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The Effects of Policy Uncertainty on the Choice and Timing of Foreign Direct Investment: An Exploratory Firm-Level Assessment*

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Foreign investors tend to be skeptical about the durability of economic reforms being undertaken in a number of developing countries on the one hand, and physical capital is partly or fully irreversible on the other. As such, even if investors are risk-neutral, they tend to favor a 'wait-and-see' attitude in the early stages of the reforms. This paper is an exploratory attempt at providing a simple unifying framework that makes explicit and clarifies thinking on the inter-linkages between policy uncertainty, option value and the choice and timing of FDI at the firm-level. The model is used as the basis for the derivation of a generalized reduced form relationship between FDI at a *micro-level* and its influencing variables.

I. Background and Motivation

There is now a broad consensus on the need for countries to adopt market-oriented policies as a necessary condition for sustained economic growth. Concomitantly, there have been a proliferation of attempts at economic liberalization worldwide (Rodrik (1990) and UNCTAD (1997)). One of the most important factors determining the potential success of these programs is the extent and pace at which private investment responds to the policy changes. Since most structural adjustment reforms are undertaken in conjunction with macro-economic stabilization packages (Rodrik (1990)), domestic investments (both public and private) usually bear the brunt of the aggregate demand austerity (Chhibber et al. (1992), Serven and Solimano (1992) and Serven and Solimano, eds., (1993)). The rapid growth of the Asian Newly Industrializing Economies (ANIEs) - which seems to have been spurred to a large extent by capital accumulation as opposed to the benefits of an outward-oriented strategy *per se* (Rodrik (1995) and Rajan (1997)) - emphasizes the important role to be played by foreign direct investment (FDI) in the success and scope of any liberalization program. When we add to this the net crowding-in effect that FDI may have on domestic private and public investment (Borensztein, et al. (1995)), the importance of FDI becomes ever more apparent.

As governments and bureaucracies in most newly liberalizing host economies tend to

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have multiple goals and objectives, which often overlap and sometimes even conflict, policies towards FDI, trade and related economic activities tend to be characterized by incoherencies and other problems in terms of both formulation and implementation. This lack of credibility regarding the durability of policy reforms on the one hand, and insofar as physical capital is partly or fully irreversible on the other, even if investors are risk-neutral, they tend to favor a 'wait-and-see' attitude in the early stages of a reform program (Rodrik (1989) and Rajan and Marwah (1997)). In other words, given that the balance of power has largely shifted from governments in developing countries to multinationals (Rajan (1994)), a foreign investor typically has a far greater degree of discretion as to the timing of entrance into the foreign market following the liberalization program, as opposed to being faced with a 'now or never' decision. In jargon, there is an *option value* in holding-back investment decisions (Dixit and Pindyck (1994, 1995)). Given this irreversibility of physical capital, it may pay the investor to delay investments until uncertainty is reduced, though this (postponement) option carries a premium. This premium, which - akin to a financial call option - gives the investor the *right* but not *obligation* to enter the market some time in the future, is either implicit in terms of loss of market share (or generally forsaking advantages of being a market pioneer), or explicit in terms of initial sunk costs to preserve the advantages it may have from early entrance. Thus, as Metcalf and Rosenthal (1995, p. 521) state, "part of the cost of making an investment is the value of the option that is lost when the option is killed. It is easy to show that the value of the option increases when the return on investment is more variable."

It is increasingly being recognized that firms tend to share broadly similar ex-ante assessments regarding the exogenous uncertainties faced in investing in new markets (Kellor et al. (1997) and Madhok (1997)). This, along with the agglomeration economies due to externalities and networking as highlighted by economic geographers (and increasingly by trade economists), may help to rationalize why FDI tends to be characterized by locational concentration in specific countries and in specific regions within countries (Brewer (1991, 1993) and De Mello (1997)). Some empirical validation of this 'bandwagon' phenomenon has been provided by Wheeler and Mody (1992). This phenomenon is also consistent with the 'follow-the-leader' or imitation behavior exhibited by multinationals as emphasized in the FDI literature (Graham (1996)).

Taking the above discussion to its logical end leads one to conclude that, at the extreme, uncertainty about future policy reversals, by 'crippling animal spirits' of the foreign private investors (Rodrik (1989), p.3), may - through the multiplier-accelerator mechanism - leave the economy trapped in a 'low investment equilibrium'. Recognizing this, Rodrik (1990, p.934) has concluded that from the viewpoint of investment, "liberalization may often need to take a back seat when it places the sustainability of policies...into question.". Hence, for instance, a president of a pharmaceutical firm's international division reportedly stated that "(w)e are willing to cope with harsh or even bad regulations, so long as we know what the rules are and they won't be changed" (quoted in Murtha and Lenway (1994), footnote 3). In light of the seeming 'herd mentality' of investors, Dornbusch (1993, p.147) has argued for some kind of coordination mechanism "that overcomes the competitive market tendency to wait" during the early stages of a structural adjustment program. Indeed, Rodrik (1995) has been persuasive in his hypothesis that a large part of the economic successes of South Korea and

Taiwan thus far were due to the governments in East Asia helping to remove such coordination failures, thus stimulating domestic investment booms.

We have briefly outlined some of the considerations in linking option value and policy uncertainty in FDI decisions within the context of the international business and economics literatures on FDI. While firms obviously face many more complicated conditions and trade-offs, expectations/perceptions of policy uncertainty do lead them to exercise some real options in their decision-making processes. For the most part though, the existing empirical literature focused almost exclusively on the effects of uncertainties on *aggregate* (or at most, private) investment in host developing countries, without sufficient consideration to the *micro* aspects of the behavior of foreign firms (see for instance, eds. by Chhibber et al. (1992), eds. by Serven and Solimano (1992) and Serven and Solimano (1993)).[1] The aggregate behavior of private investments (let alone FDI *per se*, which is our focus) cannot be inferred solely from these larger forces (Pauly and Reich (1997)). As such, this paper is an exploratory attempt at developing a simple, stylized model to make explicit and clarify thinking on the main factors influencing a foreign firm's decision to invest in a potentially lucrative market undergoing liberalization, with an eye towards future empirical applications.

The remainder of the paper is organized as follows. The next section lays out the analytical model to be used, along with all its simplifying assumptions. With the aim of parsimony in mind, but also wanting to ensure a fair degree of reality, much effort is taken to justify - sometimes in detail - any assumptions of significance made. The model to be outlined is but one formalized representation of the major factors that are involved in the complex inter-linkages between policy uncertainty, option value and the choice and timing of FDI. While we recognize that there are a number of different types of FDI, the model is primarily applicable to market-seeking or local market-oriented FDI (as opposed to, for instance, export-oriented FDI). In particular, we focus on the questions of if, when and how firms decide to service a potentially large and lucrative market in a liberalizing economy.[2] A generalized reduced form relationship between FDI at a *micro-level* and its influencing variables is derived in section 3. The last section provides a summary and some general comments pertaining to empirical issues and policy implications.

