Foreign Direct Investment in a Developing Country with Economic Reform

Gyoung-Gyu Choi*

This paper formalizes the foreign investors' investment decision in the economic reform projects of developing countries, and explains why majority of developing countries are seriously neglected by foreign investors. Although foreign direct investment (FDI) increases capital and advanced technology flows to developing countries, high concentration of FDI on developed countries and on a few advanced developing countries implies bleak prospects for industrialization in the majority of developing countries. A model is developed to link the complementarity among projects to the investment decision under various information structures. Two main factors dampen FDI flows into developing countries: (1) The combined effect of private information and the foregone positive spillover, lowers the incentive for FDI flows into developing countries. (2) The combined effect of the existence of multiple equilibria and the coordination failure, leads to a Pareto-inefficient equilibrium. While the former arises from the interaction of private information and complementarity, the latter arises from the complementarity of the reform projects regardless of the presence of private information. The finding of the paper gives the rationale for the recent institutional development in Asia of subregional economic zones and special economic zones. (*JEL* Classification: F21)

I. Introduction

This paper formalizes the foreign investors' investment decisions in the economic reform projects of a developing country. Using a formal approach, this paper explains why the majority of developing

*Hoover Institution Stanford University, (E-mail) gchoi@hoover.stanford.edu.
[**Seoul Journal of Economics** 1998, Vol. 11, No. 2]

countries are seriously neglected by foreign investors. This paper focuses on the effects of *complementarity* among investment projects on investors' *entry and exit decisions* under various information structures. And it addresses the intertwined effects of complementarity and private information regarding other investors' decisions, which highlight the rationale of the recent institutional development in Asia.

As transportation and communication technology progresses, international economies move toward increasing interdependence in terms of growing trade and capital flows. According to Krugman (1995), one of the new aspects of modern world trade is the ability of producers to *slice up the value-added chain* – to produce a good by breaking a production process into many geographically separated steps. This aspect is accompanied by the increase of international trade volume as well as the increase of foreign direct investment (FDI) flows. FDI transfers not only financial resources to the host country, but also other factors of production such as technology and management know-how. In addition, FDI helps the host country to build and/or expand various networks, such as procurement and marketing networks, through the existing organizations of the multinational corporation (MNC) and to increase foreign exchange earnings through export expansion. Although critics of multinational corporations argue that inflows of FDI may reduce efficiency and stifle growth in the host country through exploitation and domination of the host country by MNCs, it is generally accepted that FDIs have positive effects overall on the economic growth of the host country.

Since World War II, developing countries have sought to expand their industrial sectors as a primary means of development and have offered incentives for investment in the manufacturing sectors. However, one of the most noticeable developments in recent FDI activity has been *geographical concentration* of FDI in a few advanced developing countries and in the Triad which consists of North America, the European Community, and Japan. Furthermore, FDI inflows into developing countries have tended to go disproportionately to a few specific Asian and Latin American countries. The developing countries' small share of world FDI stock is heavily concentrated in just seven countries: the four East Asian "tigers" of South Korea, Taiwan, Hong Kong, Singapore, and recently China, plus Mexico and Brazil.[1]

Why is foreign investment highly concentrated in certain locations, while seriously neglected in other areas? Countries vary considerably in the effectiveness of their economies in delivering FDI advantages to MNCs and in the soundness of their business environment. Factors that affect FDI inflows are not only low labor costs, but also domestic legal and commercial policy provisions to protect foreign investments. Other factors includes rates of return from investment, uncertainty from economic feasibility, and the risks and the effects on foreign investors from the political instability in the host countries. Last but not least, FDI flows are also dependent on complementarity of investment projects.

In the theoretical literature to date, the problem of insufficient investment decisions by foreign investors in developing countries has not been formally addressed. I consider a formal model in which foreign investors decide whether to enter into a developing country's industrialization project or not, and once entered, whether to exit to an alternative investment opportunity. The model is focused on the effects of *complementarity* of investment projects on the investors' entry and exit decisions under the various information structures.

This paper applies Rosenstein-Rodan's (1961) and Murphy, Shleifer, and Vishny's (1989) ideas of "industrialization and the big push" to foreign direct investment: Simultaneous industrialization of some sectors of the economy can be profitable when no individual sector can be profitable. The analysis in Murphy *et al.* (1989) suggests that the size of the market or the aggregate demand spillover in an imperfectly competitive economy is an important factor on industrialization. The *coordinated* investment program and a *simultaneous* industrialization program are especially important since industrialization of one sector enlarges the size of the market in other sectors. My paper, however, does not focus on the do-

[1]Gundlach and Nunnenkamp (1996) show that developing countries' shares in the world trade and FDI inflows have risen rapidly since the early 1990s even though OECD countries dominates FDI flows. (See Table 4 in Appendix B.) Meanwhile, since 1980, East Asia has nearly quadrupled its share in world FDI flows, and has increased its share of FDI among developing countries, which is largely due to China's emergence in world capital markets. FDI in China soared from virtually zero in 1979 to $33.8 billion in 1994, or 31 percent of FDI in all developing countries (World Bank 1980, 1994).

mestic market constraint. Using the existing market networks, foreign investors are assumed to be able to sell the goods produced in developing countries in the world market, owing to low wages and advanced technology.

In my paper, complementarity across investment projects is assumed to enable increase in the rates of return. For example, as noted in Murphy *et al.* (1989), coordination issues are important in infrastructure projects because infrastructures complement other industrializing sectors. Since other industrializing sectors pay for the railroad, the investment in building a railroad is profitable if there are sufficient sectors using the railroad. The railroad, in turn, reduces the transportation cost for other sectors. The *positive spillover* effects will stem from the coordinated investment projects, if they are *simultaneously* invested in. If any of the essential projects does not attract investment, however, other projects do not necessarily produce the desired rate of return due to the complementarity among essential projects. Therefore, there may be multiple equilibria including an equilibrium in which the railroad is not likely to be built, although it is socially desirable and individually profitable for the sectors in complementarity to be invested in simultaneously. The coordination failure in this example can deter investment in both infrastructure and industrializing projects. Similarly, the multiple equilibria problem with coordination failure occurs when a group of projects is interrelated as key inputs or intermediate sectors to other projects in the group.

Since a developing country usually lacks domestic capital to invest and advanced technology for economic development, an economic reform needs to attract foreign investment. A developing country in the pre-reform period is usually underdeveloped in every aspect of its economy including infrastructure such as railroads, telecommunication, and energy. Thus, there exist some essential projects which have a complementary relation with each other. The analysis of the model shows that multiple equilibria arise from economic complementarity among projects, which in turn explains the lack of FDI inflows in some developing countries. In addition to the problem of coordination failure in multiple equilibria, the analysis suggests that the intertwined effect of private information and complementarity dampens the incentive of foreign investors to invest in developing countries. The results of the model gives the rationale for (1) the innovative institutional development in Asia –

the development of intense economic linkages in subregional economic zones (SREZs), and (2) the Chinese approach to economic reform – special economic zones (SEZs).

This paper follows closely the reform model of Rodrik (1989) and the analytical approach of Blanchard and Kremer (1996). In his theoretical paper, Rodrik (1989) highlights how uncertainty regarding the sustainability of reforms affects the investment decision: Since physical investment is partly sunk, rational behavior by foreign investors calls for withholding investment until uncertainty regarding the success of the reforms is mostly eliminated. Investment will not be forthcoming in the presence of uncertainty to future reform policies. Without investment, however, reforms are less likely to be sustainable. Hence, the success of reform policies may depend on investors' expectation to some extent and a reform can be reversed by pessimistic expectation that will prove self-fulfilling in a vicious circle. Uncertainty stems from economic factors as well as political factors. Krueger (1993) expresses the significance of the political environment in generating different consequences from the same economic policies under the same economic circumstances. In my paper, the uncertainty is assumed to be *asymmetric information* related to other investors' decisions of investment in the *complementary* projects. The analysis based on this assumption is the main contribution of my paper.

