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CAN THE "NEW FORMS OF INVESTMENT" SUBSTITUTE FOR THE "OLD FORMS?" A TRANSACTION COSTS PERSPECTIVE

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Abstract. This paper uses transaction costs theory to explain the features of the new contractual alternatives to foreign direct investment (the "new forms"), to assess their efficiency, and to forecast their future development.

One crucial characteristic of foreign direct investment (FDI) is that it involves the ownership, and thus the control, of domestic production facilities by foreigners. This means that the investor can exert a direct influence on domestic economic matters, and thus limit to some extent the power of national authorities to chart independent policies. The problem has been exacerbated by the attempts of some countries, principally the United States, to use the foreign affiliates of U.S. multinational enterprises (MNEs) as pawns in its foreign policy game [Kobrin 1987]. As a result, many countries see MNEs as potential threats, and have attempted to limit their presence in the local economy. At the same time, national authorities realize that MNEs control a number of scarce factors necessary for economic growth: access to external markets, proprietary technology, sources of finance, and management skills. Thus FDI poses a dilemma to host countries, which must choose between lessened political and economic independence and some of the economic benefits brought by MNEs.

Countries have resolved this dilemma in different ways: some, such as Burma or Albania, have chosen autarky. Most countries have opened their borders to incoming FDI, but have put various restrictions on foreign ownership. A small group of countries has chosen a third way: they have attempted

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to obtain some of the benefits bestowed by MNEs without the political costs of letting them in. Under traditional FDI, MNEs transfer a complex package of assets (capital, patented and unpatented know-how, managerial skills, and access to markets) through the ownership of local facilities in the host country. One way to tap these assets without losing political independence is to contract for them through the market, while leaving the ownership of production facilities in the hands of domestic nationals. Host countries have thus attempted to "unbundle" the FDI package by purchasing all of its components through contracts: technology through licensing, plants through contracts with engineering firms, financial capital through bank loans, and marketing services through distribution contracts with trading houses.

The trend towards the use of these contractual forms was chronicled in the literature on "unbundling" [Vaitsos 1974; Streeten 1974], and more recently, in the literature on the "new forms of investment" [Oman 1984a; 1984b; Dunning and Cantwell 1984]. "New forms" usually include arrangements that fall short of majority ownership, such as various forms of contracts (licensing, franchising, management contracts, turnkey and product-in-hand contracts, production-sharing contracts, and international subcontracting) as well as joint ventures. In this paper, we will use the term "new forms" to denote these various contractual arrangements (thus excluding joint ventures) and we will focus on the choice between these contractual forms and equity investments (traditional FDI). The choice between wholly-owned subsidiaries and joint ventures raises a set of additional issues that I have addressed elsewhere [Hennart 1988].

The discussion on the "new forms" of FDI has usually been cast in terms of the bargaining model of FDI. "New forms" have been seen as ways by which LDCs can extract a larger share of the rents generated by FDI. In its discussion of the "new forms," the UNCTC notes that

> The crucial question is how far the new arrangements have served the interest of one side or the other-whether, for example, they have enabled host countries to obtain a larger share of the financial gains to be made. . .or whether they have enabled the corporations. . .to obtain much of the same returns as they had previously derived from wholly-owned subsidiaries [UNCTC 1983a, p. 12].

While much of the discussion has been centered on the distribution of rents from FDI, little attention has been paid as to whether the switch to the "new forms" has had an impact on the *size* of the rents to be divided. In other words, the possibility that a switch to the "new forms" may reduce the efficiency under which the parties in the home and host country organize their interdependence has not been carefully considered.

This paper argues that the contractual solutions of the "new forms" cannot fully substitute for traditional FDI. The argument is based on transaction costs theory, as developed by Williamson [1985] in the domestic context, and by Buckley and Casson [1976, 1985], Casson [1979, 1982, 1987], Caves

[1982], Rugman [1981, 1986], Teece [1981b, 1985] and Hennart [1977, 1982, 1986] in the case of the MNE. One implication of transaction cost theory is that there are differences in the incentive structure between contracts and hierarchy [Hennart 1982, 1986]. Consequently, the new contractual forms will, in some circumstances, be unable to efficiently constrain the behavior of the parties, and will incur high transaction costs.

The paper argues that this has been the case: "new forms" have been inefficient in organizing some types of transactions. The response of countries that have banned incoming FDI and relied on "new forms" has been in two phases (Table 1). First, they have attempted to develop a range of contracts with better enforcement properties. We will show that some of the exotic contractual forms used by countries that severely restrict incoming FDI, and which are described in the literature on East-West trade [McMillan 1981; Kogut 1986], countertrade [Verzariu 1980, 1985; OECD 1981; Mirus and Young 1986; Lecraw 1989; Alexandrides and Bowers 1987], and national resource policies [Walsh 1982; Kolanda 1985] constitute attempts to increase the enforceability of contracts. Although superior to simple contracts in their enforcement properties, these are still contracts, and, according to transaction cost theory, incomplete substitutes for traditional FDI. As a result, in a second phase, countries that have heretofore excluded traditional investment have relaxed their opposition to FDI and allowed equity investment in cases where equity links yield advantages that cannot be obtained as efficiently by contracts.

The next section briefly surveys the transaction costs theory of the MNE, and shows why, and in which circumstances, contracts are likely to be less efficient than internalization through FDI. The third and fourth sections apply this rather general model to the exchange of knowledge and to the provision of marketing services. Our conclusion summarizes the argument and shows that some of the predictions of the model are consistent with some recent developments.

THE TRANSACTION COSTS THEORY OF THE MULTINATIONAL ENTERPRISE

Any assessment of the desirability of replacing traditional FDI by joint ventures or contractual forms must be based on a theory of the causes and the consequences of the MNE. Hymer [1971, 1972, 1976] provided much of the theoretical support for restricting incoming FDI. He viewed the MNE as an international monopolist, and FDI as the form chosen by MNEs for the international exploitation of their monopolistic assets. Host countries should therefore attempt to break the monopoly power of the MNE by replacing the traditional FDI package by contractual forms.

