier councils which elevates the design responsibilities of suppliers as well as providing a forum for suppliers to learn from each other (e.g., product design methodologies).²⁵²

In Canada, the Canadian Auto Workers have obstructed the adoption of new techniques, although similar action strategies to those in the US have been adopted at the plant level through the Canadian Quality Process.²⁵³ Another example of increased efforts by US auto manufacturers in Canada is the training strategy of Ford Canada in

²⁴⁷ *Ibid.*, p.300.

²⁴⁸ *Ibid.*, p.300.

²⁴⁹ *Ibid.*, p.292.

²⁵⁰ *Ibid.*, p.293.

²⁵¹ Kenny and Florida, 1993, p.119.

²⁵² Wolf and Taylor, 1991, p.303.

²⁵³ *Ibid.*, p.293.

which their spending on training in 1989 was greater than the total for the preceding seven years.²⁵⁴ Working with the American Iron and Steel Institute, Ford has influenced domestic producers in other industries such as Dofasco in Canada to increase efforts in the area of training, which, in turn, has affected other related companies.²⁵⁵

The North American auto sector contains unmistakable examples of the influence of knowledge on the investment activity of MNEs and their influence on the indigenous production base of host countries. The example of the auto sector illustrates the implications of knowledge on basic production functions, beyond what is generally considered by technology related statistics on R&D activity. The policy implications for host countries cited by the studies of the US and Canadian auto sectors focus on the relationship of learning to competitiveness. The concern is that the significance of learning has not been recognized within host country policies aimed at competitiveness and foreign investment.²⁵⁶

With a view to accelerating the rate of learning within indigenous firms, three strategic responses are noted: encouraging learning through inward investment; encouraging the development of know-how from upstream and downstream linkages (e.g., through strategic alliances); and developing in-house engineering, organizational and managerial capabilities so that indigenous firms are attractive partners and so that they will be able to absorb the benefits of external sources of knowledge.²⁵⁷ These

²⁵⁴ *Ibid.*, p.294.

²⁵⁵ *Ibid.*, p.297.

²⁵⁶ *Ibid.*, p.308.

²⁵⁷ *Ibid.*, p.307.

characteristics highlighted by the case studies support the theoretical arguments in Chapter Three. The technological role of MNE investment is acknowledged, linkages between the MNE and indigenous firms are recommended and the importance of indigenous absorptive capacity is stressed.

Many of the findings drawn from the case studies of the US and Canada are supported by other studies which have identified the technological transformation of the auto industry.²⁵⁸ The authors of a series of case studies of the European auto industry (both assemblers and component suppliers) argue that the auto industry is in a process of 'dematurity'²⁵⁹, and that foreign investments need to be assessed in terms of the MNE's attempts to search for locations and structures that facilitate the exchange of knowledge within its various elements.²⁶⁰ The empirical evidence from the case studies is less coherent than is the case with the US. For instance, Japanese investment is more fragmentary and less prone to clustering and significant supplier relationships than is the case in the US.²⁶¹ Nonetheless, the introduction and diffusion of process and product technologies, organizational techniques and customer-supplier relationships are identified.

In another study of the restructuring of the auto industry, particular emphasis is given

²⁵⁸ See for instance, Kurt Hoffman and Raphael Kaplinsky, *Driving Force: The global restructuring of technology, labour, and investment in the automobile and components industries* (Boulder: Westview, 1988); James P. Womack, Daniel T. Jones and Daniel Roos, *The Machine that Changed the World* (New York: Rawson Associates, 1990); James P. Womack and Daniel T. Jones, "From Lean Production to Lean Enterprise", *Harvard Business Review*, March 1994; and Rebecca Morales, *Flexible Production: Restructuring of the International Automobile Industry* (Cambridge: Polity Press, 1994).

²⁵⁹ Peter Wells and Michael Rawlinson, *The New European Automobile Industry* (New York: St. Martin's Press, 1994), p. 18.

²⁶⁰ *Ibid.*, p. 33.