Blanchard and Kremer (1996) propose the formal explanation for the decline of output during the transition from plan to market economy. The collapse of the state firm's production occurs due to the lack of commitment to supply inputs, as well as the private information of alternative opportunity in a private sector known to each worker. In the case of multiple equilibria, a Pareto-inferior equilibrium may prevail because of the *pessimistic* expectations by intermediary suppliers or essential workers. Similarly, in my paper, a Pareto-inferior equilibrium in investment into the essential projects of developing countries may be realized due to the MNCs' pessimistic expectation and coordination failure. As a result, MNCs would restrain or withdraw themselves from investing in any project, even when it is optimal to invest in a group of projects simultaneously.

The next section briefly summarizes the trends of FDI, focusing on FDI inflows in Asia. In the subsequent section, the underlying assumptions of the model are set out. In the subsequent three

sections which then follow, three cases with different information structures are analyzed: (1) In the benchmark model, investors are symmetric in terms of facing the same alternative opportunity, and there is no private information. In this case, complementarity does not have any effect on the investment decision. (2) In the second model, foreign investors are assumed to have different outside investment opportunities; however, the realized rates of return from both alternatives are known to all, and there is no private information. (3) In the third model, the rate of return from the alternative opportunity is assumed to be private information and is not credibly communicated in the competitive global economic environment. The final section discusses the results of the models and their implications for government policies in developing countries.

II. Complementarity in FDI and Recent Institutional Development in Asia

One of the trends in recent FDI activity has been the *geographical concentration* of FDI in the Triad and a few advanced developing countries.[2] Countries vary considerably in the effectiveness of their economies in delivering FDI advantages to MNCs and the soundness of their business environment. Factors that affect FDI inflows are not only cheap labor costs but also national legal and

[2]Table 5 in Appendix B shows the population and distribution of global exports and FDI for different groups of countries and areas. Group A, the Triad countries, while making up only 14 percent of the world population in 1990, attracted 75 percent of the FDI flows over the 1980s. Group B consists of the ten most important developing countries in terms of FDI flows over the period. These countries together account for 29 percent of world population and received 16.5 percent of global FDI. The sum of Group A and Group B equals 43 percent of the population in receipt of 91.5 percent of FDI flows along with 84 percent of exports (Hirst and Thomson 1996). Ten countries in Group B in Table 5 alone accounted for 72.3 percent of all private foreign investment flows to the developing countries between 1981 and 1992 (Hart and Spero 1997). In fact, FDI and growth in China are known to be concentrated in the south coastal provinces and in Beijing province. Group C is the same as Group B except that it includes only the populations of the nine provinces of China. Group C with only 28 percent of population, receives 91.5 percent of FDI. Therefore, slightly less than two-thirds of the world population receives only 8.5 percent of global FDI (Hirst and Thomson 1996).

commercial policy provisions to protect their investments. A growing number of developing countries signed bilateral investment treaties with developed countries to promote foreign investment by providing certain protections and a predictable foreign investment regime: They include terms for entry; standards of treatment, such as national treatment or most-favored-nation treatment; conditions for nationalization and compensation; rules for transfer of profits and capital repatriation; and dispute settlement mechanisms.

Other factors include rate of return from investment and uncertainty from economic feasibility and political stability. Although investment in the developing countries is a small part of total foreign investment, the rate of returns were greater in the less-developed countries for many years, which was one of main rationale of investing in the developing countries by MNCs.[3] The uncertainty related to macroeconomic stability is one of the most important indicators of a sound business environment. In addition, the risks faced by the foreign investors stem from the political instability in the host countries and the uncertainty of the effect of political change on individual investment. Furthermore, the character of the future political regime and the speed and the extent of economic reform are all a matter of uncertainty. Such uncertainties reduce the attractiveness of the investment in developing countries. Therefore, the availability of alternative investment opportunities to MNCs, with sound business environments and stable political regimes, can affect unfavorably the investment flows to the developing countries. There are other potential structural and ideological problems with the reform process: A half-adjusted system due to the transition from centrally controlled to market prices places strains on the economy. Regional discontent and internal migration problems along with corruption are also growing problematic. Moreover, reform efforts may be slowed by bottlenecks in the energy and transportation sectors and general infrastructure, which have been neglected in recent years.

[3]In 1982, the rate of return on U.S. investments in the Third World was 15.8 percent, as compared with an 8.2 percent return in the North. This situation was reversed in 1986-88: The rate of return on investments in industrialized countries was 17.5 percent, while it was 11.8 percent in the developing countries. The rate of return on investments in developing countries again exceeded that on investments in industrialized countries in 1989 (Hart and Spero 1997).

Last but not least, the FDI flows are also dependent on complementarity among investment projects. The most recent trends in the Asian region, novel or revived, are subregional economic zones (SREZs) and special economic zones (SEZs).

In the late 1980s, the newly industrialized economies (NIEs) in East Asia emerged as sources of outgoing FDI to Southeast Asian countries. Thus the Asia-Pacific region manifests the intensified intraregional investment flows and the accompanying trade flows in the form of SREZ, which are formed by geographically contiguous subnational areas, separated by political boundaries. The driving forces behind SREZs are (1) economic complementarity and growth spillover, (2) common geopolitical interest and geographical proximity, (3) the political and economic policy framework, (4) joint development of natural resources and infrastructure, and (5) access to the world market through competitiveness (Chia and Lee 1993). The development of intense economic linkages in SREZs, therefore, depends on the existence of economic complementarity which arises from different levels of economic development and different resource endowments.

The regionalization of Asian trade reflects the beneficial *spillover* effects occurring when a group of countries *simultaneously* adopts outward-oriented policies (Lawrence 1996): Countries following export-oriented strategies create markets for their trading partners. An essential feature of such strategies is providing access to key inputs, such as technology, capital, and intermediate inputs. Thus, successful exporters provide growing markets for suppliers of these inputs from neighboring countries. Key capital goods come from Japan; labor-intensive assembly operations are performed in low-wage countries such as China, Indonesia, Thailand, or Vietnam; and Hong Kong, Singapore, and Taiwan provide more sophisticated operations such as design, marketing, and finance. Therefore, Asia has been capable of generating a rapid increase in trade owing to growth and a virtuous regional circle with networks. SREZs exemplify this complementarity (Lawrence 1996).

Meanwhile, China has become the world's tenth largest exporter and the largest recipient of FDI in the developing countries in less than two decades. China's effort to promote foreign trade and investment has been an integral part of its overall reform drive since 1979. In that year, the joint venture law was passed to provide a legal framework for foreigners doing business in China,

and the creation of SEZs were approved. The objective of the SEZ, a specially designated area for economic activity, was to attract foreign investment by offering concessionary terms such as favorable tax treatment and special profit repatriation agreements and a good business climate. Desiring benefits from technology transfers embodied in these investments as well as revenues generated from the exports created by these joint ventures, China opened four special economic zones (SEZs) to encourage foreign investment and production for export. Designating limited areas as special zones can reduce resistance to the new open policies and prevent the policies toward foreign investment from being blocked by opposition from the existing power group who may be adversely affected by this new move. Moreover, by starting small, it may be easy for a central government to finance an essential infrastructures for the zone, which is necessary to attract sufficient investment to develop industries.

III. Model Assumptions

In the following models, I consider two MNCs as foreign investors who decide to enter to or exit from the reform projects in a developing country. Each MNC has *one* unit of capital to invest which is assumed to be the required investment size of each project. To focus on the effect of complementarity of the reform projects on the investment decision, it is sufficient to assume that there are two foreign investors and two essential projects in a reform plan – for example, a project on infrastructure and a project in the manufacturing sector.[4] To incorporate the dynamic considerations raised by reform sustainability, a multi-period model is considered. Multi-period model specifies the conditions for the foreign investment inflow, *entry*, at the first period, and the conditions for the foreign investment retrieval, *exit*, at the second period on. It is assumed that there is no reentry to simplify algebra without losing logical intuition.

The host government's objective is assumed to maximize the

[4]Although the number of essential projects are dependent upon the specific countries' economic structure, labor markets condition, and abundance of natural resources, etc., it is sufficient to analyze the case of two complementary projects by abstracting reality.

probability of financing reform projects by FDI. To focus on the investor's decision of entry and exit, the host government is assumed to be a passive player rather than one employing an active strategy to induce the foreign investment – that is, the maximum rate of return of the investment in a reform project ($\bar{r}$), the probability of reform failure (π), and entry and exit costs (e and c) are exogenously given.