Transaction costs theories, on the other hand, have seen the MNE as an efficient institution reducing the costs of organizing economic interdependence between countries. The crucial insight of the transaction costs theory of the MNE is the realization that FDI consists in the extension of hierarchical

TABLE 1
Summary of the Argument

Step	Move	Consequences
one 1970-77	Many LDCs impose restrictions on incoming FDI and mandate the use of "new forms."	"New forms" prove costly to acquire advanced technology and marketing support for some durable consumer goods.
two mid-70's	LDCs start using more sophisticated contractual forms, including counter-trade.	These forms increase contractual efficiency, but fail to fully substitute for FDI.
three 1980-	Relaxation of restrictions against FDI, on a selective basis.	

modes of organization across national boundaries, and that this form is chosen because it reduces the cost of international coordination between parties located in different countries. Those two views are not mutually exclusive. MNEs have both efficiency and market power properties.[1] This paper stresses the efficiency side of the debate on "new forms," and complements the existing literature on "new forms" which has, by and large, emphasized its market power aspects.

According to transaction costs theory, firms can organize their interdependance through hierarchy, markets, or contracts. Because each mode differs in the method it uses to organize activities, each will be most efficient in organizing a particular type of transaction. Thus, the mandated replacement of one mode by another will increase the level of transactions costs, and, at the limit, will eliminate the potential gains from effecting the exchange.

Markets rely on prices to inform agents of the impact of their decision on others and to reward (or punish) them for their behavior. Markets work well whenever there is a large number of buyers and sellers. The costs of using the market are likely to be high, however, when the number of potential or actual parties to the exchange is limited: then prices will fail to constrain efficiently individual behavior. Prices will not reflect true costs and benefits, and trades will not be self-enforcing. In "small-number" conditions, the cost of switching partners will be high, and one party can be "held up" by another [Klein, Crawford and Alchian, 1978].

Contracts provide some protection against this risk. They have two main properties: first, their enforcement is undertaken by third parties. A contract is therefore as good as the enforcement system behind it. Second, contracts specify ex ante the terms and condition of the trade, and the compensation to be paid in case of breach. Contracts can thus provide protection only if both parties can fully anticipate contingencies and stipulate adequate clauses to meet them. Contracts will provide poor protection in two cases, (1) when one party possesses better information than the other, and (2) when the environment is changing in unpredictable ways, yielding a large number

of possible outcomes. In the case of information asymmetry, the party with less information will not be able to protect himself, and, expecting to be cheated, will lower the price he will offer below that acceptable to the honest seller. As a result, only low quality goods will be traded [Ackerlof 1970]. Even if both parties have information parity, contracts will fail in conditions of uncertainty [Williamson 1985]. A high level of transaction uncertainty requires frequent adaptation of contractual terms. The establishment of ex ante adjustment rules requires that (1) traders must be able to foresee possible changes in the environment, and the impact of these changes on their profit streams, and that (2) they must also be able to find an index to track these changes, and this index must be verifiable by both parties (for example a market price of inputs, or a government price index) [Holmstrom 1979]. The greater the degree of uncertainty, the harder it will be to specify ex ante all possible contingencies and the contractual adaptations to be made in each case.

In both those cases, hierarchical organization (i.e., FDI) will be more efficient because it changes the incentives of the agents. The parties to the exchange are now employees, and, as employees, they are not (or should not be) rewarded by what they can extract from their fellow employees, but by whether or not they obey managerial directives. Cooperation can thus be achieved where market and contracts would result in adversarial situations [Hennart 1986]. There is no need to craft contracts to protect the parties. Sequential adaptation by fiat is now possible without the need for persuasion, bargaining, or compensation [Williamson 1985].

Transaction costs theory does not imply that traditional FDI is always superior to contracts. While there are conditions under which FDI is more efficient than the "new forms," in other cases contractual arrangements incur lower costs than FDI. The reason is that hierarchical coordination has its own costs. A shift to hierarchy means that one of the parties to the exchange becomes an employee of the other. As an employee, he is no longer rewarded by market prices, but by the extent to which he obeys managerial directives. Weakening the link between his output and his salary reduces his incentive to cheat in the exchange, but, because monitoring is costly, it also reduces his incentive to maximize his work effort. In other words, the switch to hierarchy encourages agents to shirk. Internalization replaces therefore one type of costs (market transaction costs) by another (internal organization costs). Hierarchy will be the most efficient method to organize the exchange when internal organization costs are lower than market transaction costs [Hennart 1982, 1986].

It is important at this point to address the limitations of the transaction cost paradigm. First, some critics of the transaction cost model fail to realize that the model deals with differences across institutions in the cost of organizing a given type of interdependence. It is, for example, inappropriate to use transaction costs to compare *exports* with *FDI*, since these two modes involve production in different locations: the proper comparison is between setting up a subsidiary in country A and licensing a local firm in country A.

It is also sometimes asserted that transaction costs are only one of the determinants of the choice of institutions, and that production costs must also be taken into consideration. One way to address this question is to ask what factors might make production costs differ between two firms located in a given country, one a licensee and the other a subsidiary of an MNE.

The first reason why costs might differ between a licensee and the foreign subsidiary of a former licensor arises from the presence of cultural differences between the home and the host country. For this factor to influence the choice of modes one must show that cultural differences have a differential impact on both types of institutions, i.e., that they increase costs (or decrease revenues) by a larger amount in the case of hierarchical coordination than in the case of market transactions. No one, as far as I know, has convincingly proved this to be true.

The second reason why costs might differ is due to government intervention. Governments often favor firms owned by nationals, and discriminate against those owned by foreigners. These policies *artificially* raise the costs of FDI compared to that of the "new forms," and are analogous in effect to outright restrictions on FDI. The theme of this article is that such policies reduce the efficiency under which home and host countries coordinate their interdependence.