²⁶¹ *Ibid.*, p. 189.

to the role of joint actions of governments and private enterprise for the purposes of encouraging innovation and nurturing the technological ability of suppliers.²⁶²

Innovation-led production and organizational changes have occurred in the US, Japan, and Europe.²⁶³ In addition, evidence of a growing innovative capability in Mexico and Brazil is noted, with emphasis given to the role of FDI by US and Japanese auto assemblers.²⁶⁴

With empirical evidence indicating the relevance of learning to MNE off-shore investment activity, the issue becomes whether factors related to learning are affecting MNE-host country bargaining. The hypothesis proposed in this study states that complementarity is an indicator of the technological fit of the investment partners and the likelihood that learning will occur.

The perceived complementary fit (i.e., the value of assets) is a function of the assessments of the MNE and host country about each other. In the following section, these characteristics are explored by probing whether host countries seek MNE investment activity:

- ▶ where the MNE exhibits competencies that fit with the domestic competitiveness and development of the indigenous base;
- ▶ where the MNE demonstrates administrative and organizational capabilities and an institutional character that values learning and information flows.

²⁶² Morales, 1994, p. 6.

²⁶³ *Ibid.*, p. 46.

²⁶⁴ *Ibid.*, p. 150.

A host country's efforts to assess the MNE's technological attributes and to tailor promotional efforts regarding location sites to those technological attributes will indicate whether it places value on those assets and attributes.

Host country priorities

In response to the competitive challenges and opportunities presented by knowledge, changes in host country policy toward MNE investment have been recommended. In the case of Canada, a new policy toward multinationals has been recommended which focuses on diffusing new technologies throughout the economy by attracting more Asian investment.²⁶⁵ Recent policy statements provide evidence that the Canadian federal government has recognized the importance of knowledge and its diffusion to the economy as well as its connection to FDI.

The Minister of Industry has stated that the elements of a knowledge-based economic strategy include two parts, the right macroeconomic climate and a forward-looking microeconomic strategy. The microeconomic strategy addresses five challenges facing Canadian competitiveness in the knowledge-based economy, gaps in: productivity, innovation, human resources, trade, and global investment. Two gaps of particular importance, within the terms of this study, are the innovation gap and the global investment gap where Canada needs to encourage more knowledge-based MNE

²⁶⁵ Lorraine Eden, "Multinationals as Agents of Change: Setting a New Canadian Policy on Foreign Direct Investment", *Industry Canada Discussion Paper*, #1, November 1994, p.31, 38.

investment in Canada.²⁶⁶ The microeconomic strategic response to these challenges consists of initiatives focused on trade and investment; innovation; human resources; competitive marketplaces; and a leading edge information highway.²⁶⁷

The question then becomes whether these five groups of initiatives are sufficiently coordinated, so that initiatives designed to attract more knowledge-based MNE investment in Canada take into account the particular technological characteristics of the MNE and its complementarity with the particular characteristics of the innovation system of potential location sites.

The federal department of Foreign Affairs and International Trade issued a working paper in December 1995 extolling the advantages of Canada's R&D environment as an investment site. The working paper profiled R&D tax incentives, the private sector R&D infrastructure (R&D consortia, private sector R&D facilities), the public sector R&D infrastructure (federal and provincial research institutes and programs, networks of centres of excellence, the intellectual property regime) and the availability of skilled labour.²⁶⁸

While factors such as tax incentives, an R&D infrastructure, and a conducive intellectual property regime are important, the arguments made in this study point to additional requirements that stem from the nature and quality of the interaction between

²⁶⁶ The Hon. John Manley, *Ensuring Canadian Competitiveness in the Global, Knowledge-based Economy*, Presentation to the House of Commons Standing Committee on Industry, October 28, 1997b, slide 9.

²⁶⁷ *Ibid.*, slide 15.

²⁶⁸ Department of Foreign Affairs and International Trade, *Advantages of Investing in Canadian Research and Development*, Working Paper, December 1995.

the MNE and indigenous institutions. In this respect, the paper stresses that Canada offers world class partnering opportunities (e.g., a number of R&D consortia and federal programs that encourage collaboration) and resident expertise in a number of high-growth sectors.²⁶⁹ The promotion of partnering opportunities, resident knowledge, and responsive organizational capabilities among indigenous Canadian firms are characteristics related to complementarity and learning.