Movements of capital across the border of the developing country incur sunk costs to investors in the beginning of the period of the capital movement: the entry cost e or the exit cost c. The entry cost may be incurred from the feasibility study, bureaucratic process and business setup, etc.. The exit cost is incurred from the partial capital irreversibility in repatriation of the assets. Investment in the alternative assets in the MNC's home market, is assumed to be sunk-cost free – that is, no entry or exit cost is required. This assumption is reasonable since MNCs usually have established business at their home country and the cost of withdrawing a unit of capital from or investing in their assets would be minimal.

Perfect complementarity between two projects in a reform package is assumed: If both projects are financed by the foreign investors with advanced technologies, the maximum rate of return, r^+, would be realized in each period, unless reform fails. However, if a project is not financed by the technologically advanced foreign investor, then domestic indigenous technology is to be employed, which would hinder the realization of the maximum rate of return of the other project financed by a foreign investor. Instead, the project financed by FDI produces a lower rate of return, θr^+ with $\theta < 1$. The index θ indicates the developmental stage of indigenous technology in the host country, which would be quite low in a developing country where reform effort should be exerted. The parameter θ would be increasing over the developmental stage, which is not modeled in this paper.

Reform is likely to fail with a exogenously given probability of π. If reform fails in some period, the rate of return to investment in that period is to be *zero*. When reform fails, it is assumed that foreign investors withdraw their assets from the host country by paying exit cost e in the subsequent period, and invest in the alternative opportunity in its home market. The rate of return from the alternative investment opportunity, r, is randomly selected in each period from the uniform distribution in the interval $[0, \bar{r}]$. Let

$F(r)$ denote the distribution function, so that $F(0)=0$ and $F(\bar{r})=1$. It is natural to assume that r^{+} is greater than the average value of the alternative rate of return, $\bar{r}/2$. Except for the rate of return realized from the alternative opportunity, investors are identical.

Therefore, the expected present value of staying in an alternative project in the MNC's *home* market with realized r for the current period is

$$V^{H}(r)=r+\delta\, EV^{H}(r) \tag{1}$$

$$\text{where} \quad EV^{H}(r)=\frac{1}{1-\delta}\,\frac{\bar{r}}{2}.$$

"E" stands for the expected present value and the superscript "H" indicates the MNC's home market outside a developing country. Discount factor for time preference is indicated as δ.

I will consider three different informational structures regarding realized rate of return from the alternative opportunity: (1) Firstly, in the benchmark model, the same rate of return for the alternative opportunity is realized for all investors. Thus there is no private information. (2) Then, the foreign investors face the different rate of return from different sectors, but the realized rates of return from foreign assets are known to all. (3) Finally, the rate of return from the alternative opportunity is assumed to be private information, a condition most likely in the real world. Since MNCs operate in a highly competitive economic environment, their private information would not be shared, nor credibly communicated to other MNCs.

The characterization of the cutoff rates is obtained by solving backward from the exit decision in the second period to the entry decision in the first period. Even though the model is a multi-period model, the analysis of the exit decision beyond the second period is identical to that of the second period, and is treated by the continuation-value approach. The cutoff rate of entry or exit is the rate of return at which the expected present payoff of investment in a reform project is equal to that in an alternative project in the MNC's home market.

IV. A Benchmark Model of Symmetric Investors

In the benchmark model, I analyze the case of the *symmetric* investors: The alternative opportunity of investment is assumed to

generate the same rate of return for both investors, and there is no private information.

A. Exit Decision at Period II

By solving backward from the second period, the exit decision can be derived. In the second period, an investor's expected present value, $V^{II}(r)$, of staying in the project, is

$$V^{II}(r) = \pi\,[r^{+} + \delta\,\{F(r^{*})V^{II}(r) + (1 - F(r^{*}))(E(V^{H}(r) \mid r \geq r^{*}) - c)\}] \\ +(1-\pi)[0 + \delta\,(EV^{H}(r) - c)]. \tag{2}$$

The superscript "*II*" stands for period *II*. Note that $V^{II}(r)$ $(=E(V^{II}(r) \mid r < r^{*}))$ is equal to $V^{II}(r^{*})$. The cutoff rate of exit, r^{*}, is defined by making the expected value of exiting to the MNC's home market be equal to that of staying in the developing country. That is, r^{*} is derived by solving $V^{II}(r^{*}) = V^{H}(r^{*}) - c$, which gives the following relationship:[5]

$$r^{*} = c - \delta c + \pi r^{+} + \frac{\delta \pi}{2\bar{r}} r^{*2}. \tag{3}$$

If the realized alternative rate of return, r in the second period is less than or equal to r^{*}, the investors stay. Otherwise, they exit to the alternative opportunity.

***Proposition* 1**

When the outside opportunity of investment is the same for both investors, there is a unique stable cutoff rate for exit decision in period *II* and on, unless reform fails.

The unique stable cutoff rate of exit decision, r^{*}, is

$$r^{*} = \begin{cases} \dfrac{\bar{r}}{\delta \pi} - \sqrt{A} & \text{if } \bar{r} > \dfrac{2}{2 - \delta \pi}(c - \delta c + \pi r^{+}) \\ \bar{r} & \text{if } \bar{r} \leq \dfrac{2}{2 - \delta \pi}(c - \delta c + \pi r^{+}). \end{cases}$$

$$\text{where } A = \frac{\bar{r}^{2}}{\delta^{2}\pi^{2}} - \frac{2\bar{r}}{\delta\,\pi}(c - \delta c + \pi r^{+}).$$

[5]For the details in the cases of corner solutions, see Appendix A.1.

B. Entry Decision at Period I

Let the expected present value of financing developing country's project in the first period be $V^I(r)$, where the superscript "I" stands for period I. Given the derived cutoff rates of return of staying, r^*, in subsequent periods, $V^I(r)$ is expressed as follows:

$$V^I(r) = \pi\,[r^+ + \delta\,\{F(r^*)V^{II}(r) + (1-F(r^*))(E(V^H(r)\mid r \geq r^*) - c)\}] \\ +(1-\pi)[0 + \delta\,(EV^H(r) - c)]. \tag{4}$$

The cutoff rate of return of entry decision, $\hat{r}$, is derived by solving $V^I(\hat{r}) - e = V^H(\hat{r})$. If the realized r in the first period is less than $\hat{r}$, the investors enter. Otherwise, they stay in the alternative investment opportunities in their home markets.

(1) When $r^* = \bar{r}/\delta\,\pi - \sqrt{A}$, we have $V^{II}(r^*) = V^H(r^*) - c$ from the second period and $V^H(\hat{r}) = V^I(\hat{r}) - e$ from the first period. Note that the right side of (4) is exactly the same as that of (2). This is because investors have the same information structures in the beginning of both periods. Thus $V^I(\hat{r})$ is equal to $V^{II}(r^*)$, which in turn derives $V^H(\hat{r}) + e = V^H(r^*) - c$. Solving this equation, $\hat{r}$ is derived as $\hat{r} = \max[0,\ r^* - e - c]$.

(2) When $r^* = \bar{r}$, $V^{II}(r^*) > V^H(r^*) - c$ for any $\bar{r}$. In this case, therefore, we cannot use the relation, $V^H(\hat{r}) + e = V^H(r^*) - c$. By solving directly from $V^H(\hat{r}) = V^I(\hat{r}) - e$ with $r^* = \bar{r}$, we have $\hat{r} = \min[\bar{r}, -e - \delta c + \pi r^+ + (\delta\,\pi/2)\bar{r}]$.[6]

Proposition 2

When the outside opportunity of investment is the same for both investors, the unique stable cutoff rate of entry decision, $\hat{r}$, in the first period is

$$\hat{r} = \begin{cases} \max[0,\ r^* - e - c] & \text{if } \bar{r} > \dfrac{2}{2-\delta\pi}(c - \delta c + \pi r^+) \\ -e - \delta c + \pi r^+ + \dfrac{\delta\,\pi}{2}\,\bar{r} & \text{if } \dfrac{2}{2-\delta\pi}(-e - \delta c + \pi r^+) < \bar{r} \leq \\ & \qquad \dfrac{2}{2-\delta\pi}(c - \delta c + \pi r^+) \\ \bar{r} & \text{if } \bar{r} \leq \dfrac{2}{2-\delta\pi}(-e - \delta c + \pi r^+). \end{cases}$$

[6]The details in the cases of corner solutions, see Appendix A.2.