II. The Model

We assume that there are two countries: I(ndustrial) and D(eveloping), with the firm under consideration originating from country I('home country'). Assume country D is undertaking (or has just been through) an economic reform program in period 0, including liberalization of the foreign investment regime. We assume, in particular, that foreign investment

1. Globerman et al. (1996) discuss the responses by Swedish multinational firms' responses to economic liberalization in India. However, their focus is on firms already established in India and not on the determinants of choice of new investments.
2. For instance, investors decide whether to enter India, China or Brazil distinctly. While there will always be some competition in terms of resource constraints, given that the aim is to service the large domestic markets of each country, the 'head-to-head' competition is arguably not significant relative to the case of export-oriented FDI targeted at servicing a particular third market.

was disallowed in country D prior to period 0. We follow the lines of Buckley and Casson (1981), Itagaki (1989), Smith (1987) and others by considering the case where exports and FDI are *substitutes* (so called 'proximity-concentration' hypothesis) a la Brainard (1993).[3] This is so, as Itagaki (1989, p.370) has noted that "(o)ne of the current concerns of economists and politicians is the replacement of exports from the home country by foreign investments." Thus to be sure, the decision facing the firm is whether to service country D's market (for good X) either through domestic production (i.e., actually establishing a production plant in country D) and/or through exports.

Let L broadly denote an index of the *variable* factors used in the production of X, i.e., $X=f(L)$. To provide a simple formalization of the problem, assume a specific production function of the form:

$$X=L^{1/2}. \tag{1}$$

In addition, assume that firms incur a one-time fixed or irreversible cost (δ) in the production of good X (where δ is in terms of country D's or local currency terms). Once committed, this capital cannot be easily recouped by the firm without incurring substantial losses should the investment turn out *ex post* to be less than expected. Examples include costs of establishing a local presence (through advertising, distribution, marketing and the like), costs of assessing investment viability, and the age-old Akerlofian-'lemons problem' relating to the resale of durables.

Assume that the preferences of the representative consumer in country D for good X can be represented by a quasi-linear utility function. Utility maximization yields a linear demand schedule only in prices (i.e., absent the income effect) that may be expressed in inverted form as:

$$p = a - bX, \tag{2}$$

where $b > 0$ and p is in terms of foreign currency. Assume also perfect competition in factor markets in both countries, with marginal returns to L in countries I and D equal to w_I and w_D respectively, where $w_I > ew_D$ and e is the real exchange rate (defined as local currency per unit of foreign currency). For simplicity, these costs are assumed to remain unchanged even after capital movements. In other words, the capital formation due to FDI inflow is assumed negligible relative to exiting stock of capital.

We consider three alternative choices open to the firm (see Figure 1 for a time-line):

3. We do recognize, but abstract from the possible *complementary* nature of trade and FDI (Rajan (1996) and references cited within), as we do the possibility of servicing the market through other channels such as licensing, joint ventures, and the like. Choice of foreign market entry mode, which is intrinsically linked to theories of internalization and transaction costs, and is an important strategic decision, is discussed in detail in Agarwal and Ramaswami (1991), Root (1987) and Rugman, et al. (1985, chapter 6). For our purposes, we might assume that the costs of such cooperative arrangements (in terms of dissipation of firm specific assets) is so great as to make them inferior strategies relative to 'going it alone'.

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I. Invest in foreign market (country D) immediately (in time period 0);
II. Choose not to invest in country D at all, but rather service the foreign market through exports;
III. Wait before deciding to invest in country D ('option value of waiting'). In this case the firm has two further options: either *initially* (a) invest in a liquid asset or (b) service the market through exports.

We assume a discrete time frame of infinite horizon with discount rate r. As in Rugman et al. (1985, Chapter 6), we assume that all options yield net profits, with the aim being to maximize the expected net present value (ENPV). Despite the criticisms leveled on this approach by Dixit and Pindyck (1994, 1995), Ghemawat (1987) has noted that it remains the most commonly used method - at least in the US - of choosing among alternative revenue-generating options by firms.

1. CASE I: Immediate Direct Investment

We consider first the case of when the firm decides to establish production facilities in the new market (country D) in time period 0 and begins earning revenues and incurring variable costs from time period 1 onwards. Let Π^D be the PV of future profits from this option in terms of domestic (country I's) currency. Following Itagaki (1989), we assume that the firm is concerned purely with profits available in the home country and thus repatriates all foreign profits. The firm must build up capacity prior to entering the foreign market. Given the above:

$$\begin{aligned}\Pi^D &= \sum_{t=0}^{\infty}[\Pi_t^D/(1+r)^t] \\ &= -e\delta+[e\phi X-ew_D L]/(1+r)+[e\phi X-ew_D L]/(1+r)^2+\cdots] \\ &= e\{-\delta+[\phi X-w_D L]/r\}.\end{aligned} \tag{3}$$

Equation (3) is based on the assumption of absence of any uncertainty regarding future net returns. In reality however, there are always significant uncertainties when investing abroad, especially in countries in the early stages of a structural adjustment program. As documented by Robinson (1987) and others, these uncertainties range from outright expropriation/ nationalization, to the introduction of other 'distortions' that lower the stream of future returns. Following Rajan (1994) and Rodrik (1991), we assume a general case where the pessimistic scenario is one where an ad-valorem tax of t is imposed on the excess of revenues over variable costs. Thus, in the extreme case of nationalization/expropriation without compensation, $t=1$.[4] We also assume that the imposition of the tax follows a simple time-constant

4. As Rodrik (1991) has noted, if the tax is 'high enough', it might no longer be profitable for the firm to continue production in country *D*, thus leading to the withdrawal of capital back to country I. Also see Rajan (1994, and 1997). We however ignore this possibility by assuming that the exit costs of withdrawal are 'sufficiently'

binomial distribution with probability $, which is known but exogenous to the firm.