Although learning capabilities are included in the working paper they do not appear to be part of an organized effort to assess particular MNEs assets or to tailor promotional efforts to the needs and opportunities surrounding MNE-host site learning. In the fall of 1996 the International Trade Minister together with the Industry Minister announced a joint initiative called Investment Partnerships Canada (IPC) aimed at targeting and securing investments in Canada by key MNEs.²⁷⁰ Efforts by IPC to attract research intensive investment tend to focus on three criteria: the cost of research (i.e., R&D tax incentives), the supply of skilled labour, and the research infrastructure (e.g., the Networks of Centres of Excellence).²⁷¹

Since the vast majority of MNE investment is no longer greenfield but through joint ventures, strategic alliances etc., IPC marketing efforts are, to a great extent, driven by the particulars of each deal.²⁷² Both these observations support the relevance of complementarity. The importance of joint ventures indicates the linkages and channels

²⁶⁹ *Ibid.*, p.4.

²⁷⁰ Investment Partnerships Canada, 'New Foreign Investment Strategy for Jobs and Growth', *Investment Partnerships Canada News Release*, October 3, 1996.

²⁷¹ Interview with Mike Flaherty, Investment Partnerships Canada, November 14, 1997.

²⁷² *Ibid.*

for learning established by MNEs. The need to pay attention to the particulars of each deal indicate the unique demands, and perhaps unique technological fit, MNEs make with their investment. These characteristics also suggest the importance of assessing the technological competencies and strategy of the MNE and tailoring marketing efforts to address the learning opportunities and fit with a particular investment site.

The Ontario government has an agency similar to IPC called Invest Ontario which is aimed at attracting MNE investment. The agency was instituted, in part, to address a decline in Ontario's share of global FDI attributed to policies put in place by the previous Ontario provincial government headed by Bob Rae.²⁷³ While the Rae government's policies may have made Ontario a less attractive investment site, the Premier was well aware of the importance of knowledge and of building knowledge capabilities. Rae is reported to have pressured the President of Chrysler, over a period of months, to build an R&D lab in Ontario. Industry Minister John Manley also applied pressure and in 1996 Chrysler launched an R&D lab at the University of Windsor.²⁷⁴

Rae is also reported to have opposed the proposed sale of de Havilland to the French consortium ATR. Rae recognized that de Havilland was the hub of an R&D network and cluster of supplier relationships. He feared that ATR would hollow-out the indigenous knowledge base by transferring key knowledge capabilities and activities to France.²⁷⁵ In this case, foreign ownership was perceived to be a threat to the growth of knowledge assets within the host country economy. The economic impact of knowledge appears to

²⁷³ Interview with Mike Crowley, Invest Ontario, November 21, 1997.

²⁷⁴ Interview with David Wolfe, University of Toronto, September 22, 1997.

²⁷⁵ *Ibid.*

be considered by the host site, but there is no evidence that this general concern translated into the development and execution of policies and promotional efforts specifically addressing learning between MNEs and host country institutions.

Although the benefits of technologically advanced MNE investment are evident, the reality for Invest Ontario does not allow for selective investment promotion. The competition for increasing shares of MNE investment is fierce. It is not the case that host countries select MNE partners, but rather MNEs choose their investment site. Apparently, there is no need for a framework with which to assess MNE technology and its complementary fit with the host site. Invest Ontario is looking to attract all kinds of MNE investment, including “low-tech” investment with the view to upgrading its technological intensity over time.²⁷⁶

The three year marketing plan of Invest Ontario has a geographic focus since 61 percent of MNE FDI is from the US and another 14 percent from the UK, followed by Japan and Germany with 7 percent each.²⁷⁷ After establishing some awareness of Ontario as an investment site, extensive contact with large foreign MNEs is made to attract new investment in high-tech sectors and re-investment by firms as close to 1500 MNEs already have investments in Canada. Re-investment is almost more important an activity than initial greenfield investment. New product mandates and more R&D are sought

²⁷⁶ Interview with Mike Crowley, November 21, 1997.

²⁷⁷ Interview with Mike Crowley, November 21, 1997.

from MNEs already established in Ontario.²⁷⁸ While Invest Ontario does promote attributes related to its knowledge infrastructure, the focus tends to be on particular institutions such as the National Research Council or the Centres of Excellence, rather than issues such as knowledge flows or complementarity and learning.