TABLE 1

$\hat{r}$ AND r^* FOR VARIOUS VALUES OF $\bar{r}$ IN BENCHMARK MODEL

$\bar{r}$	period I : Entry $\hat{r}$	period $II+$: Exit r^*
4.0	$r=4.0$	$r=4.0$ (A)
5.3	4.92	$r=5.3$ (B)
6.0	4.20	4.6 (C)

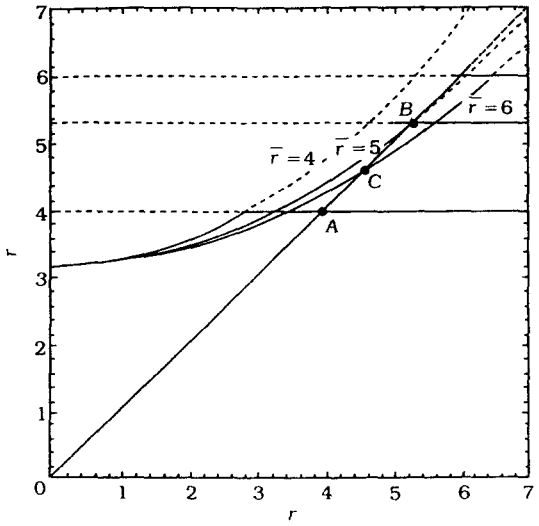

FIGURE 1

r^* FOR VARIOUS VALUES OF $\bar{r}$ IN BENCHMARK MODEL

In summary of Proposition 1 and Proposition 2, the equilibrium cutoff rates of entry and exit are arranged according to $\bar{r}$ as follows:

$$(r^*,\ \hat{r})=\begin{cases}\left(\dfrac{\bar{r}}{\delta\pi}-\sqrt{A},\ \max[0,\ r^*-e-c]\right) & \text{if } \bar{r}>\dfrac{2}{2-\delta\pi}(c-\delta c+\pi r^+)\\[2ex] \left(\bar{r},\ -e-\delta c+\pi r^++\dfrac{\delta\pi}{2}\bar{r}\right) & \text{if } \dfrac{2}{2-\delta\pi}(-e-\delta c+\pi r^+)<\bar{r}\le \dfrac{2}{2-\delta\pi}(c-\delta c+\pi r^+)\\[2ex] (\bar{r},\ \bar{r}) & \text{if } \bar{r}\le \dfrac{2}{2-\delta\pi}(-e-\delta c+\pi r^+),\end{cases}$$

$$\text{where } A = \frac{\bar{r}^2}{\delta^2 \pi^2} - \frac{2\bar{r}}{\delta\ \pi}(c - \delta c + \pi r^+).$$

Note that the cutoff rate of entry is less than that of exit by the sum of entry fee and exit cost, i.e. $\hat{r} = r^* - e - c$ when $r^* \leq \bar{r}$. To attract FDI in the local project in period I, therefore, the host government should reduce the entry fee which may be incurred by the feasibility study and business set-up, and the exit cost which may be incurred by the partial irreversibility of the sunken asset. However, the effect of the exit cost is *two-edged*: Although the low exit cost promotes the FDI inflows, it is also less costly for the investors to exit after they enter in the first period.

C. Numerical Examples

For the numerical and graphical presentations, the following parameter values are used throughout in Table 1, 2, 3: $\delta = 0.9$, $\pi = 0.9$, $e = c = 0.2$, $r^+ = 3.5$, $\theta = 0.2$.

In Table 1, there is a unique stable equilibrium cutoff rate to a given value of $\bar{r}$ as shown in Proposition 1 and Proposition 2. As the maximum alternative values of the rate of return increase, the prior probability of an investor's entry in period I is decreasing, and the probability of an investor's exit is weakly increasing.[7] Figure 1 shows the equilibrium exit cutoff rates for alternative values of $\bar{r}$.

V. Asymmetric Investors without Private Information

In this section, two MNCs face alternative investment opportunities which do not necessarily generate the same rates of return. However, the realized rates of return from both alternatives are known to all, and there is no private information. In this section and the next section, due to the computational complication, I only present implicit functions for the exit and the entry cutoff rates.[8]

[7]As $\bar{r}$ increases from 4.0 to 5.3 and to 6.0, the probability of entry changes from 1 (=4.0/4.0) to 0.93 (=4.92/5.3) and to 0.70 (=4.20/6.0), respectively.

[8]The cases of corner solutions such as zero or $\bar{r}$ are not considered, although it is necessary to give attention to some parameter values. The same logic can be used to consider corner solutions as in the benchmark model.

A. Exit Decision at Period II

Let $V_1^{II}(r)$ represent the expected net present value of staying with realized r in developing country in period *II* when only *one* investor stays:

$$V_1^{II}(r) = \pi\,[\,\theta r^{+} + \delta\,\{F(r_1^*)V_1^{II}(r) + (1-F(r_1^*))(E(V^H(r)\mid r \geq r_1^*) - c)\}] \\ +(1-\pi)[0+\delta\,(EV^H(r)-c)]. \tag{5}$$

In (5), the first bracket expresses the expected value of the project when the reform sustains, which is the sum of the payoff in the current period, θr^{+}, and the expected present value from next period and on. Note that the rate of return in period *II* is θr^{+} to a foreign investor since only one project is financed by the foreign investor with advanced technology. The second bracket is the expected value when the reform fails.

The reservation cutoff rate, r_1^*, satisfies $V_1^{II}(r_1^*) = V^H(r_1^*) - c$, which gives the following relationship:

$$r_1^* = c - \delta c + \pi\theta r^{+} + \frac{\delta\pi}{2\bar{r}} r_1^{*2}. \tag{6}$$

If the realized alternative rate of return is less than r_1^*, the investor stays in the developing country.

$V_2^{II}(r)$ is similarly defined when *both* investors stay in period *II*:

$$V_2^{II}(r) = \pi\,[r^{+} + \delta\,\{F(r_2^*)[F(r_2^*)V_2^{II}(r) + (1-F(r_2^*))(E(V^H(r)\mid r \geq r_2^*) - c)] \\ +(1-F(r_2^*))[F(r_1^*)V_1^{II}(r) + (1-F(r_1^*))(E(V^H(r)\mid r \geq r_1^*) - c)]\}] \\ +(1-\pi)[0+\delta\,(EV^H(r)-c)]. \tag{7}$$

In (7), the first big bracket is the net present value when reform is sustained in period *II*, which is composed of two terms: (1) the rate of return in the current period, r^{+}, and (2) the expected present value from the next period on; the terms inside of the brace consists of two cases: (i) when the other investor stays in the host country, and (ii) when it exits in period *III*.

The reservation cutoff rate, r_2^*, is such that $V_2^{II}(r_2^*) = V^H(r_2^*) - c$, which gives the following relationship:

$$r_2^* = c - \delta c + \pi r^{+} + \frac{\delta\pi}{2\bar{r}}[F(r_2^*)r_2^{*2}] + (1-F(r_2^*))r_1^{*2}] \\ = c - \delta c + \pi r^{+} + \frac{\delta\pi}{2\bar{r}}[\frac{r_2^*}{\bar{r}} r_2^{*2} + (1-\frac{r_2^*}{\bar{r}}) r_1^{*2}]. \tag{8}$$

With two investors in the previous period, if each investor's realized alternative rates in the second and the subsequent periods are less than r_2^*, both investors stay through period *II* and on. Therefore, the probability that both investors stay in period *II* is $r_2^{*2}/\bar{r}^2$. If any investor's realized r_2 in the second period is greater than r_2^*, it exits to the alternative investment opportunity. Then the other investor has to use r_1^* instead of r_2^* as a cutoff rule due to the *foregone positive spillover*. If the realized r is less than r_1^*, then this investor stay. Otherwise, it also exits to the alternative investment opportunity. Therefore, the probability that one investor stays given two investors enter in period *I*, is $2r_1^*(\bar{r}-r_2^*)/\bar{r}^2$. If only one investor enters in period *I*, the probability of the investor staying is just $r_1^*/\bar{r}$.

