

Foreign direct investment and the environment: A transaction cost perspective

By Michael W. Hansen
Copenhagen Business School

Table of contents

I. INTRODUCTION	1
II. THEORIES OF INTERNATIONAL PRODUCTION	1
III. THE TRANSACTION COST PERSPECTIVE ON INTERNATIONAL PRODUCTION	2
A. THE TRANSACTION COST PERSPECTIVE	2
B. THE TRANSACTION COST PERSPECTIVE AND INTERNATIONALIZATION	3
1. <i>Explaining internationalization</i>	4
2. <i>Internalization factors in different stages of the project cycle</i>	4
IV. INTERNALIZATION AND THE ENVIRONMENT	5
A. THE DECISION TO INVEST	5
1. <i>Industrial flight to pollution havens</i>	5
2. <i>FDI in the environment goods and service industry</i>	5
3. <i>Firms possessing complementary environmental competencies</i>	7
B. THE CHOICE OF ENTRY MODE.....	7
C. ORGANIZING ENVIRONMENTAL MANAGEMENT ACROSS BORDERS	8
1. <i>Organizing non-existent markets for environmental services</i>	8
2. <i>Asset specificity and opportunism</i>	8
Reputational risks	9
Opportunistic behavior among regulators	9
3. <i>Reducing transaction costs of multiple governance systems</i>	10
D. SUMMARY	11
V. ENVIRONMENTAL EFFECTS OF FDI	11
A. WELFARE EFFECTS OF FDI	11
B. ENVIRONMENTAL EFFECTS OF FDI	12
C. SUMMARY.....	12
VI. EXTERNALIZATION AND THE ENVIRONMENT	12
A. TOWARD FLEXIBLE INTERNATIONAL PRODUCTION	13
B. THE TRANSACTION COSTS OF HIERARCHIES	13
C. ENVIRONMENTALLY MOTIVATED EXTERNALIZATION	13
D. NETWORKS BETWEEN MARKETS AND HIERARCHIES.....	14
1. <i>A network economic conception of internationalization</i>	14
2. <i>Environmental implications of networks</i>	15
E. SUMMARY.....	16
VII. CONCLUSION	16
REFERENCES	

Foreign direct investment and the environment: A transaction cost perspective

By Michael W. Hansen

Copenhagen Business School

Abstract: Traditionally, the revealed literature on foreign direct investment and the environment has conceived the investment-environment nexus in terms of foreign investors exploiting weak environmental regulations and abundant natural resources in developing host countries. This paper provides a corrective to the literature's focus on locational factors as determinants of foreign investors' environmental strategies. Based on an excursion through various insights on the environmental strategies of foreign investors offered by transaction cost economics, the paper reaches the conclusion that internalization, not location, may be the more significant aspect of the investment-environment nexus.

I. Introduction

Since the mid eighties, a growing literature has taken interest in the environmental strategies of transnational corporations (TNCs), in particular as they affect developing host countries¹. To the extent that this literature has been theoretically founded, it has drawn mainly on trade economics or dependency theory at the macro level and market power theory at the micro level. Conspicuously little attention has been devoted one of the leading paradigms within international business, transaction cost economics. This paper² demonstrates that a series of tangible and highly relevant hypothesis and explanations regarding the environmental strategies of TNCs can be extracted from transaction cost economics.

¹ For reviews of that literature, see Chudnovsky et al, 1999; Zarsky, 1999; Hansen, 1998; Jaffe et al, 1995; Dean, 1992; Leonard, 1988; Gladwin, 1987; Pearson, 1985.

² Valuable inputs have been received by Audun Ruud, Peter Wad and Henrik Schaumburg-Muller.

II. Theories of international production

If there is a dominant theoretical paradigm regarding economic globalization and the environment it is no doubt neoclassical trade economics. Based on the logic of comparative advantages, trade economics argues that environmental factor endowments such as abundant natural resources, high assimilative capacities and a social tolerance for pollution, furnish some countries - typically emerging economies and developing countries - with comparative advantages vis-a-vis those countries not holding such endowments (Walter, 1975; Pearson, 1985; Leonard, 1988). Further, most trade economists will argue that an international division of labor based on such locational advantages will increase global welfare and ought to be encouraged (Walter, 1975; Summers, 1992). Authors inspired by dependency theory will tend to make predictions very similar to those of trade economics, but will question the positive welfare implications (Amin, 1975; O'Connor, 1989; Daly, 1993).

The predictions made by neoclassical

trade economics have been challenged empirically. A host of studies has concluded that there is very little evidence that environmental factor endowments affect trade patterns (Jaffe et al, 1995) nor investment patterns (UNCTC, 1992; Dean, 1992; Jaffe et al, 1995; Hansen, 1998; Zarsky, 1999; Chudnovsky et al, 1999; Letchumanan et al, 2000). One reason for the lack of empirical corroboration is that neoclassical trade economics assumes away (or at best, pays lip service to) the fact that the current integration of economies is driven less by trade than by foreign direct investment (FDI) undertaken by TNCs. Because it holds no conception of FDI, trade economics largely fails to grasp environmental outcomes of globalization and ends out with predictions that only find confirmation in the twisted world of general equilibrium models.

This problem is all the more conspicuous as, since the late, 1960s, an exceptionally vital literature on international production has advanced our understanding of the role of FDI in globalization enormously (Vernon, 1966; Kindelberger, 1969; Hymer, 1976; Buckley and Casson, 1976; Caves, 1982; Dunning, 1988). Where trade economics more or less implicitly assumes that goods are exchanged effortlessly among independent buyers and sellers across borders, the literature on international production explicitly postulates that the transfer of many goods - in particular intermediate goods - take place outside the market, within the same enterprise (Dunning, 1988:2).

One of the most pervasive and dynamic theories of international production is the 'internalization theory' (Buckley and Casson, 1976; Hennart, 1991), the international sibling of the transaction cost theory (Coase, 1937; Williamson, 1975). In the following we will present the transaction cost perspective and outline the kinds of insights that it offers in regard to understanding the environmental strategies of TNCs.

III. The transaction cost perspective on international production

Since the early eighties, the transaction cost perspective – sometimes referred to as the theory of market failure - has been exceptionally successful within business economics; so successful that it according to some has become the new orthodoxy within economics (Groenwegen, 1996) and according to others, a fully fledged scientific research programme (Knudsen, 1998). While it throughout the, 1990s has been forcefully challenged from competence/knowledge and resource-based perspectives (Kogut and Zander, 1992; Madhok, 1998; Ghoshal and Moran, 1996) it still holds a strong position within business economics, especially within applied theory (Foss, 2001). Let us examine in more detail the central propositions of the transaction cost perspective.

a. The transaction cost perspective

In line with neoclassical economics, transaction cost economics conceives economic agents as rational utility maximizers³. In that sense, transaction cost economics is an extension of the neoclassical theory of the firm (Dunning, 2000: 36). However, contrary to neoclassical economics the structure of the market system and its accompanying institutions (or lack hereof) is seen as giving rise to inefficiencies. These inefficiencies can be described as transaction costs.

Transaction cost can be defined as the

³ There is some debate whether transaction cost economics should in fact have a rational utility maximizing assumption at its core. However, as argued by Williamson (1996:13), analytically 'satisficing' (Simon, 1978) economists will opt for the utility maximizing assumption over the satisficing assumption as the latter add little to the conclusion and implies an analytical tool box that is 'incomplete and very cumbersome'.

sum of information, enforcement and bargaining costs associated with a market transaction (Hennart, 1991: 83). The existence of transaction costs may render alternatives - in particular hierarchies - more efficient than market solutions. Typically, transaction cost economics identifies three factors affecting the trade-off between markets and hierarchies, namely 1. Uncertainty associated with transactions; 2. The frequency of transactions; and 3. The asset specificity of the transaction (Menard, 1996: 158)⁴.