a. *A Note on Modeling of Uncertainty*

Before proceeding, it might be noted that, following the classification by Lawson (1988) and Palley (1993), we are assuming a Friedman-Savage-type view regarding uncertainty, with the probability, while calculable (unlike 'risk' which, in Knightian terminology, is not measurable), is largely a 'construct of knowledge' (i.e., based on feelings and beliefs). Critics might argue for a Muth-Lucas-type view of uncertainty, which assumes that the probability is based on 'objective' measures (specifically, the entire information set available prior to the investment decision, which may be analyzed and interpreted in numerical terms with regard to its effect on ENPV). However, analyses of actual management decision-making strongly suggests that uncertainties of foreign investments tend to be assessed simply from "first impressions and dramatic but insignificant events" (Rummel and Heenan (1978), p.68) and are "subjective, impressionistic, and superficial" (Kobrin (1978), p.114).[5] Similarly, Vagts (1991, p.104) has argued that decisions regarding the riskiness of foreign investments are "intuitive and somewhat irrational...and are often excessively influenced by acquaintances who have strong views about a country's stability but may be ill-informed, biased." This provides some validation for the above 'simplistic' (though realistic) formulation regarding uncertainty (also see Madhok (1997) and survey by Brunetti, et al. (1997)), and in turn may be rationalized as possibly being due to high information and search costs involved in FDI relative to other investment decisions i.e., 'rational ignorance' or 'bounded rationality', loosely defined (Madhok (1997)).[6]

It is also assumed that if the tax is imposed, it is done so in the first time period, and following Dornbusch (1993) and Rodrik (1991), is *perceived* by the investors as being permanent. This assumption can be easily relaxed by assuming that uncertainty declines monotonically over time (i.e., investors' confidence that government will not impose the tax will increase with time), or alternately, as in Cukierman (1980), more technically sophisticated Bayesian-type learning processes could be assumed (though the 'practical relevance' 'real-world' relevance of such learning processes is open to question). Nevertheless, the assumption of perceived permanence of partial/complete policy reversal, while highly simplified, is by no means extreme, because as Krueger (1981, p.102) has noted, "every failure...intensifies expectations of the next one...an unsuccessful stabilization program may itself have growth costs, not only in the current slow down in economic activity...but also in the heightened

greater than the tax imposed. Hence, withdrawal from the country after investing (over and above the option cost) is not considered.

5. According to Murtha and Lenway (1994, footnote 3), "(m)any managers have reported that unless they can calculate the bottom line impact of government policies with certainty, they discount them 100 percent in project assessments."

6. In light of this, the attempted endogenization of the probability of reversal of trade liberalization by Froot (1988) along with the assumption of complete foresight, while technically interesting, seems however to be inconsistent with actual investment decisions/behaviors. It is arguably therefore of limited operational value. Consistent with the literature on multinationals and developing country host governments, we also abstract from strategic or opportunistic behavior on the part of host country governments (see for instance, Raff (1992)). This is so, as it is generally recognized that major reform programs take place during periods of crises, when governments are weak, and are consequently limited in their ability to undertake strategic behavior.

cost of achieving the same objectives at any future date, when memories of past failures result in skeptical expectations about the likelihood of success." These 'growth costs' of policy reversals are especially acute in the present times, which are characterized by an intense 'global race' for foreign investment for reasons discussed by Oxelheim (1993), with there being, at any point in time, a number of possible investment-alternatives from which to choose.

Alternatively, one could think of the above as a prisoner's dilemma game being played between the foreign investor (player A) and the government (player B), where player A plays a cooperate strategy until defection, then the strategy is to defective forever. In this case, we are assuming a situation where A is implicitly telling B that "I will...trust you as long as you do not abuse that trust. But if you ever abuse that trust, I will never trust you again...(i.e.,)... B's reputation is irrevocably sullied if ever B abuses trust. A will trust B if B has an unsullied reputation, and A will refuse to trust B if B's reputation is sullied" (Kreps (1990), pp.102 & 106). Player A is able to lay down such (extreme) conditions because it has a number of alternative 'partners' from which to choose, i.e., it has the balance of the 'bargaining power' (Contractor (1995), p.108).

b. *Solution to CASE I*

Expected net returns from investing in country D are:[7, 8]

$$\begin{aligned} E(\Pi^D) &= \sum_{t=0}^{\infty} E[\Pi_t^D/(1+r)^t] \\ &= -e\delta + (1-s)[e\phi X - ew_D L]/(1+r) + [e\phi X - ew_D L]/(1+r)^2 + \cdots] + \\ &\quad [(1-t)s][e\phi X - ew_D L]/(1+r) + [e\phi X - ew_D L]/(1+r)^2 + \cdots] \\ &= -e\delta + e\{[\phi X - w_D L][1-st]\}/r, \end{aligned} \qquad (4)$$

where $s, t \in (0,1)$. Substituting (1) and (2) into (4) and assuming that the firm maximizes the expected value of the sum of discounted cash flows, i.e., $\partial[E(\Pi^D)]/\partial X = 0$ (the assumed

7. Another way of accounting for the uncertainty would be to adjust the discount factor (Black (1988)). However this has the disadvantage of assuming that the risk is a smooth, monotonic and increasing function of time. There is the further difficulty of finding suitable discount rates for completely different types of investment options, as is the case in this paper. Governments, at least as far as the US is concerned, tend to impose a uniform and ad-hoc assumption of a 10% discount rate .
8. Note that unlike Dixit and Pindyck (1994) and others, we do not assume that the value of the project follows a specific type of diffusion process (i.e., Brownian motion), which in turn allows for computations using stochastic calculus and dynamic programming. This is so, as the uncertainty in this model arises from *perceptions* regarding host country's foreign investment policy, which are unsystematic. This is in contrast to the above-noted papers in which price/exchange rate/interest rate variability are the sources of uncertainty, and there is evidence that these variables might in fact follow a geometric Brownian motion (see Dixit and Pindyck (1994) and (1995)). To maintain primary focus of the paper (viz. on the impact of lack of policy credibility on investment decisions), we abstract from price/demand and exchange rate uncertainties. Our assumption of constant wage rates allows us also to abstract from uncertainty regarding costs.

concavity of the production function ensures the fulfillment of the second order condition), we can solve for optimal output and profit levels respectively:

$$X^{D*} = a/2(b + w_D),$$

$$E(\Pi^{D*}) = -e\delta + [(1-st)ea^2]/[4r(b + w_D)]. \quad (5)$$

It is obvious by envelope theorem using (4) or directly from (5) that $\partial E(\Pi^{D*})/\partial s < 0$ and $\partial E(\Pi^{D*})/\partial t < 0$ (representation of the 'locational advantage'), as would be expected *a priori* and empirically confirmed by Agarwal and Ramaswami (1991). Of particular interest is the *seeming* ambiguity of $\partial E(\Pi^{D*})/\partial e$. This is so, as an increase in the exchange rate (or depreciation of the home country's domestic currency) would lead to an increase in the cost of (irreversible) capital in terms of the domestic currency, while simultaneously leading to an increase in the net earnings stream in domestic currency terms (i.e., a sort of partial natural hedge). However, given the assumption of all options earning net profits (i.e., profits after accounting for sunk costs), $\partial E(\Pi^{D*})/\partial e$ is unambiguously positive.