B. Entry Decision at Period I

Once each MNC observes its own rate of return as well as the rate of return realized by others, each investor's cutoff rate for entry and the number of project(s) to be financed in period *I* are to be decided. Given the observation of the realized alternative rates of return in period *I* and the derived cutoff rates of exit, r_1^* and r_2^*, the expected present value of entry can be derived by a similar approach to the benchmark model case. Let $V_i^I(r)$ be the expected present value of investing in a project of the developing country with i number of project(s) financed by foreign investors. $V_1^I(r)$ and $V_2^I(r)$ are expressed as following:

$$V_1^I(r) = \pi\,[\,\theta\, r^+ + \delta\,\{F(r_1^*)V_1^{II}(r)+(1-F(r_1^*))(E(V^H(r)\mid r\geq r_1^*)-c)\}]$$
$$+(1-\pi)[0+\delta\,(EV^H(r)-c)].$$
$$V_2^I(r) = \pi\,[r^+ + \delta\,\{F(r_2^*)[F(r_2^*)V_2^{II}(r)+(1-F(r_2^*))(E(V^H(r)\mid r\geq r_2^*)-c)]$$
$$+(1-F(r_2^*))[F(r_1^*)V_1^{II}(r)+(1-F(r_1^*))(E(V^H(r)\mid r\geq r_1^*)-c)]\}]$$
$$+(1-\pi)[0+\delta\,(EV^H(r)-c)].$$

It is notable that the information structures are the same in both period *I* and period *II*, and the expected present value of entry depends on the *number* of the investors in period *I*: $V_1^I(r)=V_1^{II}(r)$, and $V_2^I(r)=V_2^{II}(r)$. Furthermore, $V_1^I(\hat{r}_1)=V_1^{II}(r_1^*)$, and $V_2^I(\hat{r}_2)=V_2^{II}(r_2^*)$. Since the cutoff rates for entry are decided such that the expected present value from investment in the reform project is the same as that from an alternative investment opportunity, the cutoff rate of

entry $\hat{r}_1$ satisfies that $V_1^I(\hat{r}_1)-e=V^H(\hat{r}_1)$ when only one project is financed. With the relation of $V_1^{II}(r_1^*)=V^H(r_1^*)-c$ from period *II*, $V^H(\hat{r}_1)+e=V^H(r_1^*)-c$, which gives the solution for the cutoff rate of entry, $\hat{r}_1$:

$$\hat{r}_1=r_1^*-e-c=-e-\delta c+\pi\theta r^{+}+\frac{\delta\pi}{2\bar{r}}r_1^{*2}.$$

Similarly, when two projects are financed in period *I*, the cutoff rate of entry, $\hat{r}_2$ is

$$\hat{r}_2=r_2^*-e-c=-e-\delta c+\pi r^{+}+\frac{\delta\pi}{2\bar{r}}\left[\frac{r_2^*}{\bar{r}}r_2^{*2}+\left(1-\frac{r_2^*}{\bar{r}}\right)r_1^{*2}\right].$$

If an investor's alternative rate of return is less than or equal to $\hat{r}_2$, the investor will enter if the other investor's alternative rate of return is also less than or equal to $\hat{r}_2$. In this case, both investors will enter. Therefore, the probability of both projects being financed a priori, is $\hat{r}_2^2/\bar{r}^2$. If an investor's realized r in period *I* is greater than $\hat{r}_2$, it stays in the alternative investment opportunity. Then the other investor has to use $\hat{r}_1$ as a cutoff rule. Therefore, the probability that one investor enters in period 1 is $2\hat{r}_1(\bar{r}-\hat{r}_2)/\bar{r}^2$. Otherwise, the investor also stays in the alternative investment opportunity.

C. Numerical Examples

From using the same numerical values as in the benchmark case, Table 2 shows the entry and the exit cutoff rates for varying $\bar{r}$. Figures 1 and 2 show the equilibrium cutoff rates for the exit decision with two projects financed.

When $\bar{r}=4$, two investors enter with a probability of 1 since $\hat{r}_2=\bar{r}=4$, and $\hat{r}_1(=0.3)$ is not an equilibrium. Unless reform fails, two investors stay afterwards since $r_2^*=\bar{r}=4$, and $r_1^*(=0.7)$ is not an equilibrium, either.

When $\bar{r}=6$, there is a unique, low equilibrium of $r_2^*=3.8$ and a unique $\hat{r}=3.4$. Two investors enter with a probability of 0.32 a priori, and the probability of one investor's entry is 0.04 a priori.[9]

When $\bar{r}=5.3$, however, there are two stable equilibria of $\hat{r}_2(=4.03$

[9]When $\bar{r}=6$, $\hat{r}_2^2/\bar{r}^2=3.4^2/6.0^2=0.32$. And, $2\hat{r}_1(\bar{r}-\hat{r}_2)/\bar{r}^2=2\times0.28\times(6.0-3.4)/6.0^2=0.04$.

TABLE 2

$\hat{r}$ AND r^* FOR VARIOUS VALUES OF $\bar{r}$ WITHOUT PRIVATE INFORMATION

$\bar{r}$	period I : Entry			period II+ : Exit		
	$\hat{r}_1$		$\hat{r}_2$	r_1^*		r_2^*
4.0	(0.30)		$\bar{r}=4.0$	(0.70) (*a*)		$\bar{r}=4.0$ (*A*)
5.3	0.29	4.03	4.92	0.69 (*b*)	4.43 (B_1)	$\bar{r}=5.3$ (B_2)
6.0	0.28	3.40		0.68 (*c*)	3.80 (*C*)	

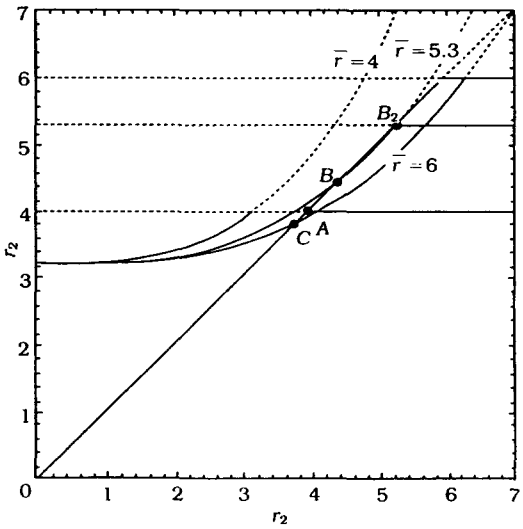

FIGURE 2

r_2^* FOR VARIOUS VALUES OF $\bar{r}$ WITHOUT PRIVATE INFORMATION

and 4.92) and two stable equilibria of r_2^*(=4.43 and 5.3). Deciding which equilibria to apply in their decision of entry or exit is a pure *coordination problem* between investors. All rational investors would want to use the efficient (higher) cutoff rate. However, pessimistic expectations spurred by some exogenous factors may induce investors to hire the inefficient rate. If the investors apply $\hat{r}=4.92$, the efficient (higher) cutoff rate, two investors enter with a probability of 0.86 a priori. If both investors apply $\hat{r}=4.03$, the inefficient (lower) cutoff rate, two investors enter with a probability of 0.58 a priori.[10]

This large probability discrepancy, 0.86 vs. 0.58, depends on the belief in the other investor's choice of cutoff rate from among the multiple equilibria.

For example, when $\bar{r}=5.3$, if an investor's alternative rate of return is 4.80, the decision depends on (1) the other investor's alternative opportunity, say 4.91, and (2) the belief in the other investor's cutoff rule. If the investor with $r=4.80$ believes that the other uses the efficient, higher cutoff rate, then it will enter. However, if it believes that the other with $r=4.91$ uses the lower cutoff rate, 4.03, for any reason, it will not enter.

VI. Asymmetric Investors with Private Information

In this section, the realized rate of return from an alternative investment opportunity is private information and is not credibly communicated.

A. Exit Decision at Period II

At the beginning of the second period on, a foreign investor decides whether it will operate for that period or not. An investor's decision to exit is based on the same rules from the second period on, which depends on how many projects are financed in the *previous* period: The cutoff rate of return for the exit decision with two investors in the previous period is different from that with one investor in the previous period.