Because transaction costs associated with markets exist, it will in many instances be opportune for entrepreneurs to replace market transactions with hierarchies:

"If it is very costly to measure the value of goods and services, and opportunities for bargaining and dishonesty are therefore high...the price system can be replaced by a mode of organization in which the buyers and sellers no longer profit from their ability to change the terms of trade in their favor but instead are rewarded for following directives of a central party.....Such a system of organization is called hierarchy" (Hennart, 1991: 84).

Transaction cost economics is typically employed to explain how characteristics of transactions determine whether a firm (or a hybrid form) will replace market transactions. This is why transaction cost theory sometimes is referred to as 'the economic theory of the firm'. However, the transaction cost logic can equally be applied to explain, how characteristics of a given transaction determines the internal nature and properties of formal

organizations (Menard, 1996)⁵. Emphasizing this latter aspect, Williamson defines transaction costs as⁶

'the comparative costs of planning, adapting and monitoring task completion under alternative governance structures' with a transaction defined as 'a good or service transferred across a technological separable interface'.

b. The transaction cost perspective and internationalization

The common application of the transaction cost perspective is to explain the choice between markets and hierarchies in a national context. However, the transaction cost logic has also been successfully employed to explain why market failures will induce firms to create hierarchies across borders. Cross border hierarchies are typically associated with foreign direct investment (FDI), that is investment undertaken in a foreign activity with the aim of obtaining management control of that activity.

In the neoclassical world of frictionless markets there are no market failures. Technology and know-how is assumed automatically transferred to where it is most profitable to put into use. If a foreign company possesses assets not available in the home market, these will be exploited through arms-length transactions such as exports, licensing or franchising. In this world, no capital mobility and thus foreign direct investment will exist.

These 'hard' assumptions of international trade economics are fundamentally challenged by the transaction cost theory of international production, the so called 'internalization

⁴ The uncertainty can either be related to external factors such as suppliers, demand conditions or changes in the regulatory environment or internal factors such as those emanating from opportunistic behaviour or costs of maintaining hierarchies (Menard, 1996: 158). Frequency of transactions may reduce the need for hierarchical integration and guidance. Asset specificity may increase the dependence on e.g. specific employees (Menard, 1996: 159).

⁵ While the former application of the transaction cost logic is widely accepted within micro-economics, the latter is more controversial (Menard, 1996: 149).

⁶ Cited from Menard (1996: 151)

perspective'. Thus, from the mid, 1970s, a generation of economists took interest in explaining the international integration of business activities from a transaction cost perspective (Buckley and Casson, 1976; Hennart, 1991; Cantwell, 1991) and from the late, 1970s and early, 1980s and onwards, the internalization perspective emerged as the dominant explanation of the TNC (Kay, 1983). While the internalization perspective has been seriously challenged by more behavioral, evolutionary and resource-based models (Kogut and Zander, 1992; Johanson and Vahlne, 1998) it still holds a dominant position within the theory of FDI (Dunning, 2000)⁷.

1. Explaining internationalization

Essentially, the internalization perspective explains why firms prefer to organize production internationally instead of simply relying on arms-length markets. The point of departure is a puzzle raised by trade economics' failure to address the issue of FDI: why do firms engage in international production instead of simply exploiting their advantages through exports or licenses? The answer provided by internalization theory is that endemic informational and transactional market failures make hierarchical integration either more profitable or the only option for exploiting those advantages.

Typically, three distinct types of transactional market failures are identified as sources of cross border integration: 1. Those arising from risk and uncertainty; 2. Those stemming from the ability of firms to exploit economies of large-scale production in an imperfect market situation; 3. Those producing significant positive and

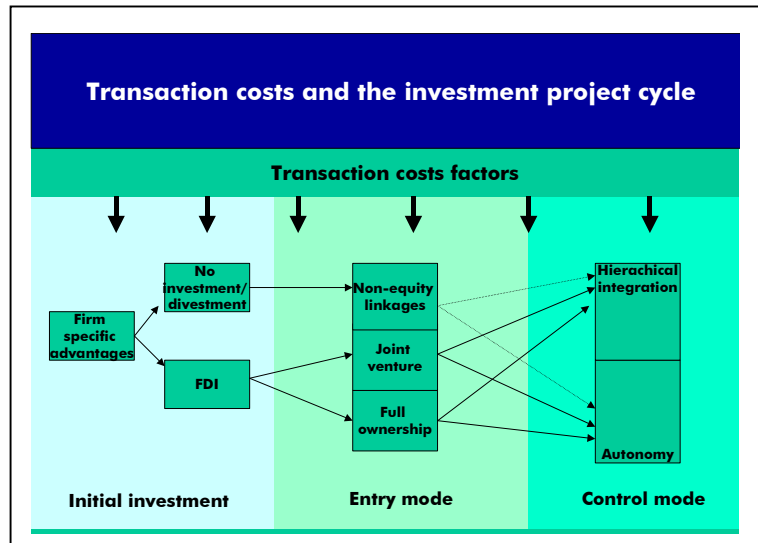
negative externalities.

These market failures are typically consolidated under different headings, e.g. to safeguard supplies, to ensure quality, to guarantee markets, to protect property rights, to allow price discrimination, to spread the costs of shared overhead, etc.

The greater the perceived costs of transactional market failures, the more TNCs are likely to exploit their competitive advantages through international production rather than arms length transactions (Dunning, 1988: 3).

2. Internalization factors in different stages of the project cycle

While the transaction cost logic usually is devoted the question whether or not a company chooses to undertake FDI, it can also explain the optimal control mode over a foreign activity at different



stages in the investment project cycle: The decision as to undertake FDI or not is one stage (see e.g. Casson, 1987; Teece, 1986; Buckley, 1982; Hennart, 1991), the decision as to the degree of control with the foreign investment (entry mode) is a second stage (see e.g. Meyer et al, 1998 or Anderson and Gatingnon, 1986⁸), and the decision as

⁷ The internalization perspective has found way to numerous integrative frameworks to explain FDI (see e.g. Caves, 1982 or Rugman, 1981). Most notably it is an essential element in John Dunning's Eclectic Framework which has assumed an almost paradigmatic position within the literature on international production (Dunning, 1988,, 2000).

⁸ According to Anderson and Gatingnon's

to the deployment of resources for specific activities is a third stage (Hennart, 1991; Menard, 1996). At all three stages of the investment project cycle, TNCs face a choice between hierarchies (control) or markets and at all three stages, the costs of market transactions vis-a-vis hierarchic transactions constrain that choice.

IV. Internalization and the environment

It should by now be clear that the transaction cost logic offers some fairly plausible explanations, why firms organize certain international activities through hierarchies rather than markets. In the following we will explore to what extent this logic can be employed to analyze the environmental strategies of TNCs as well. First, we will examine the extent to which transaction costs related to the environment influence the decision as to invest or not. Second, we will examine how environment related transaction costs may affect the choice of entry mode. Third, we will examine how transaction costs related to the environment affect the control mode in regard to foreign subsidiaries.

a. The decision to invest

The decision as to invest or not may be affected by environmental factors in at least two ways: First, transaction costs may explain whether and when firms facing high environmental compliance cost opt for relocation of production through FDI, so called 'industrial flight' to 'pollution havens' (Leonard, 1988). Second, transaction cost factors may explain investment behavior by firms

framework, there are four variables, which determine the efficiency of various entry modes from a transaction-cost perspective namely: 1. How highly proprietary is the nature of the knowledge employed; 2 How well understood and structured is that knowledge; 3. How customised are the products to the end user; 4. How mature are those products.

possessing environmental ownership advantages⁹. Here a distinction must be made between firms in the environment goods and service industry proper and firms where environmental competencies provide the firm with a competitive edge.