The third reason is directly related to the concept of market transaction costs and internal organization costs defined above. Let us take the example of the international transfer of knowledge. A licensee may have higher costs (or lower revenues) than a foreign subsidiary because the difficulty of enforcing the licensing contract forces both licensor and licensee to agree to terms that reduce their income. Specifically, they may find it necessary to agree to contractual stipulations that limit the licensee's right to export, and hence the licensee's income (and consequently the licensor's fees). On the other hand, transforming the licensor into an employee reduces the former licensor's work effort, and thus decreases the investors's revenues. Licensing will be chosen if the total cost of this mode (including the reduced revenues due to mutual restrictions on the freedom of licensor and licensee to maximize their income) is lower than the shirking costs that result from FDI.

All the other reasons why costs differ between firms would seem to have no bearing on the choice of organization form. For example, differences in costs that derive from possession of unreproducible assets do not affect the choice between integrating into that activity (FDI) or contracting with it, since they do not vary with changes in the governance structure.

Two conclusions can be drawn from this discussion. First, when the problem is properly framed, differences in production costs between the same activity under alternative governance structures are endogenous to a fully specified model of institutional choice. Such a model must, like the one presented above, incorporate both market transaction costs and internal organization costs. Second, the choice of institution affects both costs and revenues. For

example, attempts by licensors to constrain the behavior of licensees reduce both the licensor's and the licensee's income as compared to a situation of costless enforcement. Similarly, as discussed below, the difficulty of persuading independent distributors to make transaction-specific investments lowers the income of both manufacturer and distributor compared to a situation where they are joined within a hierarchy.

We can now return to the relative costs and benefits of the three modes of organization, contracts, hierarchies (FDI), and joint ventures. These are presented in Table 2. Each mode will be efficient under a particular set of circumstances.

Our model of institutional choice throws an interesting light on the issues raised by the recent development of the "new forms of investment." Transaction costs theory suggests that, if parties are free to choose the institutional form they prefer, they will tend to choose the MNE whenever the costs of using the market or contractual alternatives are prohibitive. Note that this is the optimal choice of both parties, both of the MNE and of local entrepreneurs or factory owners. Conversely, the theory implies that, whenever FDI would otherwise have been chosen, there will be significant economic costs involved by substituting a "new form" to traditional FDI. These costs will tend to reduce the gains of trade, and, at the limit, will extinguish opportunities for exchange. Imposition by host governments of contractual forms to organize a relationship which would otherwise have been governed by traditional FDI does not necessarily increase the gains from such a transfer from the firm to the host country. Instead, such intervention, when binding, reduces the gains to be divided between the parties. In some sense, host country regulations are similar to tariffs, which redistribute income from consumers to domestic producers and to the government, but end up dissipating much of the welfare thus transferred into dead weight loss. The "new forms" are likely to be especially inefficient in two main cases: (1) in transferring uncodified and poorly protected know-how; (2) in arranging for the purchase or sale of goods whose market is narrow or whose distribution requires substantial, up front investments.[2]

The next two sections look at these two cases. In each section, we will first outline the defects of simple contracts. The development of more sophisticated contracts will then be discussed, and their efficiency compared to FDI.

TABLE 2
Costs and Benefits of International Governance Structures

	Potential Benefits	Potential Costs
Contracts	Save on internal organization costs	Fail to constrain opportunism
FDI	Save on opportunism by aligning incentives of parties	Incur internal organization costs
Joint Ventures	Partially save on opportunism by aligning incentives of parties	Incite partners to free ride on the venture

TECHNOLOGY

Technology can be embedded in physical goods (such as machinery), in blueprints and formulae, or in people. The way knowledge is embedded and the efficacy of the legal system of protection influence whether it will be transferred within the firm or by contract with independent parties.

One major problem in the sale of technology is that of "buyer's uncertainty" [Arrow 1962; Buckley and Casson 1976]. The buyer of knowledge, by definition, does not know what he is buying. The seller, on the other hand, is reluctant to provide extensive information because, if he did so, he would be transferring his knowledge free of charge. As a result, the buyer's offer price will be lower than the seller's. There are two solutions to this problem: (1) the embedding of technology into physical goods and, (2) the patent system.

Embedding knowledge in capital goods facilitates its transfer, since capital goods are tangible and can be shown and demonstrated prior to sale [Teece 1977]. The second solution, the patent system, allows a seller of knowledge to divulge the characteristics of the knowledge he has for sale by granting him a monopoly in its use. The efficiency of a patent system thus depends crucially on two main factors: (1) the degree to which the know-how can be put on paper, or, in other words, on its non-tacitness [Teece 1981a]; (2) the protection offered by the patent system.

Tacit knowledge is knowledge which cannot be described in a patent, and must thus be transferred by human contact. Because the patent is then unable to provide full information, we are back to the problem of buyer's uncertainty: the buyer does not know what he is buying, and his valuation of the know-how is likely to differ from that of the seller.

The second variable is the strength of the legal system of protection. The efficacy of this system varies markedly across innovations and countries. When legal protection is weak, transferring to independent parties fails to provide full returns on the technology: instead the unpaid-for portion helps build up the licensee as a competitor.

In both those cases, internal transfer within the MNE through FDI may be more efficient because the switch to intra-firm transfer changes the incentives facing the parties: within a firm, the knowledge seller has less incentives to overstate the value of the know-how, for he is no longer rewarded in direct function of its sale. Instead, both sender and receiver are rewarded for efficiently performing the transfer. Dissipation of the know-how is no longer an issue, since sender and receiver maximize jointly their income. One crucial difference between contracts and FDI lies therefore in the nature of incentives.

Thus the higher the tacit component in the technology package, and the weaker the legal protection afforded to innovators, the less efficient markets will be in effecting the transfer. Technology packages that contain mostly non-tacit and well-protected knowledge will be efficiently transferred through

market means (licensing and/or sale of capital goods). The efficient transfer of technology packages with more tacit and poorly protected elements will require increasingly sophisticated contractual forms. At the limit, contracts will fail if the tacit elements predominate, or if the technology is poorly protected.