Let $V_i^{II}(r)$ be the expected net present value of staying in a reform project with i number of project(s) financed in the *previous* period. Due to private information, investors who invested in reform projects in period I do not know how many investor(s) will remain in the host country when the exit decision is made. Without private information, the payoff depends on the number of projects financed in the *current* period.

Let $V_1^{II}(r)$ be the expected net present value of staying with

[10]When $\bar{r}=5.3$, if investors apply the efficient (higher) cutoff rate, $\hat{r}=4.92$, the probability of two projects financed is $4.92^2/5.3^2=0.86$, and the probability of one project financed is $2\times0.29\times(5.3-4.92)/5.3^2=0.008$. If investors use the inefficient (lower) cutoff rate, $\hat{r}=4.03$, the probabilities are $4.03^2/5.3^2=0.58$, and $2\times0.29\times(5.3-4.03)/5.3^2=0.028$, respectively.

realized r in the developing country with one project financed in the *previous* period:

$$V_1^{II}(r) = \pi[\theta r^+ + \delta\{F(r_1^*)V_1^{II} + (1-F(r_1^*))(E(V^H(r)\mid r \geq r_1^*) - c)\}] + (1-\pi)[0 + \delta(EV^H(r) - c)]. \tag{9}$$

The cutoff rate of exit, r_1^* satisfies so that $V_1^{II}(r_1^*) = V^H(r_1^*) - c$, and gives the following relationship:

$$r_1^* = c - \delta c + \pi\theta r^+ + \frac{\delta\pi}{2\bar{r}} r_1^{*2}. \tag{10}$$

$V_2^{II}(r)$ is similarly defined when two projects are financed in the previous period:

$$\begin{aligned} V_2^{II}(r) = {} & \pi F(r_2^*)[r^+ + \delta\{F(r_2^*)V_2^{II}(r) + (1-F(r_2^*))(E(V^H(r)\mid r \geq r_2^*) - c)\}] \\ & + \pi(1-F(r_2^*))[\theta r^+ + \delta\{F(r_1^*)V_1^{II} + (1-F(r_1^*))(E(V^H(r)\mid r \geq r_1^*) - c)\}] \\ & + (1-\pi)[0 + \delta(EV^H(r) - c)]. \end{aligned} \tag{11}$$

In (11), the first two brackets are the net present value when the reform is sustained: (1) The first term is the expected present value multiplied by the probability of the other investor staying in the current period, $F(r_2^*)$. (2) The second term is the expected present value multiplied by the probability of the other investor exiting, $1 - F(r_2^*)$. The third bracket represents the situation wherein the reform is not sustained.

The cutoff rate of exit, r_2^* is such that $V_2^{II}(r_2^*) = V^H(r_2^*) - c$, which gives the following relationship:

$$\begin{aligned} r_2^* &= c - \delta c + \pi[F(r_2^*)r^+ + (1-F(r_2^*))\theta r^+] + \frac{\delta\pi}{2\bar{r}}[F(r_2^*)r_2^{*2} + (1-F(r_2^*))r_1^{*2}] \\ &= c - \delta c + \pi[\frac{r_2^*}{\bar{r}} r^+ + (1-\frac{r_2^*}{\bar{r}})\theta r^+] + \frac{\delta\pi}{2\bar{r}}[\frac{r_2^*}{\bar{r}} r_2^{*2} + (1-\frac{r_2^*}{\bar{r}}) r_1^{*2}]. \end{aligned} \tag{12}$$

The choice of the cutoff rule in this section is slightly different from that of the previous section. In this section, the other investor's alternative opportunity is private information. Therefore, the decision rule of exit cannot be dependent upon the number of projects in the current period. When two investors stay in the *previous* period, and if an investor's realized r_2 in the second period is less than r_2^*, then the investor stays. Otherwise, the investor exits to the alternative investment opportunity. Therefore, the

probability that both investors stay is $r_2^{*2}/\bar{r}^2$, and only one investor stays with the probability of $2r_2^*(\bar{r}-r_2^*)/\bar{r}^2$. Note that in the model *without* private information, given that two investors enter in the previous period, only one investor stays with the probability of $2r_1^*(\bar{r}-r_2^*)/\bar{r}^2$.

When there is only one investor in the previous period, the investor uses the cutoff rate of r_1^*, and the probability of this investor's staying is just $r_1^*/\bar{r}$, which is the same as in the case without private information.

B. Entry Decision at Period I

Let $V^I(r)$ be the expected present value of financing a project in the developing country. Given the cutoff rates of return of exit, r_1^* and r_2^*, in subsequent periods, $V^I(r)$ is expressed as following:

$$\begin{aligned} V^I(r) = {} & \pi F(\hat{r})[r^+ + \delta\{F(r_2^*)V_2^{II}(r) + (1-F(r_2^*))(E(V^H(r)\mid r \geq r_2^*) - x)\}] \\ & + \pi(1-F(\hat{r}))[\theta r^+ + \delta\{F(r_1^*)V_1^{II} + (1-F(r_1^*))(E(V^H(r)\mid r \geq r_1^*) - x)\}] \\ & + (1-\pi)[0 + \delta(EV^H(r) - x)]. \end{aligned} \tag{13}$$

The first two brackets are the terms of the expected present value of the project when reform is sustained in the first period, and is composed of two cases: (1) the other investor also enters with probability of $F(\hat{r})$, and (2) the other investor does not enter with probability of $1-F(\hat{r})$. The third bracket is the expected present value when the reform fails.

The reservation cutoff rate of return, $\hat{r}$, is such that $V^I(\hat{r}) - e = V^H(\hat{r})$:

$$\begin{aligned} \hat{r} &= c - \delta c + \pi[F(\hat{r})r^+ + (1-F(\hat{r}))\theta r^+] + \frac{\delta\pi}{2\bar{r}}[F(\hat{r})r_2^{*2} + (1-F(\hat{r}))r_1^{*2}] \\ &= c - \delta c + \pi[\frac{\hat{r}}{\bar{r}}r^+ + (1-\frac{\hat{r}}{\bar{r}})\theta r^+] + \frac{\delta\pi}{2\bar{r}}[\frac{\hat{r}}{\bar{r}}r_2^{*2} + (1-\frac{\hat{r}}{\bar{r}})r_1^{*2}]. \end{aligned} \tag{14}$$

A foreign investor finances a project in a developing country if $r \leq \hat{r}$. Otherwise, the investor stays in the alternative investment opportunity. The probability of both projects being financed a priori, is $\hat{r}^2/\bar{r}^2$. And, the probability that one investor enters in period I is $2\hat{r}(\bar{r}-\hat{r})/\bar{r}^2$, which is also in contrast with the probability in the model without private information, $2\hat{r}_1(\bar{r}-\hat{r}_2)/\bar{r}^2$.

TABLE 3

$\hat{r}$ AND r^* FOR VARIOUS VALUES OF $\bar{r}$ WITH PRIVATE INFORMATION

$\bar{r}$	period I : Entry		period II+ : Exit		
		$\hat{r}$	r_1^*		r_2^*
4.0		$r=4.0$	(0.70) (a)		$r=4.0$ (A)
5.3	0.57	2.26	0.69 (b)	1.36 (B_1)	$r=5.3$ (B_2)
6.0	0.50		0.68 (c)	1.20 (C)	

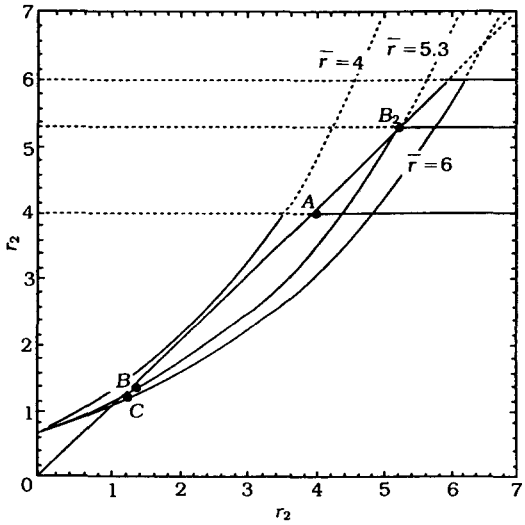

FIGURE 3

r_2^* FOR VARIOUS VALUES OF $\bar{r}$ WITH PRIVATE INFORMATION

C. Numerical Examples

From using the same numerical values as in the benchmark case, Table 3 shows the entry and the exit cutoff rates for varying $\bar{r}$. Figure 3 shows the equilibrium cutoff rates for the exit decision.