1. Industrial flight to pollution havens

Mainstream trade economics will predict that firms facing high environmental compliance costs in the home country will relocate production to locations with less environmental compliance costs (Leonard, 1988). However, while locational factors definitely influence the decision whether or not to relocate production, they cannot predict the mode of relocation. Thus, it must also be demonstrated that the gains from investment in a pollution haven outweighs the gains from choosing alternative modes, e.g. licensing or outsourcing. Internalization theory predicts that alternatives to investment in most instances will be more efficient for firms contemplating environmentally motivated industrial flight. This due to the relatively small gains of relocation compared to the potentially very large transaction costs of investing in the pollution haven (Klavens et al, 1995; Hansen, 1998). Some of these transaction costs are related to the environment, e.g. costs of potential litigation and punitive action as environmental awareness in the pollution haven grow, or costs of consumer backlash in home countries. Consistent with the predictions of internalization theory, very little evidence of industrial flight to pollution havens has been produced in spite of very large research efforts (Jaffe et al, 1995; Leonard, 1988; Zarsky, 1999; Hansen, 1998; Letchumanan, 2000).

2. FDI in the environment goods and service industry

In many instances, firms will be forced

⁹ Ownership advantages are maybe more commonly known as 'competitive advantages'.

to start up international production in order to effectively exploit their competitive (ownership specific) advantages in producing environmental goods and services. Theoretically, the reasoning behind such a strategy can be captured by the internalization perspective:

The environmental goods and service industry produces products such as eco-labeled products, organically produced food, recycling friendly packaging materials, pollution abatement technologies, or cleaner technologies, and services such as eco-tourism, environmental auditing and certification services and consultancy services. The demand for such products and services has virtually exploded in recent years; by, 1996, the market was approaching \$500 Billion annually (OECD, 2000: 8). Evidently thirty years of environmental regulation in OECD countries has led to the emergence of a strong industry.

The integration of less developed countries (LDCs) into the global economy causes demand for environmental protection to rise, partly due to growing environmental concerns in those markets, partly due to pressures (and sometimes direct support to environmental investment from OECD countries fearing eco-dumping (Krut, 1999). This creates a rapidly growing market for environmental goods and services in LDCs; already today 25% of that market is in non-OECD countries (Bangshøj et al, 2001).

It is highly probable that the private sector will play a pivotal role in the development of environmental protection in LDCs as capital shortages and capacity problems leave little alternative to private organization. This is evidenced by the rapid proliferation of so-called BOOT (Build, own, operate, transfer) arrangements in LDC environmental infrastructure projects (Larsen, 2001).

The environment industry in OECD countries will naturally seek to exploit these vast market opportunities. To do this, foreign direct investment will

frequently be indispensable. This for three reasons that all have to do with transaction costs: First, it may not be possible for foreign firms to service the host market through arms-length transactions due to tariffs, technical barriers to trade or public procurement policies. While tariffs in the environment industry generally are low within the OECD (6-11%), they may be quite high in LDCs; in the case of India, it is up to 100% (OECD, 2000:30). Technical barriers may be an even stronger force behind direct investment. Thus, a particular characteristic of the environment goods and service industry is that the market is driven largely by national regulation that often will work as technical barriers to trade (OECD, 2000:32). Differences in standards prevent firms from capturing economies-of-scale and different enforcement processes create potential costs, delays and uncertainties that is a major barrier to entry. Add to this, the typical national preference in most government's public procurement policies. These regulatory and political barriers to trade provide a strong incentive for firms to undertake direct investment aimed at circumventing those barriers. Such investments typically take the form of M&As or joint ventures involving local firms.

A second transaction cost related explanation, why the environment industry may prefer direct investment to arms-length transactions is that many LDC host countries offer little or no patent protection. Thereby there is a danger that local operators may copy the environmental technology possessed by the TNC¹⁰.

¹⁰ However, as argued by the OECD (2000) the risks associated with lax patent protection does not seem to be a major problem in the environment industry. Thus, while propriety concerns in rare instances may affect investment patterns in the environment industry, the overall impression is that, as stated by the OECD, 'in practice the environment industry has not identified intellectual property protection as a high-ranking problem. Nor does it seem to be subject to the problem of large scale piracy reported for some other goods' (OECD,, 2000).

A third explanation why servicing host markets with environmental goods and services may require direct investment is that environmental know-how and know-why often is tacit and embedded in a larger organization and therefore is difficult to codify and exploit through arms-length transactions. In many cases, sellers must be able to apply generally available knowledge to the specific situation of the client, a skill that is very hard to formalize and codify. Moreover, the sale of environmental goods is typically part of a larger package including technical assistance and services. This 'package nature' of environmental goods makes them very difficult to sell without having a physical presence in the host market.

3. Firms possessing complementary environmental competencies

In an economy increasingly screening firms for their environmental profile and record, the possession of environmental competencies may provide firms with a competitive edge. Often such environmental competencies are tacit, highly informal and embedded in corporate culture and therefore difficult to organize through arms-length transactions. Consequently, environmental factors may strengthen the incentive to internalize production across borders, that is to undertake direct investment.

There is in fact empirical evidence that environmental competencies have provided some firms with a competitive edge over other investors in regard to government contracts, concessions and procurement. Especially industries that potentially are extremely destructive - such as the mining industry or the oil industry - need to provide significant and very costly environmental safeguards in order to win contracts and concessions and thus be allowed to undertake investment (Clark, 1993). In many cases, such safeguards can only adequately be provided by very large

international firms¹¹. In addition to government pressures, environmental screening by large industrial customers in buyer and producer driven commodity chains (Gereffi, 1994) may provide those foreign investors possessing special environmental competencies with an edge. Ultimately, leading TNCs may - as seen e.g. in the car industry - supplant entire value chains to foreign locations, bringing with them the home market suppliers and subcontractors. This is done mainly to ensure quality and reliability of deliveries, but it is possible that known suppliers and subcontractors are provided with an additional edge because they are better able to provide environmental safeguards than are local firms.

b. The choice of entry mode

Just as transaction cost perspective can help us explain how environmental factors influence the investment decision, so may transaction cost theory explain how the choice of entry mode can be affected by environmental factors.

In general, proprietary, reputational and scale considerations may draw in the direction of full ownership, whereas costs of obtaining approvals and permits or gaining market knowledge and circumventing cultural barriers may draw in the direction of joint ventures (Meyer et al, 1998). As OECD based TNCs, due to domestic pressures, often will harbor greater environmental concerns than will the typical local partner in a LDC, it is probable that conflict on this issue may arise. The greater the discrepancy between the environmental outlook of the foreign firm and the local industry is in this regard, the more inclined the foreign investor will be to increase ownership

¹¹ In line with this, Hansen (1997) identifies Danish investment projects within the Eastern European telecom sector that were approved by host governments, partly because the Danish investors could document a capability to effectively address environmental problems.

control to prevent such conflict to arise.

There is in fact evidence that OECD based TNCs in Eastern Europe have experienced conflicts with local partners in regard prioritizing environmental investment (Hansen, 1997) and similar evidence exists from Asian developing countries (Hansen, 2002). Such conflicts may increase the risks associated with joint ventures and help explain why TNCs in environmentally sensitive industries such as the chemical industry today prefer full ownership control when they invest in developing countries¹². For instance, Ruud (1999) reports that a Norwegian chemical TNC increased its equity share due to concerns regarding the local partner's environmental commitment.

c. Organizing environmental management across borders

As argued in the previous sections, transaction cost economics may help us understand various organizational modes between the two extremes of hierarchy and markets. In other words, internalization is not a one for all decision, but may be conceived as a continuum spanning from loose control (close to arms-length transactions) to highly hierarchical integration. In the following we will analyze, how transaction costs may influence the level of integration of a TNC's environmental management system. It will be argued that the level of integration of foreign affiliates' environmental function is affected by transaction cost factors in essentially three ways: First, a given operation may require various environmental services to be provided effectively and safely. However, if such services cannot be provided in the host market at reasonable costs, the TNC may opt for organizing that service internally. Second, opportunistic

behavior among regulators and other market agents creates environmental risks and uncertainties that may force a firm to strengthen control with affiliates. Third, the transaction costs associated with managing different standards in different locations may encourage TNCs to standardize their environmental management systems internationally.