Let us first analyze the contractual transfer of technology embodied in capital and equipment, before turning to licensing.

Sale of Plant vs. FDI

Technology embedded in equipment or in plants can be bought in various ways: piecemeal, or in complete form, as in the case of "turnkey" plants. Under "turnkey contracts" the contractor is responsible for setting up a complete production unit, and his obligations are normally fulfilled when the plant is fully operational [Oman 1984a, p. 16].

The purchase of technology embodied in capital and equipment is subject to two main limitations. The first one is that the equipment seller usually possesses better information about the technology and the market for the plant's output. Unless the market for the capital goods is competitive, or the buying country has a high level of technical sophistication, the country purchasing plant and equipment through such contracts runs the risk of obtaining poor value for the money.

The reason lies in the differences of incentives between a plant sale and an investment [Oman 1984a]. In most turnkey contracts, the seller is paid a fixed sum at the conclusion of the transfer. The seller is thus incited to maximize the amount of the contract ex ante, and, after he has won the contract, to minimize the cost of fulfilling it. The problem does not arise in the case of traditional FDI, for then the foreign direct investor is motivated to build the most efficient plant possible since he is paid from maximizing the difference between total revenues and total costs.

The normal defense against such opportunism consists in having the buying country stipulate detailed specification and performance guarantees, and in forcing sellers to self-reveal the cost of the plant through a competitive bidding process. In practice, this is not always possible. When the seller has better knowledge than the buyer about the technical choices to be made, supervision by the latter is likely to be costly and ineffective: the seller may be happy to follow government specifications, even though a cheaper solution is available. If the number of potential plant sellers is small, the bidding process will fail to disclose the reasonableness of the quoted price, and will allow contractors to pad their bid. The only truly effective way to minimize costs and maximize profits is to motivate the contractor to make the best use of his information and experience by giving him a financial stake in the project, that is, traditional FDI.

A second potential problem in the contractual sale of plant and equipment is that the value of the equipment sold often hinges on the seller providing follow-up services long after he has been paid for the plant. In a straight

sale of equipment, the plant seller, once paid, has few incentives to provide free after-sale service. Once the plant is built, the contractor is often the only one capable to set the plant right.[3] The buyer is thus in a position of inferiority. This again is in contrast to traditional FDI, where the foreign investor, because he recoups his investment through the sale of plant output, has strong incentives to make sure the plant operates satisfactorily.

In theory, a carefully crafted contract could guarantee that no payment be made unless the facility works as intended. This is difficult to assure in practice. Turnkey contracts specify that the contractor is paid upon satisfactory completion of trial runs. But these runs are usually made by the contractor's personnel and they last only 24 hours. Thus successful runs do not guarantee that the plant will operate as planned in normal circumstances, that is, when run by the buyer on a day-to-day basis [Salem and Sanson-Hermitte 1979].

Because of these limitations, the transfer of technology through turnkey contracts has incurred serious problems when successful plant operation has required an unusually high amount of associated tacit knowledge, and when the general technical and managerial capacity of the buying country has been poor. A recent example is that of the purchase by Bolivia and Indonesia of a tin smelter from the same German engineering firm. In both cases the host countries ended up paying too much for a poorly designed plant, as they were sold at high cost what was basically an unproved technology that performed very badly [Batubara and Mackey 1974; Ayub and Hashimoto 1985]. Bolivia also bought under turnkey a lead-silver smelter in 1978. Construction took five years and cost twice the contracted amount, and the plant has remained idle since due to lack of feed.

A candid assessment of the problems involved in buying technology through contracts is contained in a chapter written by Kemal Abdallah-Khodja, who was Algeria's Minister of Planning, and responsible for Algeria's policy of buying technology through the "new forms." According to Abdallah-Khodja, turnkey contracts have been expensive, as Algeria's technological inferiority and the small number of potential bidders has made it difficult to verify that the price quoted was reasonable. Often the buyer has been unable to operate the plant, and the contractor has had to be called back at great expense. Lastly, the contracts have not protected Algeria against the risk of poor project execution, because the Algerian partner has not had the know-how to make the necessary checks, and because the validity of the many technical choices made by the contractor has been revealed long after contract fulfillment [Abdallah-Khodja 1984, pp. 33-34].

Algeria has tried to solve these problems by making sellers responsible for running the plant with the buyer's personnel during the first two or three years of operation. The contractor is thus obligated to transfer tacit technical and management knowledge to the local labor force. These contracts, called "Product in Hand," stipulate that the contractor will be paid upon satisfactory completion of trials by the buyer's staff under the contractor's

supervision. To insure that the technology transfer is complete, some contracts have the contractor post a guarantee that is reimbursed two years later if the plant is running well under local management [United Nations 1983b].

This approach has not proved to be very useful in practice, as contractors have been reluctant to commit themselves to performance obligations. One possible reason is that "product in hand" contracts make them responsible for the outcome of a training process on which they can only exercise partial control, since success also depends on the performance of the trainees. In practice, product-in-hand contracts have proved to be very expensive (30% to 50% above turnkey contracts in the Algerian case); the number of bidders has been small, making it difficult to evaluate tenders; suppliers have been unwilling to offer completion guarantees of more than 5% to 10% of the amount of the contract, while the potential losses from breakdown, defect, or delay, have been much higher; lastly, when contractual disputes have arisen, the seller, who knows the technology and can offer solutions, has been usually in a better bargaining position [Abdallah-Khodja 1984, p. 34-35].

In short, there are clear limitations to the ability of contracts to purchase tacit technology when there is a high information asymmetry between the parties. This point of view is summarized in a recent United Nations report on turnkey contracts. After reviewing the main provisions of turnkey and product-in-hand contracts, the authors concluded that

> It is questionable whether a turnkey contract, even with carefully drafted performance guarantees... is capable of meeting the expectations of the owner/purchaser with respect to the multi-purpose [i.e., product-in-hand] contracts covered in the present report. Encumbering the contract with specific and rigorous performance guarantees may serve to create an expectation on the owner/purchaser's part that he is contracting for several objectives to be achieved besides the establishment of the physical facilities; it may, as a practical matter, however, eventually lead only to higher costs and a greater likelihood of disputes with the contractor [United Nations 1983b, p. 48]

Licensing vs. FDI

Licensing also suffers from limitations: there is a substantial amount of evidence that shows that it can only efficiently transfer certain types of knowledge, namely non-tacit and older know-how.