The experience of Investment Partnerships Canada and Invest Ontario confirm that Canada is not in a position to selectively negotiate with targeted MNEs. As Canada seeks to increase its share of global FDI, it is interested in attracting R&D intensive MNE investment but it is also interested in attracting other types of MNE FDI as well. A policy framework that assesses the technological fit of prospective MNEs with particular investment sites is more detailed and targeted than is apparently needed.²⁷⁹ Such a targeted policy is also felt to run the risk of attempting to pick winners.²⁸⁰ Despite the validity of these points, it may nonetheless be worthwhile developing such a framework.

It is not suggested that bargaining power has shifted to host sites and that they are able to choose their MNE investment partners. Rather, due to the difficulty of attracting foreign MNE investment and maximizing its benefits, there is a need to convince prospective MNEs that Canadian investment locations are complementary; they have the key knowledge-related attributes which make MNE investment most productive. By developing and promoting the right indigenous policies and assets, host countries can enhance the value of their bargaining assets and hence their bargaining power by

²⁷⁸ *Ibid.*

²⁷⁹ Interview with Doug Anderson, Chief, Sectoral Trade and Investment Policy, Department of Finance, December 11, 1997.

²⁸⁰ *Ibid.*

developing specialized knowledge and open knowledge networks that can uniquely serve MNE requirements.

The efforts of IPC to provide detailed information regarding investment sites is currently focused on matching the type and format of municipal level information made available in the US. A great deal of effort is expended in developing data that can be included within the comparative analyses of US location sites. To a great extent, these analyses are driven by the demands of the MNE investors and the types of comparisons dictated by their priorities.

MNE priorities

From the perspective of the MNE, the value it places on the assets of a host country will be a function of the nature of the MNE's assessments of location possibilities.

Technological attributes related to complementarity will be:

- ▶ if there are a variety of suitable partners with whom the MNE can learn (including other firms, government and universities)
- ▶ the nature and extent of knowledge flows and interaction within the system;
- ▶ if the indigenous base is adaptable in terms of administrative and organizational capabilities, interfirm relations, and institutional structure.

In the case of Canada, a working paper by the federal department of Foreign Affairs and International Trade, includes testimonials by foreign MNEs that have recently invested in Canada.²⁸¹ The existence of a network of research institutions with which to engage in

²⁸¹ Department of Foreign Affairs and International Trade, 1995.

collaborative R&D is cited by four of the five foreign companies profiled within the paper (Dynapro Systems Inc, Glaxo Wellcome Inc, Astra Pharma Inc., Solarchem Environmental Systems).²⁸² An executive from Astra Pharma is quoted in the paper: “From the start, Astra’s approach to innovative research as been to team up its in-house researchers with scientists in universities and other institutions. This model has worked well for us in Sweden. We wanted to continue it here in Canada.” The benefits of synergy are cited by the authors as a major factor in Astra’s location choice.²⁸³ This indication by an MNE that its location choice was influenced by the knowledge assets of the host country, suggests that if the MNE sufficiently valued these assets/opportunities, the bargaining power of the host country would be enhanced.

Participants in MNE-host country bargaining not identified in the literature are consulting practices that have emerged within the ‘big 4’ accounting firms that specialize in ‘site selection’. These consulting practices are intermediaries in MNE investment location activity; they do comparative analysis of prospective location sites on behalf of MNE clients which may extend to the point where they engage in negotiation with potential hosts.²⁸⁴

A site selection consultant with KPMG, who authored the study, “The Competitive Alternative: A comparison of business costs in Canada and the US”, was not aware of weights or factors that could be used to measure the knowledge-related attributes of

²⁸² *Ibid.*, p.21-25.

²⁸³ *Ibid.*, p.23.