2. CASE II: Exporting

Consider the case next of when the firm decides to stay in its 'home country' and service country D through exports. We assume that firm A does not need to undertake any sunk costs at home under this option, as it already has the necessary infrastructure in place from production of 'comparable' goods (in terms of resource requirements) in the host country.[9] The main benefits of choosing to service the developing country through exports rather than investment are: (a) the absence of the need to invest in irreversible (full or partial) capital; (b) the concomitant ability to generate revenues 'instantaneously' (time period 0); and (c) the relatively stable domestic policy climate. We further assume that a per unit import tariff (or any other per unit trade barrier) of m is imposed on country D's imports and transport costs of f are incurred per unit of good X shipped from country I to D.[10] We also assume for simplicity that there is no uncertainty regarding future tariff rates.[11] The import tariff as

9. This is not completely accurate. To be more precise, sunk costs may be broadly divided into plant/production-specific (such as costs of establishing a new plant/production facility) and product/market-specific (such as advertising, distribution, marketing, market-research and the like). If the firm decides to service the foreign market through exports, we assume that it only faces the product/market-specific sunk costs as opposed to FDI, in which case both costs are incurred. Thus δ in the above case refers only to the plant/production-related non-recoverable costs. Since the product/market-specific sunk costs are to be faced in both cases (i.e., exporting or direct investing), we ignore the term altogether.
10. Alternately, we could assume costs as being of the Samuelson 'iceberg' variety.
11. While this is a simplifying assumption, it is not all that unrealistic if we were to assume that the country was bound by external 'anchors' such as WTO, IMF/World Bank conditionalities, bilateral and/or regional trading arrangements (see Rajan (1994) and Rodrik (1989)). On the other hand, insofar as one might expect uncertainties pertaining to trade and investment-related policies to be positively correlated (for instance, both are directly impacted by the domestic macroeconomic environment), and given the very plausible supposition that the latter

well as the higher variable costs of production ($w_1 > ew_D$) are the drawbacks of choosing this option.

Let Π^1 be the present value (PV) of future profits from this option.

$$\begin{aligned}\Pi^1 &= \sum_{t=0}^{\infty}[\Pi_t^1/(1+r)^t] \\ &= [ep_1X - w_1L - mX - fX] + [ep_1X - w_1L - mX - fX]/(1+r) + \cdots] \\ &= [(ep_1 - m - f)X - w_1L](1+r)/r\end{aligned} \tag{6}$$

Optimal output and profits respectively are:

$$X^{1*} = (ea - m - f)/2(eb + w_1),$$

$$\Pi^{1*} = [(ea - m - f)^2(1+r)]/[4r(eb + w_1)]. \tag{7}$$

As would be expected *a priori*, both $\partial(\Pi^{1*})/\partial m$ and $\partial(\Pi^{1*})/\partial f$ are negative, with Brainard (1993) providing an empirical confirmation. Once again, of interest are the comparative statics with respect to the exchange rate. As long as profit maximizing output is positive, *ceteris paribus*, $\partial(\Pi^{1*})/\partial e > 0$, i.e., a depreciation will lead to an increase in profits in terms of domestic currency.

3. CASE III: Option Value of Waiting

As highlighted in the previous sections, the recent literature on investment emphasizes the presence of uncertainties and an 'option value' of waiting to invest. Kester (1984, p.156) has noted that "(t)he ability to defer the (investment) decision gives the decision-maker time to examine the course of future events and the chance to avoid costly errors if unfavorable developments occur." To reiterate, we assume the simplest case of there being no uncertainty after time period 1. We also assume that the firm will find it profitable to invest in country D only if t = 0 (i.e., no tax/distortion is introduced). In order to compute the PV of future earnings stream from this option, an assumption needs to be made about returns in time periods 0 and 1. Cukierman (1980) and Dornbusch (1993), among others, have suggested that the option to investing in physical capital would be to invest in financial/liquid capital. However, there is a further viable alternative open to the firm, viz. to service the market through exports initially, before directly investing in country D. Both cases are considered below.[12]

is greater than the former (as the number of 'channels' through which government policies could reduce revenues in the case of domestic investment are obviously more extensive than in the case of imports), one could quite easily assume that *s* (the probability of reduction in net investment-generated revenues) is a *relative measure*, where the uncertainty relating to import protection is normalized to one. This apart, we are also ignoring the possibility of 'quid-pro-quo' or 'threat-induced'-type FDI *a la* (Bhagwati (1991), chapters 8 and 17), in which case, the intensity of the import barriers (f) is inversely related to the value/volume of foreign investment.

12. The above two options are by no means exhaustive. For instance, the firm could (a) undertake investment *sequentially* (i.e., increasing investment commitments to the foreign market gradually), rather than a *shotgun* or 'all at once' approach, as seems to have been the case with Japanese firms (Chang (1995)); (b) it could enter the market through joint ventures, licensing, outsourcing or other arrangements (Horstmann and Markusen (1995)); (c) insofar as some risks are largely industry/sector-specific, the firm could choose to invest in relatively less-risky sectors; and/or (d) the firm could undertake to invest in relatively costlier, though more 'flexible' capital. (Dixit and Pindyck (1994)).

a. *CASE IIIa: Initial Investment in Liquid Capital*

We assume that the returns from investing in liquid assets in country D equal R (or eR in home currency terms). However such a 'wait-and-see' strategy has two costs. First, the firm forsakes such advantages as customer loyalty, patent protection and redemption of scarce resources from being a market pioneer (Lieberman and Montgomery (1988)). Second, to be able to exercise this option of entering late, we assume that specific sunk costs need to be undertaken in the target market. We denote this by ϕ in local currency terms, where it must be that $\phi < \delta$. The PV of future returns in this case (Π^L) is:

$$\begin{aligned}\Pi^L &= \sum_{t=0}^{\infty}[\Pi_t^L/(1+r)^t] \\ &= R + R/(1+r) + [1-E(\alpha)][(e\beta X - ew_D L)/(1+r)^2 + \cdots] - e\delta/(1+r) - e\phi \\ &= eR[(2+r)/(1+r)] + \{e[1-E(\alpha)](\beta X - w_D L)\}/[(1+r)r] - e\delta(1+r) - e\phi,\end{aligned} \qquad (8)$$

where, following Dornbusch (1991, p.65), the cost of being a late-comer is easily incorporated within a perfectly competitive frame-work by assuming the firm earns only a fraction of revenue in country D in the 'good'-state, i.e., $\alpha \in [0,1]$.[13]