1. Organizing non-existent markets for environmental services

The provision of environmental quality may be conceived as a business service similar to other services such as accounting or human resource management. Whether or not a firm chose to organize this service internally or not is affected by transactional costs. In industries where the production and/or marketing of a product requires a substantial input of environmental services and where those services cannot easily be acquired in the host country, there may be good reason to consider organizing that activity internally. The chemical industry for instance, often demands extremely sophisticated and expensive environmental services in order to be operated safely. These services are related to safety and storage, monitoring and controls or to treatment and disposal of waste materials. In many host countries it will be prohibitive expensive if not impossible to identify effective providers of such services, to screen them, and to ensure the quality of the services offered. Consequently, TNCs may be encouraged to organize those services internally. In line with this, a study of chemical TNCs in India found that some TNCs, in order to ensure a safe operation of their Indian affiliates were forced to undertake even very substantial investment to provide environmental services (e.g. incineration services) because such services were absent in the Indian market (Ruud, 1999).

2. Asset specificity and opportunism

Two central determinants of cross border internalization are 'asset

¹² According to some observers, the joint venture nature of the Union Carbide Bhopal plant was a strong contributing factor to the, 1984 catastrophe (Gladwin, 1987b).

specificity' and 'opportunism' (Groentwegen, 1996: Ch, 19). 'Asset specificity' refers to the ability of firms to bring a capital or investment made in connection with one market transaction to use in another market transaction. If asset specificity is high, the firm will be particularly vulnerable to opportunistic behavior among market agents and regulators. The existence of opportunism and asset specificity provide a strong incentive for TNCs to suspend the market and internalize the transaction¹³. In the following we will show how the concepts of asset specificity and opportunism can explain why some firms internalize environmentally sensitive activities:

Reputational risks

An important category of transaction cost considerations that may affect the environmental investment and control strategies of TNCs is 'reputation'. This in at least three ways:

First, a market solution - contracting out management of an environmental problem to a consultant firm or a local operator¹⁴ - may entail significant reputational risk for a TNC, not only for the affiliate but for the brand and company name world-wide¹⁵. The provider of the environmental service may cheat or be incapable of delivering on contractual obligations. Such risks provide an incentive to organize the production of that service internally.

Second, TNCs may suffer reputational risks from the environmental performance of their suppliers and

subcontractors proper and consequently be encouraged to engage in upstream integration. This issue is for instance highly relevant within the food industry, where the growing use of genetically modified organisms (GMOs) has raised much concern, especially among European consumers. As a consequence of such market sentiments, producers of branded food products need to obtain firm guarantees from suppliers that raw materials are not GMOs, guarantees that ultimately may be acquired only through vertical integration.

Finally, firms selling products and services that are environmentally sensitive may ultimately be encouraged to integrate the downstream marketing, sales and after-sales-service functions to avoid being associated with inappropriate marketing, use, storage and disposal of products. For instance, sellers of pharmaceutical products have to some extent integrated down stream activities for exactly such reasons. The sale of pesticides in developing countries provides another case where the reputational risks to a brand name have encouraged cross border integration, in this case down stream into marketing and sales (Eriksen and Hansen, 1999).

Opportunistic behavior among regulators

TNCs already engaged in foreign transactions with high asset specificity may be in a weak bargaining position when they negotiate environmental permits with local authorities. In such cases, TNCs may opt for high corporate environmental standards and stringent internal controls to shield themselves against costly or even rent seeking intervention by regulators. Internalizing standards and controls may prevent that the entire operation is put in jeopardy by arbitrary regulatory intervention. Industries characterized by high asset specificity - such as mining or chemicals - can alone for this reason be expected to operate with high environmental standards regardless of local regulatory requirements.

Conversely, TNCs that have few assets vested in a given foreign transaction

¹³ The classical case of an industry with very high asset specificity is the mining industry, where vertical integration is common to prevent opportunism from suppliers and customers (Wilkins, 1998).

¹⁴ E.g. providing waste treatment facilities, providing engineering inputs, or conducting analysis of emissions.

¹⁵ As noted by Gladwin (1987b), Union Carbide faced major problems locating activities anywhere near anyone in the years after the Bhopal catastrophe.

may easier obtain concessions from regulators as they credibly can invoke the 'exit' option. In line with this, most cases of environmentally dubious behavior by TNCs are within highly footloose industries such as the furniture industry, the textile industry (Teknologirådet, 1999), or the shipping industry (Murphy and Oye, 1998).

3. Reducing transaction costs of multiple governance systems

Firms engaged in international activities spanning numerous jurisdictions may significantly reduce transaction costs by establishing common systems of governance. Instead of creating specific management procedures, standards, organizations etc. for individual operations in different countries, there is a strong pressure on TNCs to standardize approaches.

This motive for cross border integration of activities is no more evident than in the environmental field. Thus, Royston (1979) explains that the *"technical standards of the plants operated by multinationals in different countries tend to be similar, just because it is managerial simpler to standardize"*. Hadlock (1994) further explains that it

would be impractical to design separate training curricula, personnel evaluation systems, audit and inspection protocols, risk reduction initiatives and standard environmental procedures for operations in distinct plants or countries and that TNCs therefor tend to create uniform management systems. Raucher (1997) argues that,

"fixed and sunk cost may make it cheaper to use environmentally friendly technologies that have been developed for domestic plants elsewhere than to redesign them for laxer standards".

It can furthermore be argued that in a dynamic perspective, the drive toward standardization is reinforced. Thus, market and policy driven convergence of environmental standards and requirements makes it increasingly profitable for TNCs to adopt uniform approaches globally as this provides first mover advantages (Porter and van der Linde, 1995) and prevents costly retrofitting if regulation is strengthened.

Consistent with the above observations, numerous studies indicate that standardized environmental

How transaction costs may affect the international environmental strategies of TNCs

Horizontal integration strategy	Vertical integration strategy	
	Upstream	Downstream
<ul style="list-style-type: none"> ➤ Firms possessing competitive advantages related to the environment that cannot be exploited through arms length transactions due to regulatory barriers, propriety concerns or because the advantage cannot be easily codified ➤ Firms wishing to shield themselves against opportunistic behavior by other market agents or regulators ➤ Firms fearing problems from lack of environmental commitment of host country joint venture partner ➤ Firms (with brands) having a high environmental profile or visibility and thus facing significant reputational risks from opportunistic behaviour by potential licence or franchise holders ➤ Firms seeking scale advantages related to environmental management and technology 	<ul style="list-style-type: none"> ➤ Firms purchasing environmentally sensitive rawmaterials where it is difficult to control their environmental quality (e.g. genetically modified organisms, hormone beef or tropical wood) ➤ Firms that require environmental services that cannot be provided satisfactory by local markets (e.g. emission monitoring or environmental certification) 	<ul style="list-style-type: none"> ➤ Firms selling products, the safe use of which requires huge training and education efforts (e.g. pharmaceuticals or pesticides) ➤ Producers of intermediate technology that potentially is environmentally destructive and where reputation might suffer from abuse of that technology ➤ Firms operating in host countries where there are widespread market failure for environmental waste management services

management approaches are a significant characteristic of TNC environmental strategies (Hadlock, 1994; UNCTAD, 1993; Hansen, 1998; 2002)¹⁶.

d. Summary

In Table I we have summarized the various ways that transaction costs and environmental factors interact to create cross border hierarchies. The table distinguishes between horizontal and vertical integration as well as backward and forward integration. As seen, many important aspects of the investment-environment nexus can be understood when seen through the lenses of transaction cost economics. Thus, we have provided a corrective to the pre-occupation with locational factors as a determinant of TNC environmental strategies that, thanks to the hegemonic position of trade economics, has tended to characterize the literature on FDI and the environment. Our conclusion is that internalization rather than location may be the more significant aspect of the investment-environment nexus.