Howard Davies, studying the transfer of technology to India, found that firms transferred a much wider range of know-how, including tacit know-how, to their affiliates than to their licensees. Licensees were likely to receive blueprint and formulae, but not tacit know-how transferred through personal contact. For example, personnel from the technology-supplying firm was sent to supervise plant construction in 78% of the cases where the

Western firm had equity in the Indian venture, but only in 26% of the licensing agreements [Davies 1977]. Killing's [1980] study of licensing agreements and joint ventures between Canadian, American, and Western European firms also found that, compared to licensing, joint ventures received much more tacit know-how: a permanent employee was sent by the technology supplier to transfer tacit knowledge in 19 of the 30 joint ventures, but only in one of the 74 license agreements.

Similar findings were reported by Balasubramanyan [1973]. He found that licensors provided little assistance to their independent Indian licensees in adapting the technologies transferred to the local conditions, but provided such assistance to ventures in which they had a financial stake. He concluded:

> Technical collaboration [i.e., licensing] agreements deny foreign firms the kind of total participation that results from capital ownership and control over operations. These agreements may thus be suitable for transmitting knowledge that can be stored in drawings or blueprints or the kind that can be embodied in machinery and equipment, but not for complex technology requiring continuous and close participation of the transferor firm [p. 129].

Another implication of the theory is that licensing will be relatively more efficient in transferring older technology. Buyer uncertainty is likely to be lower than in the case of new, untested products. The number of potential licensors of the technology is likely to be higher, and, given less than perfect appropriability, the danger of building a competitor lower. These theoretical predictions are supported by Stobaugh [1971], who found that new petrochemical products were transferred through FDI, while older products were licensed, and by Davidson and McFetridge [1985], who found that the probability of licensing an innovation increased with the age of the product.

A third implication is that licensing is likely to be more efficient for process than for product innovations. Process licenses are easier to price: the technology has always at least one close substitute, the old technology, which provides a benchmark for establishing the value of the new process. Such direct comparison is not available for new products [Brada 1981].

Have countries that put limits on foreign equity cut themselves off from new technology? From new product technology? From tacit technology? Brada [1980] analyzed the transfer of technology of pharmaceuticals products to Eastern Europe. He found that, in spite of a large technology gap, few pharmaceuticals had been licensed. He attributed the absence of transfer to the reluctance of pharmaceutical companies to license product innovations. Coughlin [1983] compared the diffusion of 406 innovations and 548 imitations introduced by 57 U.S. firms. He found that countries that restricted FDI ended up with a disproportionately smaller percentage of product innovations than those that did not put barriers to incoming FDI. The mean age of product innovations transferred was also higher in the case of restrictive countries, supporting the view that restrictive countries were unable to license newer products. Some further evidence on that point

is given by the frequent complaints of East European observers that Western firms have only transferred relatively dated technology [Wilczynski 1977; Eaton 1986].

Faced with the relative inefficiency of standard equipment purchase and licensing contracts to efficiently transfer technology, countries that must rely on these non-equity modes of transfer have attempted to craft contracts with better enforcement properties. These more sophisticated contracts impose upon the technology seller reciprocal obligations that help make contracts self-enforcing [Kogut 1986; Mirus and Young 1986]. Co-production and buy-back contracts have this property. These two contracts stipulate that the licensor or equipment seller must purchase back part of the output of the plant that uses the license and/or the equipment. In the case of co-production, output is used by the plant seller in his production process. This is sometimes, but not always, true in the case of buy-back.

Forcing the equipment seller to take back some of the output has two main consequences: first, it provides a strong incentive for the licensor or plant seller to assist the buyer in running the plant, and in providing up-to-date technology. The seller now depends on the output of the plant, and may have made substantial investments to incorporate the products in his production process. He will now suffer if the technology buyer experiences technical problems, or if the product is of an obsolete design [Holt 1977; Mirus and Yeung 1986].

Such contracts have, however, a number of limitations. They impose additional risks on the technology seller which he may not be in the best position to shoulder. In some cases the seller of technology may not be in fact a producer of the commodity: finding a Western producer that agrees to market the takebacks is likely to be difficult. The technology seller must also commit himself to purchase the plant's output at prices and quantities to be determined as long as ten to twenty years in advance. The risks involved are substantial, and the equipment is likely to be marked up accordingly. Lastly, buy-backs and co-production contracts do not protect the buyer against false promises concerning the project's operating costs [Parsons 1985]; such protection can only be obtained by having the plant seller take an equity position in the plant. Thus while co-production and buy-back contracts provide sufficient incentives for some types of technology transfer, they will not be complete substitutes for traditional FDI.

MARKETING

Multinational firms enter foreign countries for two main reasons: to sell products developed initially in the home market (horizontal investments) or to produce or extract inputs which enter their downstream activities. In the second case, one important element of the package offered by foreign direct investors is marketing, that is, the experience, knowledge, and ability to access foreign markets. Here again, an important question is whether these services can be efficiently purchased through contract.

Transaction cost theory suggests two cases where this will be difficult: (1) when the outside market for the resource is narrow because there are a small number of potential buyers, and (2) when the potential market is large, but substantial investments must be made to develop it.

Outside Market for the Resource Is Narrow

Markets for some products are narrow when the number of potential buyers is limited. This situation can be due to high transportation costs, scale economies, or the need to make transaction-specific investments [Williamson 1985].