²⁸⁴ Interview with Mike Flaherty, November 14, 1997.

particular location sites.²⁸⁵ A computer model was developed by KPMG to conduct comparative analyses of cost factors to help organizations choose among location alternatives. The model focuses on eight location-sensitive cost factors, although it was acknowledged that other factors such as workforce availability, quality of life, transportation infrastructure, education and medical care, among other factors, do play a role. The selection criteria for MNE investment is driven by the particular needs of each MNE client and these needs will overrule any esoteric considerations of the quality of knowledge flows or knowledge clusters.²⁸⁶ If the MNE's objectives include a need for an active 'cluster', the consulting firm will assess it, but it is not a formal part of the site selection service. Technological considerations, particularly those related to complementarity do not appear to have penetrated the analytic services of site selection consultancies, however, development work is being conducted into analytic tools to assess knowledge clusters.

The federal government along with the governments of the four western provinces sponsored a study by KPMG, DRI/McGraw-Hill and Impax Policy Services International of three emerging technology clusters in western Canada. The consulting companies developed a proprietary model of cluster structure based on Porter's diamond of competitiveness. Called the General Evaluation Methodology, the model is designed to assess the structure and strengths of technology clusters. It examines several factors, among them the presence of related and supplier firms that use similar technology and

²⁸⁵ Interview with Stuart MacKay, KPMG Management Consulting, November 18, 1997.

²⁸⁶ Interview with Stuart MacKay, November 18, 1997.

other inputs and the formal and informal linkages that exist among those firms.²⁸⁷ This approach differs from the production cost based approach which appears to dominate site selection analysis within consultancies. With survey research indicating that transaction and coordinating cost variables are ranked considerably higher as investment determinants than traditional production-cost variables, there may be good reason for MNEs, site selection consultancies and host governments to explore variables that indicate the efficiency of knowledge clusters.

The report notes that the US has at least 19 unique business clusters that exist in large metropolitan areas, in small cities as well as rural areas. While much attention has been paid in the past to clusters such as Silicon Valley, other examples such as the auto manufacturing cluster in Tennessee also illustrate competitiveness generated from cluster-based economic development.²⁸⁸ These clusters are an agglomeration of interdependent industries, supporting sectors and economic infrastructure that share technology, labour skills, common inputs and suppliers, where the defining characteristics are a high degree of connectivity and the diffusion of new knowledge and skills.²⁸⁹

In terms of the western Canadian clusters, the report includes the recommendations to encourage cluster associations between large, driving cluster firms and small technology firms, as well as attracting large foreign firms.²⁹⁰ The report states that: “[t]he cluster-

²⁸⁷ DRI/McGraw-Hill, *Building Technology Bridges: Cluster-based Economic Development for Western Canada* (Ottawa: Industry Canada Strategis website, June 1997), p.14.

²⁸⁸ *Ibid.*, p.7.

²⁸⁹ *Ibid.*, p.8.

²⁹⁰ *Ibid.*, p.38.

based marketing approach is a powerful means of attracting beneficial inward investment.”²⁹¹ The theoretical arguments profiled in this study point to the importance of complementarity between the knowledge assets of the MNE and the host site. For MNEs looking to integrate their capabilities with those of the host site, cluster-based analyses by the MNE (or consultancy) provide key comparisons regarding their complementarity.

Previous analyses of clusters within Canada have been conducted by Porter (1991) as well as Rugman and D’Cruz. The Rugman and D’Cruz study reviewed Canada’s ten strategic clusters.²⁹² In a separate chapter within their study, the authors argue that the development and maintenance of competitive advantage hinges on one principle, organizational learning. The continuous improvement of the individual and collective capabilities of all the human resources in the business is marked by the ‘quality movement’, employee involvement in all levels of decision-making, enhancing innovative competence, and joint learning with customers.²⁹³ Although these elements are identified, they are not incorporated in the analysis of the clusters. The methodology employed by the consulting firms noted above, as well as on-going work within the NIS Project at the OECD are two sources of cluster analysis which focus on functional aspects such as the nature and extent of organizational learning.

²⁹¹ *Ibid.*, p.38.

²⁹² Alan Rugman and Joseph D’Cruz, *Fast Forward: Improving Canada’s International Competitiveness* (Toronto: Kodak Canada, 1991), p.31.

²⁹³ Rugman and D’Cruz, 1991, p.46-48.