V. Environmental effects of FDI

The internalization paradigm is mainly aimed at explaining international production and is as such a departure from trade economics, which typically assumes no capital mobility. However, it does not denounce its neoclassical heritage in regard to drawing welfare implications of FDI:

a. Welfare effects of FDI

In the world of transaction cost

economics, FDI is essentially about internalizing activities that due to endemic failures of markets in host countries cannot be organized otherwise. By combining mobile assets of TNCs with immobile assets of host countries, FDI introduces a series of tangible and intangible assets in host countries that would not otherwise have been available (Hymer, 1976; Dunning, 1994; Blomström, 2000; Altenburg, 2000). Consequently, internalization theory will tend to emphasize that TNCs impact host countries positively, partly because they make technology, capital and know how available that cannot be provided through arms-length transactions, partly because rivalry between global firms combined with the incentives to internalize failing markets lead to a more rapid diffusion of desirable technologies than if no internalization took place (Graham, 1996: 40). Thus, in line with neoclassical trade economics, the internalization perspective argues that internationalization overall is welfare enhancing, however not only because of the efficient workings of the market, as argued by trade economics, but also because of the replacement of failing markets by TNCs (Hood and Young, 1981).

The internalization perspective also differs from the market power tradition on TNCs as originally outlined by the seminal work of Hymer in the early sixties (see also Barnett and Muller, 1974; Caves, 1982; Cantwell, 1991). Market power theories - and with them most sociologists and radical economists - will tend to explain cross border hierarchies in terms of power and conceive TNCs as instigators and creators of market imperfections (e.g. monopolies and oligopolies), imperfections that reduce welfare. In contrast, the internalization perspective views market failures as endemic, inherent in the workings of the market and FDI as an introduction of efficiency in such failing markets¹⁷.

¹⁶ For instance, Hansen (1998) finds that there is a strong correlation between the multinational orientation of Danish TNCs and their level of environmental management centralization, a correlation that remains strong even when controlling for size and industry.

¹⁷ In the words of Rugman (1981:33) *'the multinational firm is able to circumvent most*

b. Environmental effects of FDI

It is very common in popular debates to depict TNCs as major culprits of environmental destruction, in particular in developing host countries. Typically these impacts are attributed to the market power of TNCs, their secrecy, and their ability to rapidly deploy resources to new uses and locations (Gladwin, 1987). A more moderate version holds that foreign investors in an environmental sense (and presumably in other ways as well) are no different from comparable local companies¹⁸.

From a transaction cost economic perspective, these assertions are counter intuitive. First, according to the internalization perspective FDI creates greater efficiency in the workings of the market. As environmental protection and resource conservation are closely related to efficiency, the expectation is that, *ceterus paribus*, an inflow of FDI will lead to improved environmental conditions in developing host countries (Birdsal and Wheeler, 1992).

Second, TNCs provide a significant technological and organizational bridge between countries (Hadlock, 1994). As FDI, according to the internalization theory, is about exploiting home bound advantages in foreign locations, and as environmental know how and technology often is embedded in the very organizational and technological fabric of the enterprise, FDI in environmentally backward countries will typically lead to a relative environmental upgrading. In fact, through various diffusion and spill over effects (Wallace, 1996), the environmental effects of FDI may not only pertain to fully controlled subsidiaries but also to joint venture or

exogenous market imperfections. Concerns about the alleged market power are only valid when it is able to close markets or generate exogenous imperfections. In practice, these events rarely occur.

¹⁸ Thus, several authors have suggested that it is size, industry, etc. that explain environmental performance of firms, not the foreignness of ownership (Dasgupta, 1998; Jenkins, 1999).

even non-equity partners.

Third, because TNCs are large, internationally oriented and diversified, they can better handle short and medium term risks and maintain a longer investment horizon than other firms (Wilkins, 1998: 17). The environmental implication of this is that TNCs are more likely to undertake environmental investments that meet not only current regulatory standards, but also anticipate future environmental standards.

c. Summary

In sum, rather than focusing on export of polluting production and double standards, the transaction cost logic will emphasize how FDI may produce positive environmental effects in developing host countries. Ultimately, TNCs' strive for reducing transaction cost related to the environment may, this perspective would tend to argue, spur an international convergence of environmental standards around the highest common denominator (Hadlock, 1994; Wallace, 1996; Gentry, 1999); as stated by Dunning,

TNCs 'far from being exporters of pollution – as was once thought – ... are among the trail blazers of environmentally friendly, yet competitive enhancing innovations, and often set, rather than follow, the dictates of governments' (Dunning, 1997)

VI. Externalization and the environment

In the previous sections we analyzed, how the transaction cost logic may help explain why environmental factors may encourage TNCs to internalize across borders. A similar logic may be employed to analyze the decision as to divest a foreign activity. In the following we will turn to the environmental implications of such 'externalization'.

a. Toward flexible international production

Cross border integration of economic activity can be either equity or non-equity based, deep or shallow. It is a widespread belief that economic globalization entails a movement from 'thin' and 'shallow' integration (trade and portfolio investment based integration) toward 'deep' integration (FDI based integration) (Dicken, 1998). However, this is probably a simplified characterization of the current economic internationalization process. Rather, globalization may be conceived as an intensifying development of simultaneous cross border internalization and externalization processes (Kobrin, 1997), processes that are largely orchestrated by TNCs. Developments in computer and information technology combined with falling transportation costs enable firms to organize production in new ways¹⁹. The result is a highly complex pattern of internalized and externalized transactions, markets, hierarchies and networks, molded together by the strategies of large TNCs.

b. The transaction costs of hierarchies

The dichotomy between different modes of organizing international production can be phrased in transaction cost terms: Thus, just as market transactions implies costs, so do internalized transactions (Coase, 1937). When an activity is internalized, the nature of the transaction changes fundamentally. The

internalized activity becomes guided by non-market signals such as directives voiced by superiors, company rules, and socialization into corporate culture. In essence, price constraints on employees are replaced by behavioral constraints (Hennart, 1991: 105). Such internalization implies costs, not only in terms of control and monitoring, but also in terms of stifling innovation or in terms of assuming liability. Thus, the advantages gained through reduced transaction cost of common governance must be balanced against the costs of coordination.

According to the transaction cost logic, firms will continue to integrate activities across borders until the marginal transaction costs of hierarchies exceed the marginal transaction costs of markets. At this point activities will, depending on sunk costs and other slacks involved, be externalized, that is divestment will take place. As the relative costs of hierarchies and markets respectively are under constant change due to market volatility and rapid technological developments, the optimal configuration of hierarchies and markets may be altered within very short time spans. In line with this, the reason for the proliferation of international sourcing by TNCs could be that the relative costs of hierarchies vis-a-vis markets are being altered by technological developments, falling transportation costs and policy liberalization.

c. Environmentally motivated externalization

Focussing on environmental dimensions, it is evident how transaction costs factors make TNCs simultaneously contemplate externalization and internalization. In industries and firms where there are huge reputational risks at stake; where propriety know-how is firmly embedded in the environmental function; where gains of common governance are significant; or where asset specificity is high, a continuous integration of environmental aspects of foreign activities can be expected. This integration process will not only involve

¹⁹ It has thus become common to describe the changes in the international organization of the economy in terms of movements toward *post fordist* production modes (Dicken, 1998). Post fordism entails a movement away from traditional mass production toward an emphasis on economies of scope, flexibility and just in time production. The expansion of post fordist modes of production makes it possible to slice up the value chain and source internationally non-vital parts of production while integrating those functions that yields the highest profits.

fully controlled subsidiaries but increasingly also joint ventures and non-equity partners.

However, cross border environmental monitoring and controls are expensive and inflexible (Hansen, 1998; Hadlock, 1994). Ultimately, the costs of sustaining high standards around the globe and running a worldwide environmental management system may motivate divestment and externalization:

'The administrative costs of hierarchies and/or external diseconomies (or disbenefits) of operating a foreign venture (e.g. as shown by the Bhopal disaster)' may lean the TNC toward divestment (Dunning, 1988: 3).