When $\bar{r}=4$, two investors enter in period I with probability of 1 and stay afterward unless reform fails, since $\hat{r}=4=\bar{r}$, and $r_2^*=4=\bar{r}$. And $r_1^*=0.7$ is not an equilibrium.

When $\bar{r}=6$, there is a unique, low equilibrium of $r_2^*(=1.20)$. Two investors enter with probability of 0.01 a priori, and one investor

enters with probability of 0.2 a priori.

When $\bar{r}=5.3$, however, there are two stable equilibria of $\hat{r}$ (=0.57 and 2.26) and two stable equilibria of r_2^*(=1.36 and $\bar{r}$). Which equilibria is applied in the decision of entry or exit is just a pure coordination problem between investors. If both investors apply $\hat{r}=2.26$, the efficient entry cutoff rate, two investors enter with a probability of 0.18 a priori. Both investors apply $\hat{r}=0.57$, the inefficient cutoff rate, two investors enter with probability of 0.01 a priori.[11] The probabilities of two projects being financed by foreign investors (0.18 and 0.01) *decrease* drastically from the case of those *without* private information (0.86 and 0.58). In period *II* and on, if two investors enter in the previous period and the efficient cutoff rate is used, then they stay afterward with a probability of 1, unless reform fails since $r_2^*=5.3=\bar{r}$. If an inefficient rate is used for some reason, the probability of both investors staying is 0.07.[12] Without credible communication, there may be a coordination failure. Shift of the belief in the equilibrium cutoff rate used by other investors results in a huge discrepancy in the optimal behavior by foreign investors and the extent of FDI inflows or stock: from staying with a probability of 1 to staying with probability of 0.07.

VII. Comparison of Three Cases

In this section, the equilibrium cutoff rates in three cases of different information structures, are compared with each other. The basic features of their order are derived by relying on intuitive presentation, and the analyses of the corner solutions are omitted. To distinguish the notations for the three cases from one another, superscripts are used: "S" for the symmetric case, "N" for the asymmetric but no-private information case, and "P" for the case of

[11]When $\bar{r}=5.3$, if investors apply the efficient (higher) cutoff rate, $\hat{r}=2.26$, the probability of two projects financed is $2.25^2/5.3^2=0.18$, and the probability of one project financed is $2\times2.26\times(5.3-2.26)/5.3^2=0.49$. If the investors use the inefficient (lower) cutoff rate, $\hat{r}=0.57$, the probability of two projects financed is $0.57^2/5.3^2=0.01$, and the probability of one project financed is $2\times0.57\times(5.3-0.57)/5.3^2=0.19$, respectively.

[12]If the investors use the inefficient (lower) cutoff rate, $\hat{r}=1.36$, the probability of two projects financed is $1.36^2/5.3^2=0.07$, and the probability of one project financed is $2\times0.69\times(5.3-1.36)/5.3^2=0.38$.

private case. The equations that derive the equilibrium cutoff rates of exit and entry are listed as following:

S: $$r^* = c - \delta c + \pi r^+ + \frac{\delta \pi}{2\bar{r}} r^{*2}$$

$$\hat{r} = r^* - e - c$$

N: $$r_1^* = c - \delta c + \pi \theta r^+ + \frac{\delta \pi}{2\bar{r}} r_1^{*2}$$

$$r_2^* = c - \delta c + \pi r^+ + \frac{\delta \pi}{2\bar{r}} [\frac{r_2^*}{\bar{r}} r_2^{*2} + (1 - \frac{r_2^*}{\bar{r}}) r_1^{*2}]$$

$$\hat{r}_1 = r_1^* - e - c = -e - \delta c + \pi \theta r^+ + \frac{\delta \pi}{2\bar{r}} r_1^{*2}$$

$$\hat{r}_2 = r_2^* - e - c = -e - \delta c + \pi r^+ + \frac{\delta \pi}{2\bar{r}} [\frac{r_2^*}{\bar{r}} r_2^{*2} + (1 - \frac{r_2^*}{\bar{r}}) r_1^{*2}]$$

P: $$r_1^* = c - \delta c + \pi \theta r^+ + \frac{\delta \pi}{2\bar{r}} r_1^{*2}$$

$$r_2^* = c - \delta c + \pi [\frac{r_2^*}{\bar{r}} r^+ + (1 - \frac{r_2^*}{\bar{r}}) \theta r^+] + \frac{\delta \pi}{2\bar{r}} [\frac{r_2^*}{\bar{r}} r_2^{*2} + (1 - \frac{r_2^*}{\bar{r}}) r_1^{*2}]$$

$$\hat{r} = c - \delta c + \pi [\frac{\hat{r}}{\bar{r}} r^+ + (1 - \frac{\hat{r}}{\bar{r}}) \theta r^+] + \frac{\delta \pi}{2\bar{r}} [\frac{\hat{r}}{\bar{r}} r_2^{*2} + (1 - \frac{\hat{r}}{\bar{r}}) r_1^{*2}]$$

***Proposition* 3**

1. Given parameter values, the equilibrium cutoff rates of exit (or at least one of the multiple equilibria) of the three cases are in the following order:

$$(r^*)^S \geq (r_2^*)^N \geq (r_2^*)^P \geq (r_1^*)^N = (r_1^*)^P.$$

2. Given parameter values, the equilibrium cutoff rates of entry (or at least one of the multiple equilibria) of th three cases are in the following order:

$$(\hat{r})^S \geq (\hat{r}_2)^N \geq (\hat{r})^P \geq (\hat{r}_1)^N.$$

VIII. Discussion

The analysis of the model shows that there are two main sources of dampening FDI inflows to developing countries: (1) One is the combined effect of pessimistic expectation and failure to coordinate in the choice of higher cut-off rate in multiple equilibria which forces investors to *choose* a Pareto-inefficient equilibrium. This effect does not stem from the presence of private information, but from the complementarity of the reform projects. (2) The other one is the combined effect of private information and the possibility of foregone positive spillover, which *lowers* the incentive of FDI inflows and decreases the FDI inflows to developing countries.

Multiple equilibria arise from economic complementarity among projects, which in turn explains the lack of FDI inflows in some developing countries. Multiple equilibria arise due to the complementarity of the projects, regardless of the existence of private information. Which multiple equilibria are applied in the decision of entry or exit is a pure coordination problem between investors. A Pareto-inferior equilibrium may be realized due to the MNCs' pessimistic expectations and failure to coordinate investment in the essential projects of developing countries. MNCs would restrain themselves from investing in any project, even when it is optimal to invest in a group of projects simultaneously in terms of individual profit making or world welfare. Therefore, a large proportion of FDI flows depends on the belief in the other investor's choice of cutoff rate from among the multiple equilibria.

If the index for developmental stage, θ, of technology in a country is 1, the maximum rate of return for the reform projects can be realized *regardless* of FDI. In this case, the cutoff rates for the entry in all of three models are same, and similarly the cutoff rates for the exit in all three cases are the same. This explains the disproportionate inflows of FDI into developed countries in which complementarity does not play any role in the investment decision as seen in the numerical example in the benchmark model: There is a unique stable equilibrium for exit and entry as in the benchmark model with symmetric investors, and the probability of FDI inflow and remaining in the project of a host country is very high. If there is a learning effect from FDI which brings advanced technologies along with capital, and the domestic entrepreneur can produce the same quality goods, then the index θ increases to 1.

This dynamic aspect of technology development is beyond the scope of this paper, although it is an important point for the future research.

In addition to the problem of coordination failure in multiple equilibria, the analysis suggests that the intertwined effect of private information and complementarity dampens *drastically* the incentive of foreign investors to invest in developing countries. Due to the private information and lack of credible communication, the expected value of entry or staying in the developing country's project has to incorporate the possibility of only one project being financed, which reduces the rate of return due to the complementarity of projects. However, multiple equilibria do not result from the existence of private information but from the complementarity among the projects as mentioned before.