While we are making a simplifying assumption that the sustainability of early-mover advantages is permanent, this is not without merit. For instance, there is growing evidence based on the United States' market which suggests that market pioneers tend to maintain higher market shares than late-comers (Mascarenhas (1992), p.501). Similar persistence in brand/ company positions of market pioneers has been noted in other studies internationally (Lieberman and Montgomery (1988)). Such a formulation is general enough to allow for the possibility of cost-reductions through learning/experience effects (Lieberman (1987)), as well as the expectation that the late-comer firm would have to undertake relatively higher advertisement expenses to penetrate the market successfully (Kessides (1986), p.85).[14]

Profit maximizing output and corresponding profits are respectively:

$$X^{L*} = a/2(b + w_D),$$

$$\Pi^{L*} = eR[(2+r)/(1+r)] + e[1-E(\alpha)a^2]/[4r(1+r)(b+w_D)] - e\delta/(1+r) - e\phi. \qquad (9)$$

13. While we assume here that foreign investors take α to be exogenously given, Rajan (1997) has developed a multi-period model in which the parameter is modeled as a declining function of the aggregate output in the sector (a means also, of accounting for the noted agglomeration effect). Investors recognize this relation and internalize it when optimizing their objective (i.e., profit) functions. Alternately, one could model α as being a monotonically decreasing function of the number of rivals.
14. Note that by assuming imperfect competition in the product market, we have ignored behavioral assumptions regarding market rivalry, which in turn would necessitate some kind of game-theoretic analysis to take account of the strategic interactions among the rivals (as in, for instance, Smith (1987)), results of which are in turn heavily dependent on assumptions regarding the type of game being played, information sets available, and the like.

As expected, $\partial(\Pi^{L*})/\partial E(\alpha) < 0$. This is consistent with actual experience which reveals that firms tend to commit irreversible investment funds "at a very early date despite their ability to defer a final decision", possibly in fear that "a competitor may preempt the move" (Kester (1984), p.158). As in the case of immediate investment, insofar as the firm will not invest unless net revenues exceed initial sunk costs, $\partial E(\Pi^{D*})/\partial e$ is unambiguously positive.

b. *CASE IIIb: Export Initially, Invest Later*

Another option the firm has is to initially service the market through exports, which enables it "to adopt an exploratory, experimental behavior to obtain knowledge about foreign markets...(i)n other words, exporting can become an *international learning experience*" (Root (1987), pp.53-4), and then switch to FDI at an 'appropriate time'. Buckley and Casson (1981) refer to this as the 'economics of switching'. The advantage of this strategy is that the firm will reap most the benefits of already having some type of market presence. Buckley and Casson (1981) have gone some way in attempting to formalize what is essentially a dynamic problem (viz. a firm has to decide *if* and *when* to enter). However, to maintain tractability, and with empirical specification in mind (section 3), we limit ourselves to the case in which the firm has a choice between investing in time periods 0 and 1 rather than allowing it a continuous set of choices. We consider the extreme case of $\alpha = 0$. In words, we assume that exporting allows the foreign firm the ability to maintain a market presence, hence precluding loss of market position. The PV of future returns in this case (Π^E) is:

$$\begin{aligned}\Pi^E &= \sum_{t=0}^{\infty}[\Pi_t^E/(1+r)^t] \\ &= (ep_0X - mX - fX - w_IL) + [(ep_0X - mX - fX - w_IL)/(1+r) \\ &\quad + (ep_0X - ew_DL)/(1+r)^2 \cdots] - e\theta/(1+r) - e\phi \\ &= [(ep_0X - mX - fX + w_IL)(r+2)]/(1+r) + (ep_0X - ew_DL)/[r(1+r)] - e\theta/(1+r) - e\phi.\end{aligned} \tag{10}$$

Profit maximizing output and the corresponding profit are respectively:

$$\begin{aligned}X^{E*} &= [r(ae - m - f)(2+r) + ae]/\{2[r(eb + w_I) + e(b + w_D)]\}, \\ \Pi^{E*} &= [X^{E*}(ae - m - f)(2+r) + ae/r]/(1+r) - (X^{E*})^2[r(eb + w_I)(2+r) \\ &\quad + (eb - ew_D)]/r(1+r) - e\theta/(1+r) - e\phi.\end{aligned} \tag{11}$$

III. Factors Affecting a Firm's Decision to Invest Abroad

Broadly, a firm would decide to invest *immediately* in the developing country following the reform program (time period 0) if and only if (iff) the maximum profits from this option

exceed those from the other three options. To allow for direct comparison, we assume that the firm is risk-neutral.

Immediate Investment versus no Investment

The firm would choose to invest immediately rather than export iff $E(\Pi^{D*}) > \Pi^{I*}$:

$$-e\delta + [(1-st)e\alpha^2]/[4r(b+w_D)] > [(e\alpha - m - f)^2(1+r)]/[4r(eb+w_I)]. \quad (12)$$

Immediate Investment versus Delayed Investment

The firm would decide to invest immediately rather than wait iff $E(\Pi^{D*}) > \max(\Pi^{L*}, \Pi^{E*})$:

$$-e\delta + [(1-st)e\alpha^2]/[4r(b+w_D)] >$$

$$\max\{\{-e\delta/(1+r) - e\phi + [eR(2+r)/(1+r)] + e[1-E(\alpha)\alpha^2]/[4r(1+r)(b+w_D)]\}, \quad (13)$$

$$\{-e\phi - e\delta/(1+r) + X^{E*}[(\alpha e - m - f)(2+r) + \alpha e/r]/(1+r) +$$

$$(X^{E*})^2[r(eb+w_I)(2+r) + (eb - ew_D)]/r(1+r)\}\}.$$

1. Empirical Implications

Based on (12) and (13), we can obtain a generalized reduced form relationship between the propensity to undertake FDI at a *micro level* (I^D) following the initiation of the liberalization program and the influencing variables, as well as sign their impact on I^D:

$$I^D = I(\delta, s, t, w_D, r, m, w_I, \phi, E(\alpha), f, e, R) \quad (14)$$
$$\text{---- ? + + + + + ? -}$$

The expected direction of influence of each of the independent variables on a firm's FDI decision is given in Equation (14) (below the corresponding variable). Based on the model, we hypothesize that a one time fixed or irreversible cost (δ), a tax imposed on repatriated profits (t), the probability of this tax being imposed (s), wages (or more generally, marginal production costs) in the developing country (w_D), and the return on investments in liquid capital (R) are all expected to negatively impact a firm's expected net present value of future profits from undertaking FDI immediately following the reform program. The import tariff (m), wages/marginal production costs in the industrial country (w_I), exercise price of the option (ϕ), the opportunity costs of being a late-comer (E(α)) and transportation costs (f),

are expected to have a positive impact on FDI. Even in this simple model, the impact of the discount rate (r) and exchange rate (e) on the investment decision are ambiguous, in reality, being highly dependent on the particular country, sector, and investment project in question. The latter is consistent with Serven and Solimano (1992), who, on reviewing the empirical literature, conclude that that exchange rate trends/levels seem to have ambiguous or insignificant effects on investment (also see Campa (1993)).