The cluster and diffusion analysis under development offer potential tools for MNEs to assess the knowledge-related bargaining assets of host sites. This type of analysis also offers potential tools for host countries to assess the complementarities specific MNEs may be seeking from host sites. Based on this analysis, host countries would be in a better position to promote their (possibly unique) technological attributes, thus strengthening their bargaining position.

Complementarity is coming into greater focus as empirical indicators are refined and employed. Identification of the technological attributes of host country institutions (private sector firms, public sector research organizations), particularly their absorptive capacity, and the identification of the transfer capacity of the cluster or system are key elements of current empirical work that shed light on the complementarity between MNEs and host countries. Both absorptive capacity and transfer capacity reveal the importance of interactions, linkages and learning relationships that are critical to innovation.²⁹⁴ Consequently, these same characteristics are critical to successful long-term MNE investment activity and the maximization of host country benefits.

Several OECD countries now maintain policies and programs designed to support the absorptive capacity of their institutions.²⁹⁵ Dunning (1994) has argued that MNEs are increasingly attracted to investment sites with low transactional and coordinating costs. In addition to the macro-economic and organizational policies cited by Dunning that

²⁹⁴ Pim den Hertog, et al., *Assessing the distribution power of national innovation systems, Pilot study: the Netherlands*, December 1995, OECD NIS Project website, p.4.

²⁹⁵ Mario Cervantes, "Diffusing Technology to Industry", *The OECD Observer*, 207, August/September 1997, p.20.

influence these costs, there is reason to believe that micro-economic policies focused on the absorptive and transfer capacity of indigenous clusters will also play an important part in the MNE-host country relationship.

Summary

This chapter is divided into three sections which provide progressive support for the relevance of the hypothesis. The first section uses trade and investment statistics to substantiate the focus of this study on knowledge-related FDI. Empirical data concerning R&D related FDI is limited, particularly for smaller countries such as Canada. Data concerning knowledge-related FDI (a broader concept that includes organizational and tacit components) is even more limited. Due to the inherent limitations in this type of data, case studies provide much needed detail and insight into MNE-host country learning.

The case studies serve two purposes. They support the broader notion of knowledge-related FDI and its practical impact on MNE interaction with indigenous institutions. They also support the theoretical argument made in this study that knowledge-related FDI plays a significant role in the strategies of MNEs and host sites, beyond what might be a fairly narrow conception of high-tech sectors and firms. The evidence is limited and is certainly not a basis on which to make generalizations across sectors or countries. The evidence does appear to be sufficient however, to warrant attention to the subject and its possible application to current MNE-host site relations.

The third section of the chapter builds on the first two. Given the evidence of knowledge-related FDI, the applicability of the hypothesis is probed through a review of literature and a series of interviews. The results of the probe are mixed, and the depth of the findings are severely limited geographically. Although the perceptions of federal, regional, and local levels of government are examined, the results are drawn a small number of interviews within a single country.

If complementarity is a factor, it should be reflected in promotional material that highlights knowledge assets used by host countries to attract MNEs. It should be reflected by the reasons given by MNEs for their locational choices and in the measures used by host countries and MNEs to assess each other as investment partners. To the extent that complementarity is determined to be high for a particular MNE-host country relationship, its influence on bargaining power will be reflected by the lack of additional incentives offered by the host country to secure the investment. It should also be reflected in adjustments the MNE and host country make to optimize the learning benefits associated with the FDI.

Promotional material does highlight the knowledge assets, innovation policies and networks as a way of attracting MNEs. It was not reflected in the responses of government officials responsible for MNE bargaining, although there are some indications that it is emerging as a feature measured and assessed in site selection analysis. It is reasonable to conclude that rhetoric indicating the importance of knowledge-related FDI has not yet translated into investment perceptions and behaviour.

V. Conclusions

Divergent outcomes for structurally similar MNE-host site bargains are not adequately explained by bargaining theory. In her review of IPE literature on MNEs, Eden quite rightly argues that bargaining theory needs to be updated. The theory, arguments and evidence presented in this study take up this challenge by focusing on knowledge as the primary factor of production. There are certainly cases where other factors of production influence the locational decisions of MNEs. For cases where knowledge is the key resource and learning is the main objective of FDI, this study has provided a new dependent and independent variable within the bargaining framework.