Especially firms operating in markets with narrow profit margins can be expected to opt for outsourcing of environmentally costly and risky activities. They will source for at least three reasons: 1. The growing costs of providing environmental goods and services worldwide might encourage firms to source whatever activities that are expendable; 2. The falling transaction costs of sourcing may further promote sourcing of polluting activities; 3. The proliferation of internal market thinking in TNCs (Birkingshaw, 2000)²⁰ may promote divestment of environmentally risky or costly activities.

There is in fact evidence that some TNCs attempt to obtain quick returns on large-scale investment by externalizing as many functions and costs as possible (Carrere, 1999²¹). In particular in labor intensive industries characterized by mature technologies (such as furniture, textiles or tanneries) a notable sourcing process appears to take place from OECD countries to LDCs. While there are many factors explaining this process - labor costs being the most prominent - environment, health and safety costs

and risks may play a role as well (Hesselberg, 1992; Knutsen, 1995; Jenkins, 1999) As noted by one observer

'The logic of capitalist production ... puts pressure on firms to cut or externalize costs and seek locations with weaker environmental and labor regulations'. Such pressures may well be escalating in the harshly competitive environment associated with globalization and liberalization. Through mergers and acquisitions, downsizing, outsourcing, the feminization and informalization of employment, and the lure of largely deregulated havens such as export processing zones, many corporations are reducing their core labor force and shifting production to sites and systems with lower social and environmental standards' (Utting, 2000:18)

Thus, the surprising conclusion regarding globalization and the environment may be that the danger seen from an environmentalist's perspective comes not so much from the international expansion of hierarchies as typically argued by environmentalists, but rather from the dissolution of those same hierarchies.

d. Networks between markets and hierarchies

Hitherto, this paper has phrased the strategic choice facing TNCs in terms of markets versus hierarchies. However, at least one additional organizational mode must be considered and that is 'networks', or as it is sometimes referred to, 'co-operation', 'collusion', 'linkages' or 'alliances'. Let us analyze environmental aspects of such modes in a transaction costs perspective:

1. A network economic conception of internationalization

In recent years, international business economists have argued that networks²²

²⁰ Birkingshaw (2000) makes a distinction between an internal and external market model to contrast the hierarchical model traditionally emphasised.

²¹ Cited from Utting, 2000: 18.

²² According to Kobrin (2000: 152), a network is 'a cooperative and reciprocal organization of

rather than markets and hierarchies are the defining mode of current internationalization (Hirst and Zeitlin, 1991; Gerreffi et al, 1994; Kobrin, 1997; Lipsey, 1998; Dunning, 1997). It is argued that information technology, computerization, policy liberalization and falling transportation costs make it increasingly possible to organize cross border transactions through collaborative relationships. Given the costs and risks associated with developing and introducing new products it is increasingly necessary for firms to establish strategic alliances and other forms of collaborative relationships (Kobrin, 1997: 151). Others argue that the proliferation of network based activities is partly a result of the intensified competition in factor and final goods markets which leads companies to shed non-core activities into networks and alliances (Dunning, 1997).

In sum, it is argued, network linkages are increasingly replacing market based or hierarchical linkages. In the words of Kobrin, the information revolution removes the boundaries between manufacturing and service industries and *"facilitates the integration of geographically dispersed operations and allow networked coordination to replace ownership and hierarchy as the primary mode of control"* (Cited from Hood and Young, 2000: 396).

From a transaction cost perspective, network based organization embodies several advantages vis-a-vis the hierarchical and market alternatives. It maintains the advantages of markets (low entry and exit costs, low control costs) while assuming some of the advantages of hierarchies (coordination and information sharing). Those advantages are particularly beneficial in situations where innovation and development are crucial.

However, while it is true that the altered competitive environment may offer new opportunities for non-market, non-

hierarchical organizational modes, it is also true that networks entail costs that may transcend those of either markets or hierarchies. These are the well-known costs associated with collective action, including asymmetric information (which gives rise to uncertainty regarding the real value of goods being offered); moral hazard (that participants in a network are less careful due to mutual insurance and shared responsibilities); or outright deception and irresponsibility (e.g. that some participants enter the network with no intention or ability to fulfilling its obligations).

2. Environmental implications of networks

There are various reasons why especially environmental activities are particularly likely to become subject to network cooperation. First, as TNCs increasingly are shedding non-core activities due to intensified competition, environmental activities are likely to be subject to network cooperation as these activities rarely are core activities. Second, the environment is a relatively new issue on the corporate agenda and firms are still in the process of finding appropriate ways to address such issues, especially when we focus on international environmental problems. In this situation of development, innovation and search for appropriate responses, network collaboration is effective.

Given these advantages of network collaboration in the environmental field, it is not surprising firms increasingly are collaborating to solve environmental problems in a non-competitive manner. Through technical collaboration²³, the formation of professional networks and environmental industry associations²⁴, an industry may achieve significant environmental progress at relatively modest costs. By issuing common

economic transactions' in which the most important flows are knowledge and information.

²³ For examples, see e.g. Andersen (1999) or Flotow (2000).

²⁴ E.g. WBCSD, ICC, INEM, CMA.

environmental standards and criteria²⁵ or setting benchmarks for environmental performance²⁶, the transaction costs of identifying appropriate standards and behavior in uncharted waters are significantly reduced. More sinister observers would argue that such collaboration is mainly undertaken to deflect costly government intervention (Gleckman, 1992; Finger et al, 1997).

It has been argued that network based and flexible production is conducive of environmental and social responsibility (Utting, 2000: 24). First, flexibility and innovation is central to competitiveness in a network-based economy and such objectives are consistent with high environmental performance (Porter et al, 1995). Second, new technology is frequently also clean technology and close network based integration may lead to massive technology transfer and diffusion. Third, network based production builds to a large extent on cooperation and trust. The search for 'trust' has, it could be argued, prompted the widespread environmental certification and reporting activities currently taking place in TNCs.

e. Summary

In this section we analyzed hierarchies, markets and networks as alternative ways of organizing environmental activities across borders. The choice between these three alternative modes can be analyzed through the lenses of transaction cost economics. Thus, the transaction costs of hierarchies, markets and networks respectively can explain many aspects of TNC environmental strategies. Roughly, transaction cost economics predicts three generic environmental strategies: First, there is

the externalization strategy where environmentally costly activities are outsourced or abandoned entirely. This strategy can be expected from firms producing highly price elastic, standardized goods that are sold in spot markets or in anonymous consumer markets. Such firms will be prone to dynamics of industrial flight to pollution havens and there are good reasons to be concerned about the environmental implications of their activity. Second, there is the internalization strategy where advanced industries with activities embedding a high level of tacit environmental knowledge and with a long-term investment horizon seek to protect and exploit environmental assets and to avoid environment related risks. In such cases there are good reasons to expect significant positive environmental spill over effects from TNC activity. Third, there are cases where neither the externalization nor the internalization strategy will create a satisfactory balance between environmental protection and competitiveness. In such cases, a network strategy may provide a solution to the apparent stark choice between markets and hierarchies.

VII. Conclusion

Traditionally, trade economics, dependency theory and market power theory alike have emphasized locational factors when explaining the environmental strategies of TNCs. Consequently, the literature has been phrased largely in terms of 'industrial flight' to 'pollution havens' and 'environmental double standards'. However, there are strong forces countervailing the disintegrative forces of industrial flight and double standards, forces that are rarely captured by the above-mentioned theoretical paradigms. This essay argued that the balance between integrative and disintegrative forces affecting TNC environmental strategies may be captured by the transaction cost perspective. Sometimes transaction costs will push in the direction of hierarchical integration, e.g. because scale advantages from common

²⁵ Examples are the chemical industry's Responsible Care Programme, the Pharmaseducial industry's Good Manufacturing Practice, the ISO 14000 series environmental management standards, or the ICC Business Charter for Sustainable Development

²⁶ As it is done in ICC (1992) and BCSD (1992).

governance reduce costs, because market solutions are infeasible or risky, or because the intangible nature of environmental assets makes it impossible to exploit them through arms length transactions. In other instances, transaction cost considerations press TNCs toward externalization of environmentally sensitive activities.