IV. Summary and General Comments on Empirical Issues and Policy Implications

Drawing extensively on various strands of the international business and economics literatures, this paper has attempted to explicitly lay out a highly stylized, yet indicative model to make explicit some of the main factors/variables influencing a foreign firm's decision to invest in a developing economy that has recently undertaken an economic liberalization program. While investment decisions driven by location decisions tend to be context-specific (and certainly not homogeneous), general parameters relating to policy uncertainty, option values, and the choice and timing of investments seem to be prevalent. Reform policies that are perceived as weakly credible might, in the presence of capital irreversibility, lead firms to favor servicing foreign markets through exports rather than undertake FDI. Alternatively, firms may choose to postpone their investments in the country until they are confident about the durability of the policies. Given the previously emphasized bandwagon expectations of investors and the importance of agglomeration economies in industrial location on the one hand, as well as the intense global rivalry to attract foreign investors on the other, either scenario could potentially endanger the future success of the economic reform program. In other words, a reform program can fail for no other reason than the shared expectations of its imminent failure. Indeed, as noted by Rodrik (1991, p.230), "(e)ven if the initial expectation is not based on underlying fundamentals, it can prove to self-fulfilling...Hence the discomforting conclusion that the success of policies may depend in no small part on the psychology of private-sector expectations".

While we are able to derive the above reduced form equation, empirical estimation is far from straightforward, even after abstracting from data limitations (which can be acute in light of the fact that the model is micro-based, as well as the need to consider proxies for uncertainty). First, as is clear from Equations (12) and (13), apart from the direct impact of the variables, there are a number of interaction terms that need to be taken into account in any regression model. These terms depend, in particular, on the exact cost and revenue functions that a firm faces.[15] Second, as noted, we have abstracted from other forms of cost, demand, exchange rate and competitive/market structure uncertainties, which are important factors that need to be considered. In relation to this, we need to understand how firms internalize or form expectations about such uncertainties. This is particularly important, as almost all research in this area has thus far made assumptions regarding the stochastic processes followed by

15. Complications may be introduced by assuming internal returns to scale (IRS) in production, which if the case, diminishes the incentive to undertake FDI (Brainard (1993)). The introduction of IRS invariably leads to the need to consider an imperfectly competitive framework. Specifically, it is easily shown that IRS (Ω) is related to mark-ups (μ) and average share of economic profits (s_Π) by the following identity: $\Omega = \mu(1-s_\Pi)$.

policy and non-policy variables that impact firms' investment-decisions. In actual fact, what is of importance is the *manner* in which firms form expectations of future changes, as opposed to the *changes per se* (in this regard, see Murtha (1993)). Third, to recap, our analysis was also limited to only the case of risk neutrality and the special case where exports and FDI are substitutes.[16] Fourth, there are in reality a number of alternative modes of market-servicing available to the firms, and failure to consider the entire range of feasible options and the concomitant factors/variables impacting the choice and timing of FDI might lead to a misspecification of the reduced form equations.[17] Fifth, a number of complications may arise when one realizes that some of the independent variables are inter-related. For instance, while we denoted ϕ to be the *cost* of the option, what is really of significance to the investor is the *value* of the option. Thus, for a given explicit cost, the greater the perceived uncertainty ($\$$) and/or the larger the expected loss of market share through late entry (E($\propto$)), the higher will be the value of the option, and thus it's cost from the firm's perspective. Sixth, there may be a need to differentiate a multinational firm from a non-multinational one. Specifically, to the extent that the former is able to manage their exposure to any single country by altering the amounts produced and invested between different countries where it has a presence, it may be less impacted by country-wise uncertainties (assuming they are minimally correlated with those in other countries).[18]

It seems clear by now that the introduction of uncertainty in the presence of irreversibility of capital substantially complicates the investment decision in reality. Consequently, it should be of no surprise that there is a definite paucity of good empirical work on the subject. A most promising recent firm-level study is by Campa (1994) who uses a reduced form equation to determine the effects of uncertainty on the entry behavior in the chemical processing industries. The sample covered products in the United States (US) and the European Community (EC) from 1977 to 1988. A logit model is developed with the dependent variable being an increase in investment; the independent variables being the present levels and expected future trends and volatilities of three variables, viz. oil prices, exchange rates and proxies for general demand conditions. The other independent variables are proxies for sunk costs (in our model) and locational advantages of the country (consistent with w or unit variable costs in our model).

While Campa's model specification is itself devoid of a specific theoretical framework, it is broadly consistent with the reduced form derived in this paper, and is thus highly complementary to the present paper. Future research will benefit greatly from further empirical applications of the firm level model developed in this paper, taking into account the caveats previously noted. Such firm-level studies will be complementary to the newly emerging

16. Risk aversion may be easily accommodated by assuming that the firm maximizes a 'certainty equivalent' (C) of its expected future profits, where $C = \{E(\Pi) - \varepsilon\sigma\Pi\}$, σ is the standard deviation of profits, and risk aversion is captured by allowing $\varepsilon > 0$.
17. Rugman, et al. (1985) has noted that exports and FDI are the two extreme cases. The only other variable that seems important in the case of cooperative arrangements is that of potential loss of firm-specific assets. Thus, one conjectures that the higher the probability of this loss, the greater the preference for FDI.
18. For instance, MacCormack, et al. (1994, p.71) have cited a survey which found that 63 percent of foreign exchange managers noted "having locations to increase flexibility by shifting plant loading when exchange rates changed" as being a factor in international siting.

survey-based research that attempts to examine the nature of uncertainty associated with reforms such as those by Borner, et al. (1995) and Brunetti, et al. (1997); detailed 'before-after reforms' case studies of firms from particular nations investing in specific countries such as that by Globerman et al. (1996); attempts to empirically assess the effect of policy uncertainty on FDI following a liberalization program within an aggregate neoclassical-type investment behavior framework as in Ibarra (1995); and more macro, indicator-based studies comparing the determinants of FDI across countries as done by Jun and Singh (1996).