Consider, for example, the bauxite market. The number of buyers and sellers of a particular bauxite type is usually small. This is due to three main factors: (1) bauxites are heterogeneous, and efficient refining of the bauxite into alumina requires plants that are specifically tailored to the bauxite type; buyers must thus make transaction-specific investments; (2) bauxites are costly to transport, being of low grade, and consequently of high weight relative to value; (3) economies of scale are high at both the mining and refining stages.

Imagine now a country eager to develop its bauxite resources. It can either invite an MNE to come extract the bauxite, or it can borrow capital from the international market and develop the resource itself, relying on contracts to sell the output. Lenders know, however, that the profitability of the project depends on assured customers. Selling bauxite on the spot market is not a feasible solution: because of the need to adapt the refinery to the bauxite type, and the cost of switching bauxites, most refineries will buy bauxite from only one seller, and most bauxite mines will sell to only one refinery. Either party will fear that, once the investment is made, the other party would renegotiate the price in his favor. Lenders will thus insist that the bauxite seller show a long-term contract as a condition for making the loan. They will insist that the contract cover a period at least as long as it takes for the loan to be repaid. For an efficiently-sized bauxite mine in an LDC, where large infrastructure must be built, this may mean twenty to twenty-five years.

As the historical evidence shows, contracts of that length cannot provide full protection, because the environment is likely to change in unpredictable ways. Consider, for example, the long-term contracts signed in the late 1960s between Indonesian, Malaysian, and Australian bauxite producers and Japanese buyers. They ran for ten to twenty years, and stipulated a fixed price in dollars. The collapse of the Bretton Woods system of fixed exchange rates affected the local currency prices paid and received by the contractors. A few years later, the doubling of the price of energy reduced the profitability of aluminum smelting in Japan, and thus the Japanese drastically reduced their offtake. None of these events could have been reasonably anticipated when the contracts were signed. As a result, the sellers were forced to accept both lower prices and quantities [Stuckey 1983]. This is

not an isolated case: there are numerous other examples of both buyers and sellers reneging on their promises.[4] Because of these bad experiences, lenders are increasingly reluctant to accept long-term contracts as sufficient security for providing funds, but now require buyers to take some equity in the project, so as to guarantee sales of the output [Vernon 1983, p. 102].

A parallel argument can be made from the buyer's point of view. When the number of sellers is limited, buyers have a strong preference for captive sources. For example, after its Venezuelan iron ore mine was nationalized, Bethlehem Steel reduced its purchases from that country, and replaced the Venezuelan ore with output from its captive mines in the US and Canada. Alcan's response after the nationalization of its Guyana bauxite mine was a gradual decline in purchases. As a result, Guyana has experienced great difficulties in selling its metal-grade bauxite.

The relative inefficiency of simple long-term sales contracts in marketing products that have a narrow market has led to the development of more sophisticated contracts. Consider a buyer who, because of host country legislation, is not able to take equity in a potential supplier. Given the poor record of long-term contracts, the supplier may be unwilling or unable to borrow funds to start the mine. One possible solution is to have the buyer himself finance the investment. This protects the seller against opportunism by the buyer. By offering financing, the buyer binds himself to take the contracted quantities, for if he fails to do so he can expect the mine owner not to repay the loan. This type of arrangement, called "loan and import," has been used by Japanese, European, and Soviet Bloc buyers to incite independent entrepreneurs to make transaction-specific investments when FDI is outlawed or carries too much political risk. Under this scheme, buyers have extended loans at concessionary terms to foreign entrepreneurs to finance the development of mines, smelters, and factories in exchange for long-term supply contracts [Walsh 1982].

D'Cruz's analysis of the procurement of coking coal by Japanese trading companies is illustrative. The Japanese, acting as a group, have loaned funds to mine owners of new coal deposits who, because of their location, had no alternative customers besides Japan [D'Cruz 1979]. Because of the mine's dependence on Japanese customers, alternative financing would have been difficult to obtain.

Do such arrangements have the same efficiency properties as traditional FDI? The answer is no. Like all contracts, loan and import contracts tend to break down in turbulent environments. The contract will be self-enforcing if the costs of breaking it are higher than the benefits. Drastic changes in technology and markets may, however, change this balance. Consider for example an improvement in technology that makes inputs obtained under loan-and-import no longer necessary: the lender may then find it more desirable to forgo part of the loan than to take back the project's output. The seller then finds himself saddled with idle facilities. In that respect, foreign direct investment provides more flexibility, since adaptation to change can be done internally by fiat.

Developing the Market Requires High Setup Costs

The second case where purchasing marketing services by contract is likely to be inefficient is whenever distributing the product involves significant transaction-specific investments.

A number of observers have pointed out that the distribution of differentiated products is not handled as efficiently by traders as that of standardized commodities [Porter and Livesay 1971; Nicholas 1983; Anderson and Coughlan 1987]. Effective distribution of most differentiated products requires substantial up-front investments to find customers, and to learn how to price, demonstrate and service the product. Sometimes those investments are specific to a particular producer. The reason why traders do not seem to do well in distributing such products is that they are usually reluctant to invest in their distribution. Traders, like real estate brokers, fear that, sooner or later, buyers and sellers will bypass them by trading directly with one another. This is why they avoid making any long-term, up-front investments that are specific to a particular seller, that is, that they cannot use for other transactions. They will only make such investments if they control supply sources or markets through equity ties. As a result, manufacturers of new products requiring substantial demonstration and service, or of those that need specialized distribution facilities (for example, refrigeration), have found it difficult to persuade traders to provide the requisite level of investment, and have had to integrate into distribution.

Vertical integration between manufacturers and distributors solves this problem. This integration can take two forms: manufacturers can integrate vertically into distribution, or distributors can integrate into production. By the turn of the century, British and American manufacturers of new machines and durable consumer goods, dissatisfied by the performance of their independent distributors, had integrated vertically into foreign sales subsidiaries [Nicholas 1983; Porter and Livesay 1971]. Similarly, Japanese manufacturers have edged out the trading companies that initially marketed their exports and are replacing them by company sales subsidiaries [Yoshino 1976]. Likewise, MNEs have set up overseas export platforms to supply their domestic distribution networks.