It is probable that the significance of environmental transaction costs may gain in importance as concerns regarding environmental and ethical

aspects of international production are mounting. This may significantly influence TNC strategies, not only in regard to how they organize their environmental management systems, but also in regard to the very decision as to engage in international production or not. In deed, one of the most interesting strategic issues for international business in the coming decade may be how to identify the optimal configuration for managing the environment across borders.

References

- Altenburg, Tilman, 'Linkages and Spill overs between TNCs and SMEs in developing countries', in Unctad, TNC-SME linkages for development, UNCTAD: Geneva, 2000.
- Amin, Samir Imperialism and unequal development, N.Y.: Monthly Review Press, 1975
- Andersen, Mette, Environmental supply chain management in Eastern Europe, CPH: CBS Dissertation, 1999
- Anderson and Gatignon, 'Modes of foreign entry: A transaction cost analysis and propositions', in Journal of International Business Studies, Fall, 1986, pp 1-26.
- Bangshøj et al, Export of Danish environmental Knowhow to Santiago de Chile, CPH: Cand Merc Int .Thesis, 2001
- Barnet, R.J., Mueller, R.E., Global Reach: The Power of the Multinational Corporations, New York: Simon and Schuster, 1974.
- BCSD (The Business Council for Sustainable Development). Changing Course. A Global Business Perspective on Development and the Environment. MIT Press. Mass, 1992.
- Birdsall and Wheeler, "Trade Policy and Industrial Pollution in Latin America: Where are the Pollution Havens?", in Low, P., International Trade and the Environment, Washington: World Bank Discussion Papers, 1992 (159-168).
- Birkinshaw, J, Multinational corporate strategy and organization: An internal market perspective, in The globalization of multinational enterprise activity and economic development, London: Macmillan, 2000. pp. 55-79
- Blomstrøm and Kokko, Multinational corporations and spillovers, London: CEPR Discussion Paper No 1365, 1996, pp 1-49.
- Blomstrøm et al, 'Multinational corporations and spill overs', in Blomstrøm et al, Foreign direct investment: Firm and host country strategies, London, 2000, pp 101 – 133 =31.
- Buckley and Casson, The future of the multinational enterprise. London: Macmillan, 1976
- Buckley, P.J, and Casson, M.C., 'Analyzing foreign entry market strategies – extending the internalization approach', Journal of International Business Studies, vol 29, no 3, 1998, pp 539-562.
- Cantwell, J., 'A survey of theories of international production', in Pitelis and Sudgen, The nature of the transnational firm, London: Routledge, 2000, pp. 10-56
- Cantwell, J, 'A survey of theories of international production', in Pitelis & Sudgen (eds), The nature of the Transnational Firm, Routledge, 1991, pp. 16-63.

- Carrere, R., The environmental and social effects of corporate environmentalism in the Brazilian market pulp industry, Geneva: UNRISD, 1999
- Casson, M., 'Internalization theory and beyond', in Buckley (ed), New Directions in International Business, England: Edgar Elgar Publishing, 1992.
- Caves, 'Multinationals in developing countries', in Caves, R., Multinational firms and economic analysis, Cambridge: Cambridge University Press, 1996, pp 214-242=28
- Caves, R.E., Multinational Enterprise and Economic Analysis, Cambridge: Cambridge University Press, 1982.
- Chudnovsky, Daniel and Andrés López (1999) TNCs and the diffusion of environmentally friendly technologies to developing countries, Occasional paper no. 9, Department of Intercultural Communication and Management, Copenhagen Business School.
- Clark, G: (1993), "Competition and Environmental Performance of Australian Mineral Companies. Is the "Rae to the Bottom"" inevitable?" in International Environmental Affairs, no. 3, pp. 147-172, 1993.
- Coase, R.H., "The nature of the firm", in Economica, no 4, 1937.
- Daly, H., "Debate: Does Free Trade Harm the Environment", Scientific American, November, pp 17-29, 1993.
- Dasgupta, S., Hettige, H., and Wheeler, D., What improves environmental performance? Evidence from the Mexican industry, Policy Research Working Paper 1877, Washington DC: World Bank, 1998.
- Dean, J.M., "Trade and the Environment: A Survey of the Literature", Low, P., International Trade and the Environment, Washington: World Bank Discussion Papers, 1992.
- Dicken, P. Global Shift: Transforming the World Economy, London: PCP, 1998
- Dunning, J., 'The eclectic paradigm of international production: A restatement and some possible extensions', Journal of International Business Studies, 19(1), 1988, pp 1-31.
- Dunning, J. (1994), 'Re-evaluating the benefits of foreign direct investment', Transnational Corporations, Vol. 3, N° 1.
- Dunning, J., Alliance capitalism and global business, London: Routledge, 1997
- Dunning, J., 'Globalization and the theory of MNE activity', in Hood/Young, The globalization of multinational enterprise activity and economic development, London: Macmillan, 2000. pp. 21-43
- Eriksen, J. and Hansen, M.W., Environmental aspects of Danish FDI to developing countries, UNCTAD/CBS: Occasional paper no.1, CBS, 1999 (pp. 1-38).
- Finger, M. and James Kilcoyne: Why Transnational Corporations are Organizing to 'Save the Global Environment', The Ecologist, Vol. 27, No. 4, July/August, 1997
- Flotow, P., Company level case studies examining the environmental behaviour of German TNCs in China, India and Malaysia, Mimeo, Paper presented to UNCTAD conference, June, 2000.
- Gentry, B., FDI and the environment: Boon or bane?, Paper presented to OECD conference on foreign direct investment and the environment, 28-29 January, 1999, Paris: OECD, 1999 (2-23=23).
- Gerrefi, G, 'Capitalism, development and global commodity chains', in L.Sklair, Capitalism and development, London: Routledge, 1994.
- Gereffi et al, 'Introduction: Global commodity chains', in Gereffi et al, Commodity chains and global capitalism, London: Greenwood Press, 1994.
- Gladwin, T. "Environment and Development and Multinational Enterprises", in C. Pearson, ed., Multinational Corporations, Environment and the Third World, Duke University Press, 1987.
- Gladwin, T., "A case study of the Bhopal Tragedy", in C. Pearson, ed., Multinational Corporations, Environment and the Third World, Duke University Press, 1987b.

A transaction cost perspective

- Gleckman, H., Transnational Corporations and Sustainable Development: Reflections from inside the debate, Internal memo from DESD, 1992.
- Graham E. 'Global corporations and national governments' Washington DC, 1996
- Groenewegen, John, Transaction cost economics and beyond Recent economic thought series Kluwer Academic, Boston, 1996
- Hadlock, C.R., Multinational Corporations and the Transfer of Environmental Technology to Developing Countries, in International Environmental Affairs, Vol 6, no 2, 1994.
- Hansen, M.W., Cross border environmental management in Danish Transnational Corporations Working Paper, Copenhagen: CBS, 1997.
- Hansen, M. Transnational Corporations in Sustainable Development. An appraisal of the environmental implications of foreign direct investment in less developed countries., Copenhagen Business School, Ph.D.-series 3.98, 1998.
- Hansen, M.W., Managing the environment across borders, Cph: Samfundslitteratur, forthcoming, 2002.
- Hennart, J.F., 'The transaction cost theory of the multinational enterprise', in Pitelis & Sudgen (eds), The nature of the Transnational Firm, Routledge, 1991, pp. 81-115.
- Hesselberg, Jan, "Exports of Pollution Intensive industries to the South", in Norsk Geografisk Tidsskrift, vol 46, 1992, pp 171-174.
- Hirst and Zeitlin, 'Flexible specialization versus post fordism: Theory, evidence and policy implications', in Economy and Society, vol, 20, no 1, 1991, pp 1-56.
- Hood, Neil and Stephen Young, Economics of multinational enterprise, London, 1979 .
- Hood and Young, 'Globalization, multinational enterprises and economic development, in Hood and Young (ed), The globalization of multinational enterprise activity and economic development, London: Macmillan, 2000. pp. 3 - , 20
- Hymer, S., The international operations of national firms: A study of direct foreign investment Cambridge: MIT Press, 1976. (extract)
- Hymer, S., "On multinational corporations and foreign direct investment", in United Nations Library on Transnational Corporations, Vol.1, London: Routledge, 1993.
- ICC (International Chamber of Commerce), From Ideas to Action. Business and Sustainable Development. The Greening of Enterprise, Oslo: Ad Notam, 1992
- Jaffe et al, "Environmental Regulation and the Competitiveness of U.S. Manufacturing: What does the Evidence Tell Us?", Journal of Economic Literature, Vol XXXIII, 1995 (pp. 132-163=31).
- Jenkins, R Transnational corporations and uneven development: The internationalization of capital and the Third World, London: Methuen, 1987.
- Jenkins R. (1999) "Trade, Investment and Industrial Pollution: A Malaysia Case Study with some Mexican Comparisons", IKMAS Working Paper (forthcoming).
- Johanson, J. & J.-E. Vahlne, 'The internationalization process of the firm', in Four Decades of Uppsala Business research, Sweden:, 1998, pp 52-64
- Kay, N., 'Multinational enterprise: A review article', Scottish Journal of Political Economy, 30, 3, 1983.
- Kay, Neil, 'The resource-based approach to multinational enterprise', in Pitelis and Sudgen, The nature of the transnational firm, London: Routledge, 2000.
- Kindelberger, C.P., American Business Abroad, New Haven, Conn: Yale University Press, 1969.
- Klavens, Jonathan , Anthony Zamparutti, Foreign direct investment and environment in Central and Eastern Europe. -a survey, Washington, D.C., , 1995.