While it is critical to study the micro determinants of FDI at a firm level so as to obtain a better understanding of determinants of FDI, two important policy implications for capital-scarce developing countries seem to follow from the above discussion. First, there is a need to develop strategies to enhance the credibility of their liberalization programs (Rajan (1994), Rajan and Marwah (1997) and Rodrik (1989)). Second, at least in the early stages, the start-up sunk costs (which interact with policy uncertainty to deter investment) needed to be incurred by private investors ought to be minimized. These might include the provision of site-specific infrastructure facilities, subsidizing worker training, allowing for flexible hiring-firing policies, encouraging joint ventures and strategic alliances and the like (Murtha (1993), p.184, Rajan (1994) and Rajan and Marwah (1997)). It is obvious that there is a quandary of sorts in the above two policies, in that while one of the best ways on inducing FDI is by making it 'footloose' (i.e., minimizing the 'hysterisis effect'), this consequently makes it even more imperative to ensure that the policy credibility is maintained.

References

Agarwal, S., and S. Ramaswami (1991), "Choice of Foreign Market Entry Mode: Impact of Owner ship: Location and Internalization Factors," *Journal of International Business Studies*, 23, 1991, 1-27.

Bhagwati, J. (1991), *Political Economy and International Economy*, The MIT Press, Cambridge, Massachusetts.

Black, F. (1988), "A Simple Discounting Rule," *Financial Management*, 17, 7-11.

Borensztein, E., J. De Gregorio, and J. Lee (1995), "How does Foreign Direct Investment Affect Growth," NBER Working Paper No. 5057, Cambridge, Massachusetts.

Borner, S., A. Brunetti, and B. Weder (1995), "Policy Reform and Institutional Uncertainty. The Case of Nicaragua," *Kyklos*, 48, 43-64.

Brainard, S. (1993), "An Empirical Assessment of the Proximity-Concentration Tradeoff between Multinational Sales and Trade," NBER Working Paper No. 4580, Cambridge, Massachusetts.

Brewer, T. (1991), "Foreign Direct Investment in Developing Countries: Patterns, Policies, and Prospects," World Bank International Economics Department Working Paper WPS712, Washington D.C.

_____ (1993), Government Policies, Market Imperfections, and Foreign Direct Investment," *Journal of International Business Studies*, 23, 101-20.

Brunetti, A., G. Kisunko, and B. Weder (1997), "Credibility of Rules and Economic Growth: Evidence from a Worldwide Survey of the Private Sector," Policy Research Working Paper No. 1760, World Bank.

Buckley, P.J., and M. Casson (1981), "Optimal Timing of Foreign Investment," *Economic Journal*, 91, 75-87.

Campa, J.M. (1993), "Entry by Foreign Firms in the United States under Exchange Rate Uncertainty," *Review of Economic and Statistics*, 75, 614-23.

_____ (1994), "Multinational Investment under Uncertainty in the Chemical Processing Industries," *Journal of International Business*, 25, 557-78.

Chang, S. (1995), "International Expansion Strategy of Japanese Firms: Capability Building Through Sequential Entry," *Academy of Management Journal*, 38, 383-407.

Chhibber, A., M. Dailami, and N. Shafik (1992), "Reviving Private Investment in Developing Countries: Major Themes," in *Reviving Private Investment in Developing Countries: Empirical Studies and Policy Lessons*, eds. by A. Chhibber, M. Dailami and N. Shafik, Amsterdam, Elsevier Science Publishers, 1-18.

Contractor, F. (1995), "Promoting Foreign Direct Investment in Developing Countries," *The International Trade Journal*, 9, 107-42.

Cukierman, A. (1980), "The Effects of Uncertainty on Investment under Risk Neutrality with Endogenous Information," *Journal of Political Economy*, 88, 462-75.

De Mello Jr., L. (1997), "Foreign Direct Investment in Developing Countries: A Selective Survey," *Journal of Development Studies*, 34, 1-37.

Dixit, A., and R. Pindyck (1994), *Investment under Uncertainty*, Princeton, Princeton University Press.

Dixit, A., and R. Pindyck (1995), "The Options Approach to Capital Investment," *Harvard Business Review*, May-June, 105-15.

Dornbusch, R. (1993), *Stabilization, Debt, and Reform: Policy Analysis for Developing Countries*, New Jersey, Prentice Hall.

Froot, K.A. (1988), "Credibility, Real Interest Rates, and the Optimal Speed of Trade Liberalization," *Journal of Development Economics*, 25, 71-93.

Ghemawat, P. (1987), "Investment in Lumpy Capacity," *Journal of Economic Behavior and Organization*, 8, 265-77.

Globerman, S., A. Koko, M. Revelius, and M. Sami (1996), "MNE Responses to Economic Liberalization in a Developing Country: Evidence from India," *Journal of Economic Development*, 21, 163-84.

Graham, E. (1996), "The (Not Wholly Satisfactory) State of the Theory of Foreign Direct Investment and the Multinational Enterprise," *Economic Systems/Journal of International and Comparative Economics*, 20, 183-206.

Horstmann, I., and J. Markusen (1995), "Exploring New Markets: Direct Investment, Contractual Relations and the Multinational Enterprise," NBER Working Paper No. 5029, Cambridge, Massachusetts.

Ibarra, L. (1995), "Credibility of Trade Policy Reform and Investment: The Mexican Experience," *Journal of Development Economics*, 47, 39-60.

Itagaki, T. (1989), "The Multinational Enterprise under the Threats of Restriction on Profit Repatriation and Exchange Control," *Journal of Development Economics*, 31, 369-77.

Jun, K., and H. Singh (1996), "The Determinants of Foreign Direct Investment in Developing Countries," *Transnational Corporations*, 5.

Kessides, I. (1986), "Advertising, Sunk Costs, and Barriers to Entry," *Review of Economics and Statistics*, 68, 84-94.

Kester, C.W. (1984), "Today's Options for Tomorrow's Growth," *Harvard Business Review*, March-April, 153-60.

Kellor, B., G. Bollier, and O. Ferell (1997), "Firm-Level Political Behavior in the Global Marketplace," *Journal of Business Research*, 40, 113-26.

Kobrin, S. (1978), "When does Political Instability Result in Increased Investment Risk?," *Columbia Journal of World Business*, Fall 1978, 113-22.

Kreps, D. (1990), "Corporate Culture and Economic Theory," in *Perspectives on Positive Political Economy*, eds. by J. Alt and K. Shepsle, New York, Cambridge University Press, 90-143.

Krueger, A. (1981), "Interactions Between Inflation and Trade Regime Objective in Stabilization Programs," in *Economic Stabilization in Developing Countries*, eds. by W. Cline and S. Weintraub, Washington D.C., The Brookings Institution, 83-114.