It is argued that as a result of the imperatives of knowledge production, learning becomes a cumulative process that extends beyond R&D to include production skills, routines, organizational relationships and managerial practices. Host countries and MNEs have a strategic interest in choosing their technology partners carefully. It is argued that this aspect of the MNE-host country relationship drives decisions regarding prized investment opportunities.

Within the bargaining framework, it is argued that the dependent variable reflects the mutual objective of MNEs and host sites regarding their interaction. The independent variable reflects a key determinant of their influence over the intended outcome. Thus, changes in the perception of complementarity signal shifts in bargaining power and behaviour. The arguments developed in this thesis do not suggest any generalizations regarding the balance of bargaining power between MNEs and host sites. The arguments

are not intended to replace or re-position the obsolescing bargain. Instead the hypothesis is intended to act as a guide to be applied in future case study analysis in order to assess bargaining positions.

If, for example, a host site is able to enhance the complementarity of existing assets (revealed by the character of its knowledge base and the quality of its knowledge flows and organizational learning), it will raise its attractiveness as an investment partner, raise its bargaining leverage and increase the likelihood of participating in increasingly more knowledge-intensive activities. The emphasis of the theoretical arguments is on the long-term, cumulative learning process between the MNE and the host site network. With competition over new greenfield investment increasingly fierce, attention is being paid to existing MNE investment activity and relationships. The focus of the theoretical arguments on the importance of sensitivity (as opposed to vulnerability) aligns with the need to assess shifts within existing relationships.

Empirical evidence in Chapter Four was collected in order to substantiate the theoretical arguments underpinning the hypothesis. The relevance and validity of the hypothesis depends on the argument that knowledge is a primary factor of production and that MNE investment activity can be interpreted in light of the strategic interests of MNEs and host sites with respect to knowledge and learning. The hypothesis is not tested by empirical observation; rather, evidence is gathered to justify a formal testing of the hypothesis. Given the significant departure from existing theory and the formulation of entirely new dependent and independent variables, it is prudent to assess the relevance of the theoretical arguments before attempting a formal test.

The results of the probe are limited and mixed. Although some international trade and investment figures are cited, statistical and case study data are primarily drawn from Canada, with a focus on the auto industry. Both statistical and case study data regarding knowledge-related FDI in Canada and the Canadian auto sector are scarce. Interviews used to supplement published government documents are limited in scope. From this preliminary evidence, there are some indications that the hypothesis may prove useful.

Theory suggests that MNEs and host countries will seek complementary and productive partnerships. They will seek to promote assets associated with this goal, thus enhancing their attractiveness and bargaining power. The preliminary evidence in the case of Canadian government promotional material indicates that indeed, Canada, as a host country, is promoting its R&D related assets, including its knowledge networks and centres of excellence. The testimonials of MNEs in these same documents indicate that they too are valuing the networking and knowledge-related partnerships that develop as a result of their FDI.

The practical experience of government bodies responsible for attracting and negotiating with foreign MNEs suggests that MNE investment activity continues to be dominated by production cost factors rather than transactional and coordinating costs and benefits related to learning. Host countries and MNEs have cited knowledge assets as a factor in locational choices and there is evidence that considerations of complementarity have entered the analysis of investment decisions (e.g., cluster analysis), but the evidence does not suggest that there has been any impact on bargaining power or MNE-host country relations to this point. It is reasonable to conclude that rhetoric indicating the

importance of knowledge-related FDI within government circles has not yet translated into investment perceptions and behaviour.

This study probes the plausibility and relevance of the hypothesis before it is used in future case studies of MNE-host country relationships. The result of such case studies will not be generalizations about the balance of bargaining power between MNEs and host countries. What case study analysis will reveal are assessments of the configuration of knowledge assets in particular MNE-host country relationships. The effectiveness of the hypothesis as a guide for case study analysis will depend on the operationalization of the variables. Complementarity and learning need to be specified and measured. Some indicators of complementarity are proposed. Specific measures of MNE and host site institution learning are more troublesome. Longitudinal surveys or extended case study analysis that captures participant perceptions over time may serve this purpose.

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APPLIED IMAGE, Inc.
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989

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