A country that wants to export differentiated goods has thus two choices: either help domestic firms develop marketing networks abroad, or let foreign MNEs that control distribution abroad produce in the country. Countries that object to incoming FDI have forsaken this last option. Most of them are LDCs and Soviet Bloc countries that do not have the management skills, the capital resources, or the experience to establish effective company-owned sales networks abroad. As a result, their international marketing networks are embryonic, and they rely heavily on traders [Jackson 1978]. As predicted by the theory, there is some evidence that they have found traders often less than diligent in pushing difficult-to-market goods [McMillan 1982].

The development of "counterpurchase" contracts can be seen as an attempt to remedy some of these problems. These contracts were introduced in the

1970s by Soviet Bloc countries, and are increasingly being used by LDCs. Although they have been seen as ways to save on scarce foreign exchange, they also have other properties. In a "counterpurchase" deal, the Western exporter to the country is forced to enter a parallel contract under which he must purchase domestically produced goods. The Western firm forced to take back the countertrading country's products can be expected to make greater commitments to successfully market the goods because failure to do so would jeopardize any future sales.

Take the example of Coca Cola. Coca Cola's bottler in Yugoslavia is Slovin. Slovin has made its syrup purchases contingent on Coke's imports of its wine. To be able to continue to sell its syrup, Coca Cola had to find a way to sell Slovin's wine in the U.S. Marketing Slovin's wine did require substantial investments: Coca Cola had to call in experts who completely changed Slovin's wine production methods, chose a new name for the product, and had a new label designed and printed in Italy [Martin and Ricks 1985]. It is doubtful that investments of such a magnitude would have been obtained through a simple distribution contract.

This solution to the distribution problem has, however, a number of limitations. Coca Cola had an existing distribution system in the United States that could handle Slovin's wine. Often the counterpurchasing country is unable to force the Western exporters to market the local goods themselves. In about half of the cases, they instead rely on trading companies to liquidate their obligations [Bussard 1983]. These trading companies will in turn often dispose of the goods by selling to traditional customers at cut-rate prices, thus displacing existing markets.

CONCLUSION

The theme of this paper has been that institutional forms do matter. Simple contracts cannot always replicate the incentives offered by traditional FDI. While the "new forms" may prove to be efficient in organizing some types of trade, the government-mandated replacement of equity ties by contracts will prove to be inefficient for others. At the limit, transaction costs will become so high as to absorb all potential gains to trade. Countries that have banned incoming FDI will find that they cannot acquire some of the factors that are available under FDI, namely tacit and poorly patented know-how, as well as some types of marketing access.

Transaction costs theory also suggests an explanation for the development by countries that ban incoming FDI of a number of sophisticated contractual forms, such as buy-back, co-production, loan-and-import, and counterpurchase. We show that these contracts can be seen as a way to improve the enforcement properties of contracts by establishing reciprocal obligations.

The theory predicts that these sophisticated contracts will still suffer from a number of limitations. There is therefore good reason to expect that, as countries gain experience with these contracts and become more aware of their drawbacks, they would start to relax, in a selective way, their previous

ban on inward FDI, as well as their reluctance to undertake direct investments abroad.

Recent developments can be interpreted that way. In the last ten years, a number of previously restrictive countries have liberalized their investment policies. In Argentina, the foreign investment law of 1973, which had significantly strengthened barriers to incoming FDI, was considerably softened by new regulations introduced after 1976. The same evolution can be seen in countries such as Chile, Peru, Venezuela, Colombia, Ecuador, Bolivia, Mexico, Uruguay, the Philippines, Indonesia, Turkey, India, Pakistan, Bangladesh, Morocco, Korea, Jamaica, and Sri Lanka. Some indication of this trend is given in Table 3. For each year, the table gives the number of LDC and Soviet Bloc members of the IMF that have relaxed or tightened their policies on inward FDI.[5] A chi-square test supports the hypothesis that the proportion of countries introducing liberal measures has been significantly higher since 1981 than during the 1974-1980 period. Table 4 focuses on the Communist countries, which, with the exception of East Germany and Albania, are now all allowing foreign equity investments.

A number of hypotheses have been advanced to explain these trends, and they are consistent with our argument. Two main factors seem to have been at work. The first one may have been the realization by host countries that attempts to increase their share of the rents through the use of the "new forms" had so decreased the size of the available rents as to result in a smaller overall amount. The second factor has been a series of trends that

TABLE 3
Measures on Incoming FDI Taken by East Bloc and Developing Countries, 1974-1986
IMF Members Only

	Number of Countries	
Year	Tightening	Loosening
1986	2	4
1985	2	10
1984	5	6
1983	0	1
1982	0	4
1981	0	4
1979/80	1	1
1978	2	3
1977	9	3
1976	16	0
1975	20	0
1974	9	3
Total	66	39
1981/86	9	29
1974/80	57	10
Chi-square=39		
Critical Chi-squre 1, .05=3.84		

Source: IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions.*

TABLE 4
Foreign Direct Investment in Centrally Planned Economies

Country	Date of Regulation	Limits on Foreign Ownership	Number of Investments at Year End	
			1983	1987
Albania		not allowed	0	0
Bulgaria	1980	no limits	3	15
China	1979	49%	105	738
	1980	no limits		
Cuba		not allowed	0	0
Czechoslovakia	1987	49%	0	3
East Germany		not allowed	0	0
Hungary	1972	49%	22	111
	1985	majority allowed		
Poland	1976	49%	0	13
	1986	majority allowed		
Romania	1972	49%	6	5
USSR	1987	49%	0	19
Vietnam	1987	no limits	0	0
Yugoslavia	1967	49%	186 (1984)	250
	1984	no limits		

Source: *Business Eastern Europe*, various issues; *Journal of Commerce*, various issues; *Trends and Issues in Foreign Direct Investment and Related Flows*, UNCTC, 1985; *East-West Joint Ventures*, United Nations Economic Commission for Europe, 1988.