Lawson, T. (1988), "Probability and Uncertainty in Economic Analysis," *Journal of Post Keynesian Economics*, 11, 38-65.

Lieberman, M. (1988), "The Learning Curve, Diffusion, and Competitive Strategy," *Strategic Management Journal*, 8, 441-52.

Lieberman, M., and D. Montgomery (1987), "First-Mover Advantages," *Strategic Management Journal*, 15, 41-58.

Madhok, A. (1997), "Cost, Value and Foreign Entry Market Mode: The Transaction and the Firm," *Strategic Management Journal*, 18, 39-61.

Mascarenhas, B. (1992), "Order of Entry and Performance in International Markets," *Strategic Management Journal*, 15, 499-510.

Metcalf, G., and D. Rosenthal (1995), "The 'New' View of Investment Decisions and Public Policy Analysis: An Application to Green Lights and Cold Refrigerators," *Journal of Policy Analysis and Management*, 14, 517-31.

MacCormack, A., L. Newman III, and D. Rosenfield (1994), "The New Dynamics of Global Manufacturing Site Location," *Sloan Management Review*, Summer, 69-80.

Murtha, T. (1993), "Credible Commitments: Can Host Governments Tailor Multinational Firms' Organizations to Suit National Objectives?" *Journal of Economic Behavior and Organization*, 20, 171-86.

Murtha, T., and S. Lenway (1994), "Country Capabilities and the Strategic State: How National Political Institutions Affect Multinational Corporations' Strategies," *Strategic Management Journal*, 15, 113-29.

Oxelheim, L. (1993), "Foreign Direct Investment and the Liberalization of Capital Movements," in *The Global Race for Foreign Direct Investment: Prospects for the Future*, ed. by L. Oxelheim, Berlin, Springer-Verlag, 11-49.

Palley, T. (1993), "Uncertainty, Expectations, and the Future: If We Don't Know the Questions, What Are the Answers?" *Journal of Post Keynesian Economics*, 16, 3-18.

Pauly, L., and S. Reich (1997), "National Structures and Multinational Corporate Behavior: Enduring Differences in the Age of Globalization," *International Organization*, 51, 1-30.

Raff, H. (1992), "A Model of Expropriation with Asymmetric Information," *Journal of International Economics*, 33, 245-65.

Rajan, R. (1994), "Liberalization and Foreign Capital Flows in the Presence of Uncertainty and Irreversibility: Theory and Policy Considerations," *Development and International Cooperation*, 10, 75-98.

_____ (1996), "Singapore's Bilateral Trade with Japan and the US: Trends, Patterns and Comparisons," *Asian Economic Journal*, 10, 378-89.

_____ (1997), "On Multinational Enterprises, Technology Transfers and Strategic Policy Under Uncertainty: With Particular Reference to Hong Kong and Singapore," mimeo, The University of Michigan, Ann Arbor.

Rajan, R., and S. Marwah (1997), "Confronting Contradiction in the Indian Economy: Evaluation of the Past, Policies for Future Investment and Growth," mimeo, The University of Michigan, Ann Arbor, Forthcoming in *Trade Policy and Dynamics in Asia*, New York, Nova Science Publishers.

Robinson, R. (1987), "Government Policy Options vis-vis Foreign Business Activity: An Academic View," in *Direct Foreign Investment: Costs and Benefits*, ed. by R. Robinson, New York, Praeger.

Rodrik, D. (1989), "Credibility of Trade Reform - A Policy Maker's Guide," *World Economy*, 12, 1-16.

_____ (1990), "How Should Structural Adjustment Programs be Designed?" *World Development*, 18, 933-47.

Rodrik, D. (1991), "Policy Uncertainty and Private Investment in Developing Countries," *Journal of Development Economics*, 36, 229-42.

_____ (1995), "Trade Strategy, Investment and Exports: Another Look at East Asia," NBER Working Paper No. 5339, Cambridge, Massachusetts.

Root, F. (1987), *Entry Strategies for International Markets*, Lexington, Massachusetts, D.C. Heath and Co.

Rugman, A., D. Lecraw, and L. Booth (1985), *International Business: Firm and Environment*, New York, McGraw-Hill Book Company.

Rummel, R., and D. Heenan (1978), "How Multinationals Analyze Political Risk," *Harvard Business Review*, 56, 67-76.

Serven, L., and A. Solimano (1992), "Private Investment and Macroeconomic Adjustment: A Survey", *World Bank Economic Review*, 7, 95-114.

_____, eds. (1993), *Striving for Growth after Adjustment: The Role of Capital Formation*, Washington D.C., World Bank.

Smith, A. (1987), "Strategic Investment, Multinational Corporations and Trade Policy," *European Economic Review*, 31, 89-96.

UNCTAD (1997), World Investment Report 1997: *Transnational Corporations, Market Structure, and Competition Policy*, Geneva, United Nations Publications.

Vagts, D. (1991), "Protecting Foreign Direct Investment: An International Law Perspective," in *Foreign Direct Investment in the 1990s: A New Climate in the Third World*, ed. by C. Wallace, The Netherlands, Martinus Nijhoff Publishers, 1-27.

Wheeler, D., and A. Mody (1992), "International Investment Location Decisions: The Case of U.S. Firms," *Journal of International Economics*, 33, 57-76.

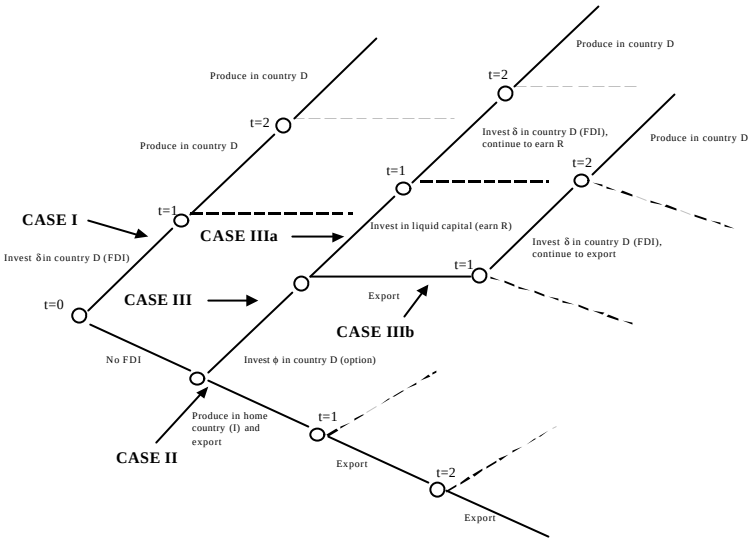

Figure 1 Time Line and Tree Diagram

Note: Dashed line denote alternatives that have not been considered in this paper