- Knudsen, C. Transaction cost economics as a scientific research program - a methodological appraisal. Paper presented at the SCANCOR workshop on "The Roots and Branches of Organizational Economics", Stanford University, September 26-27, 1998
- Knutsen, H., "Changes in the international location of polluting industries", in Bergstø, B., Endresen, S., Knutsen, H., Hesselberg, J., Industrial pollution and the South, Oslo: F.I.L Working papers, No.6, 1995.
- Kobrin, S.J., 'The architecture of globalization: State sovereignty in a networked global economy', in Dunning, J., Governments, Globalization and International Business, Oxford: Oxford University Press, 1997, pp 147-163
- Kobrin, S.J., 'Development after industrialization: Poor countries in an electronically integrated global economy', in Hood/Young, The globalization of multinational enterprise activity and economic development, London: Macmillan, 2000. pp. 133-149=16.
- Kogut, B. and U. Zander, 'What do firms do? Coordination, Identity, and Learning, Organization Science 7, 1992, p. 502-518.
- Kojima, Kiyoshi, 'Macroeconomic versus international business approach to foreign investment, Hitotsubashi Journal of Economics 23, 1982, pp 1-19.
- Krut, Riva and Ashley Moretz, Home country measures for encouraging sustainable FDI, Occasional paper cross border environmental management project, nr.8, København, 1999
- Larsen, M., Large investments in small states: Analyzing governance capabilities in the hydropower sector in Lao PDR, CBS: Cand.Merc.Int. Dissertation, 2001.
- Lecraw, D., 'Third World Enterprises once again: The case of Indonesia, in Buckley and Casson, Multinational enterprises and the world economy, Edward Edgar: England, 1992, pp 115-133.
- Lecraw, D., and Morrison, A., 'Transnational corporations and business strategy – the foundations of an emerging field', in UNCTAD, Transnational corporations and world development, Geneva: UNCTAD, 1996 (75-90)
- Leonard, H.J., Pollution and the Struggle for World Product: Multinational Corporations, Environment and International Comparative Advantage, Cambridge: Cambridge University Press, 1988.
- Letchumanan, R., and Kodama, F., "Reconciling the conflict between the pollution haven hypothesis and an emerging trajectory of international technology transfer", in Research Policy, 29 (2000) (59-79=20).
- Lipsey, R.G., 'Globalization and National Government Policies: An economists view' in Dunning, J., Governments, Globalization and International Business, Oxford: Oxford University Press, 1997, 73-109
- Madhok, Anoop, 'The nature of multinational firm boundaries - transaction costs, firm capabilities and foreign market entry', International business review . Vol. 7, Nr. 3, 1998, pp 259-290
- Menard, C., 'Inside the black box: The variety of hierarchical forms', in Groenewegen, John, Transaction cost economics and beyond Recent economic thought series Kluwer Academic, Boston, 1996, pp 149-170.
- Meyer, Klaus E. and S. Estrin, Entry Mode choice in Emerging Markets, CEES Working paper, no. 18, Copenhagen Business School, 1999 pp 1-27=27.
- Murphy, Dale M. and Kenneth A. Oye, Comparative regulatory advantage: Firm state relations in the global economy, Paper presented at ISA Conference in Minneapolis, March, 1998.
- O'Connor, J., "Uneven and combined development and ecological crises: A theoretical introduction", in Race and Class, 30,3, 1989.
- OECD, The environment Industry and trade, Mimeo, Paris: OECD, 2000
- OECD, Open markets matter: The benefits of trade and investment liberalization, OECD: Policy Briefs, no 6, 1998, pp 1-8=8.
- Pearson, Charles S. Down to Business: Multinational Corporations, the Environment and Development. Washington D.C.: World Resources Institute, 1985.

A transaction cost perspective

- Pearson, C. ed., Multinational Corporations, Environment and the Third World , Duke:Duke University Press, 1987.
- Porter, M.E. and Claas van der Linde, "Green and Competitive", in Harvard Business Review, September-October, 1995.
- Royston, M. G., "Control by Multinational Corporations: The Environmental Case for Scenario 4", Ambio 8, No. 2/3, 1979.
- Ruud , A. Environmental management at Indian subsidiaries of OECD based TNCs: Islands of environmental excellence CBS: Occasional paper Series Cross border environmental management project no 12, 1999.
- Rugman and Verbeke, 'Global Strategies for multinational enterprises', in Islam and Shepherd, Current Issues in International Business,UK:Edward Elgar, 1997. Pp132-150.
- Rugman, A.M., Inside the multinationals: The economics of internal markets, London: Croom Helm, 1981
- Simon, H., 'Rationality as process and as product of thoughts', in American Economic Review, 68, May, 1-16, 1978.
- Summers, Lawrence, Internal memo to the World Bank, The Economist, 8th February, 1992.
- Teece, D.J., "The multinational enterprise: Market failure and market power considerations", Sloan Management Review, 22,1981.
- Teknologirådet,Eksport af Farligt Affald, CPH: Teknologirådet, 1999.
- UNCTC, "Transnational corporations and the environment", UNCTC, World Investment Report, 1992: TNCs as Engines of Growth, New York: the United Nations, 1992.
- UNCTAD (United Nations Conference on Trade and Development), Environmental Management in Transnational Corporations, N.Y: United Nations, 1993.
- Utting, Peter, Business Responsibility for Sustainable Development, Geneva: UNRISD, 2000.
- Vernon, Raymond, 'International investment and international trade in the product cycle, Quarterly Journal of Economics, 80 , 1966, pp.190-207.
- Wallace, David, Sustainable industrialization, London: Earthscan, 1996.
- Walter, I., International Economics of Pollution, London: Macmillan, 1975.
- Wilkins, Mira, 'Multinational corporations: An historical account', in Kozul-Wright and Howtorn, Transnational corporations and the global economy London: Macmillan Press, 1998,
- Williamson, O.E., Markets and hierarchies, New York: Free Press, 1975.
- Williamson, O., 'Efficiency, Power, Authority and economic organization' in Groenewegen, John, Transaction cost economics and beyond Recent economic thought series Kluwer Academic, Boston, 1996, pp 11-41.
- Zarsky, L., Havens, halos and spaghetti: Untangling the evidence about FDI and the environment, Paper presented to OECD conference on foreign direct investment and the environment, 28-29 January, 1999, Paris: OECD, 1999 (pp. 2-21).
-