Note: This table excludes the Polonia joint ventures, which are small-scale businesses established and operated in Poland by foreigners of Polish origin.

have made the resources held by MNEs more valuable. According to Stopford [1987] those trends include the growing importance of marketing investments (and the resultant growth in intra-firm trade) and the acceleration of the pace of technology. Both these trends, we have seen, tend to increase the inefficiency of the "new forms."[6]

The forms taken by this liberalization and the reasons given for it are also consistent with our argument. In most countries, the liberalization has been selective: rules restricting FDI have been relaxed for investments that use advanced technologies and that produce for exports [Marton 1986]. These are the cases where we have shown the "new forms" to be particularly poor substitutes for FDI. The rationale given for the liberalization is also what we would expect: by allowing equity investments, Eastern European countries hope "to obtain up-to-date, nonstandardized technology that was not available through the market, and to use the distribution channels of the corporation to obtain access to export markets" [United Nations 1985, p. 41].

Lastly, Oman [1984a, p. 25] notes that some LDCs have started to *demand* that technology sellers take equity in turnkey projects. Such is the case in Saudi Arabia, where firms building petrochemical plants were asked to take a 25% stake. Oman explains this move by the desire to align the incentives of both parties, an explanation similar to that made here.[8]

Clearly the evidence presented here is only suggestive, and considerably more research needs to be done before more definite conclusions can be drawn. The causes that have led host countries to selectively liberalize their FDI

regulations are numerous and complex, and to evaluate their relative importance would require detailed empirical work.[9] The best that can be said at this point is that the evidence does not contradict some of the implications of the theory.

The goal of the paper was to show that institutions do matter. Regulations that limit the freedom of the parties to choose the governance structure that is most efficient at governing their interdependence will result in significant economic costs, which must be balanced against the gains that may result from these measures. Governments that have restricted FDI may have hoped that it could be replaced by "new forms of investment" with no consequences on efficiency. I have shown that the "new forms," even in their sophisticated versions, cannot fully substitute for FDI.[10]

The paper also shows that transaction-costs theory can provide interesting insights into the development of a range of complex contractual forms, and can generate some interesting hypotheses about the differential efficiency of the "new forms" across transactions and the reasons for recent changes in host country regulations towards incoming FDI.

Drawing out policy implications requires some care. First, as mentioned earlier, some firms invest abroad to increase their market power. Control of such investments may be warranted. Second, it does not follow from the analysis that a relaxation of laws against incoming FDI necessarily increases economic efficiency in the host country. Liberalization of FDI restrictions is only efficient if the country has abolished all distortions in domestic factor and output markets. Otherwise the country may attract import-substituting investments with negative cost-benefit ratios. Encarnation and Wells [1986] found this to be the case in Indonesia. In this situation, screening out import-substituting investments may be a second-best solution.[11] Nevertheless, because this article has shown that contractual arrangements of the "new form" variety are incomplete substitutes for FDI, the first-best solution is a simultaneous abrogation of restrictions on both FDI and domestic product and factor markets.

NOTES

1. See for example Hennart [1982], pp. 77-79 and Casson [1987], pp. 5-6.

2. I am not arguing here that the imposition of the "new forms" is always detrimental to host countries, only that it results in lower efficiency. Countries may find, however, that the imposition of the "new forms" yields gains that more than compensate for these static efficiency losses. First, although restrictions on FDI may decrease the size of rents, they may increase the share that remains in the country, and thus result in a larger absolute amount for host countries. Second, there are also dynamic arguments why restricting incoming FDI might be desirable. MNEs may block future local competition, and stunt the development of local entrepreneurs. Thus policies restricting FDI may encourage the development of domestic managerial and technological capabilities, as the examples of Japan and Korea seem to show. I am indebted to an anonymous referee for this point.

3. An additional problem is the "installed base" effect. Because of the presence of different standards in technology, a buyer who has bought into one technology may find it difficult to shift to a different supplier. This point was suggested by an anonymous referee.

4. For example, when the price of coal shot up in 1974 due to the oil embargo, American producers who had contracted to sell coking coal to Japan curtailed their deliveries under contract to sell on the spot market [D'Cruz 1979]. Similarly, with the current steel slump, most steel companies are ignoring their long-term contracts for iron ore, and are instead buying ore on the spot market. Today iron ore contracts provide "little, if any, assurance that the annual tonnages stipulated will be lifted" [Franz, Sternberg and Strongman 1986, p. 30]

5. The list was established from successive issues of IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions*, and from UNCTC [1983].

6. I am indebted to an anonymous referee for bringing these two points to my attention. The drying up of international bank lending has also been a factor [Goldsbrough 1986].

7. Similarly, one of the reasons given by the Chinese government for their JV legislation is the fact that "because foreign investors have a direct interest in the ventures, they presumably will provide the most useful technology and train Chinese managers to operate the venture more successfully" [UNCTC 1987, p. 16].

8. China has also imposed minimum equity requirements for foreign joint venture partners. One may wonder why, if equity is a more efficient way to transfer technology, firms would not natually choose this institutional form when it is made available. The answer lies probably in the presence of political risk, which biases the choice of the technology seller towards a less efficient, but safer, transfer mode. It takes time for memories of past confiscations to fade away, and this probably explains why, in spite of more favorable policies towards FDI, direct investment capital flows to LDCs have not substantially risen from their 1983 level [Weigel 1988, p. 6].

9. Additional factors, suggested by the referees, may be the greater sensitivity shown by investors towards host country concerns and the increasing sophistication of host countries, which allow them to increase their share of the surplus generated by incoming FDI.

10. I am not arguing here that more FDI is always better than less FDI, only that government restrictions on the governance structure freely chosen by parties to the exchange reduce efficiency. Since restrictions are invariably put on FDI, but not on contractual forms, the argument made here is that the "new forms" cannot fully substitute for contracts. If governments systematically banned contracts in favor of FDI, I would have argued the reverse.

11. This point was brought to my attention by an anonymous referee.

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