Uncertainty is represented as π, stems from the economic factors as well as the political factors. Since physical investment is partly sunk, rational behavior by foreign investors calls for withholding investment until uncertainty regarding the success of the reforms is mostly eliminated. Without investment, however, reforms are less likely to be sustainable, and investment will not be forthcoming in the presence of uncertainty in reform survival, constituting a *vicious circle*. Hence the success of reform policies may depend on investors' expectation to some extent and a reform can be reversed by pessimistic expectations that prove self-fulfilling. In particular, pessimistic expectation in the presence of multiple equilibria from complementarity proves detrimental to FDI inflow.

Increasing exit cost would hurt the investment incentive in the first period, while it increases the irreversibility of capital invested in a reform project. If the provision of property rights is not adequate or the commitment to them is loose, therefore, the host government has every incentive to deviate from the original provision of the property right once after foreign capital is invested in the reform project. Based on rational expectation, potential investors are reluctant to invest in developing countries where the rules applied to capital movement are not properly institutionalized. Therefore, the provision of the property right, the commitment to it, and the enforcement of this provision are very important in order for the government of developing countries to attract potential foreign investors.

In summary, the analysis of this paper gives the intuition to

explain why FDI is less distributed in some of developing countries at a sub-optimal level, and why the institutional arrangements – (1) the development of intense economic linkages in subregional economic zones (SREZs), and (2) the Chinese approach to economic reform by special economic zones (SEZs) – have attracted a large share of FDI to Asia, particularly in China, among developing countries.

(1) The economic complementarity arises from different levels of economic development and different resource endowments in geographically contiguous subregion in Asia. It generates the beneficial spillover effects when a group of countries simultaneously adopts outward-oriented policies (Lawrence 1996): Countries following export-oriented strategies create growing markets for their trading partners who are suppliers of key inputs, such as technology, capital, and intermediate goods, from neighbor countries. Therefore, Asia has been capable of generating a rapid increase in trade owing to growth and a *virtuous regional circle with networks*. This example illustrates the positive spillover effects of complementarity among projects that are linked in the contiguous subregions. Among others, the main driving forces of the development of Asia SREZs are economic complementarity and growth spillover. The export-oriented foreign investors are attracted to this competitive business environment from intensive economic linkages. These innovative institutional arrangement, formal or informal, have been facilitated by national rules easing FDI and by more localized inducements negotiated among relevant parites. The institutionalized national rules and the bilateral or multilateral agreements among states also ease the concern of the potential investor regarding uncertainty.

(2) In the Chinese case, the economic reform policy of designating limited areas as special zones can serve dual purposes, political and economic: The policy can reduce resistance to the new open policies and prevent the policies toward foreign investment from being blocked by opposition form the existing power group who may be adversely affected by this move. Moreover, by starting on a small scale, it may be easy for a central or a local government to finance the essential infrastructure for the zone necessary to attract sufficient investment to develop industries while avoiding the risk of excess foreign dependency.

Central governments or local governments can provide the necessary infrastructure investment with domestic means or foreign

aid and technological advice from international institutions such as the World Bank, IMF, UNDP, and/or UNCTAD. One of the major difficulties faced by the foreign investors operating in China has been the absence of a workable economic infrastructure; electricity, roads and communication are in short supply. One way to facilitate the build-up of a well-developed infrastructure in China is to bring in other capital-rich large firms to develop industrial parks project which is a manifestation of the beneficial spillover effect from the complementarity of economic activities. Participation by foreign investors in projects on things such as energy, communications, and transportation infrastructure facilitates the capital formation required for infrastructure build-up, but also meets the needs of potential investors (Jun and Simon 1992).

The analyses in this paper generate some implications for government in economic reform to attract FDI inflow: (1) By making a credible commitment to pursue reform, governments can attract foreign investment in essential projects and ensure their ongoing commitment to the projects. Since most reforms are technically reversible, and the erosion of reputation and underlying political support emerges only over time, establishing credibility is an imperative task to be achieved. Thus, governments need to reduce the uncertainty of the reform reversal and to assure investors by signaling the seriousness and irreversibility of policies. One such means is to make a credible commitment by increasing the cost of policy reversal through institutional changes such as the delegation of authority to independent agencies or the signing of international agreements to provide institutional means for oversights and enforcement. (2) A greater exchange of information on an official and unofficial bilateral and/or multilateral basis would also facilitate the processes of locating the right project for a potential investor and communicating the investors' decisions credibly. For example, the United Nations Development Program (UNDP) is sponsoring conferences among interested parties and funding feasibility studies of the Tumen River Delta Area (TREDA) project. Through these activities, the UNDP takes up the role of disseminating information among potential investors. The basic rationale for TREDA arrangements is the joint development of infrastructure to attract investments from outside the SREZ to develop the subregion's resources. Although such proposals face the severe problems of finding financing for the scale of investment required, joint infra-

structure development can ensure attractive returns to investment in other projects. (3) By simplifying the administrative procedures, the set-up cost or the entry cost can be reduced to facilitate the firms to get their projects up and running in the shortest possible time. (4) Favorable tax treaties and an investment guarantee system can increase the rate of return from assets in developing countries. (5) By protecting property rights with national treatment when the capital is to be recapitulated, the exit cost can be reduced. All of these provisions can make the potential investors' entry decision more favorable to the developing country.

Appendix

Appendix A: Proofs of Propositions

1. Proof of Proposition 1

By solving (3),

$$r^* = c - \delta c + \pi r^+ + \frac{\delta \pi}{2\bar{r}} r^{*2}.$$

r^* has two roots, $(\bar{r}/\delta\pi) - \sqrt{A}$ and $(\bar{r}/\delta\pi) + \sqrt{A}$ where $A = (\bar{r}^2/\delta^2\pi^2) - (2\bar{r}/\delta\pi)(c - \delta c + \pi r^+)$.

When

$$A \geq 0,\ \sqrt{A} = \frac{r}{\delta\pi}\sqrt{1 - \frac{2\delta\pi}{\bar{r}}(c - \delta c + \pi r^+)} < \frac{r}{\delta\pi}$$

since

$$1 - \frac{2\delta\pi}{\bar{r}}(c - \delta c + \pi r^+) < 1.$$

Hence, $(\bar{r}/\delta\pi) - \sqrt{A} > 0$ and this is an equilibrium. Since $(\bar{r}/\delta\pi) + \sqrt{A} > \bar{r}$, there is a *unstable* equilibrium, $r^* = \min[\bar{r}, (\bar{r}/\delta\pi) + \sqrt{A}] = \bar{r}$ along with a unique stable cutoff rate of exit, $r^* = \min[\bar{r}, (\bar{r}/\delta\pi) - \sqrt{A}]$.

When $A < 0$ which is equivalent to $\bar{r} < 2\delta\pi(c - \delta c + \pi r^+)$, $V^H(r)$ is greater than $V^H(r) - c$ for any r. Therefore, investors always stay in the reform projects unless the reform fails, which is equivalent to $r^* = \bar{r}$. Note that $r^* = \bar{r}$ if $\bar{r} \leq (\bar{r}/\delta\pi) - \sqrt{A}$ when $A \geq 0$ which is equivalent to $2\delta\pi(c - \delta c + \pi r^+) \geq \bar{r} \geq (2/(2 - \delta\pi))(c - \delta c + \pi r^+)$.

Therefore, the unique stable cutoff rate of exit decision, r^*, is.

$$r^* = \begin{cases} \min[\bar{r}, \dfrac{\bar{r}}{\delta\pi} - \sqrt{A}] & \text{if } A \geq 0 \Leftrightarrow \bar{r} \geq 2\delta\pi(c - \delta c + \pi r^+) \\ \bar{r} & \text{if } A < 0 \Leftrightarrow r < 2\delta\pi(c - \delta c + \pi r^+) \end{cases}$$

$$\text{where } A = \frac{\bar{r}^2}{\delta^2\pi^2} - \frac{2\bar{r}}{\delta\pi}(c - \delta c + \pi r^+).$$

$$\text{Equivalently, } r^* = \begin{cases} \dfrac{\bar{r}}{\delta\pi} - \sqrt{A} & \text{if } \bar{r} > \dfrac{2}{2-\delta\pi}(c - \delta c + \pi r^+) \\ r & \text{if } r \leq \dfrac{2}{2-\delta\pi}(c - \delta c + \pi r^+). \end{cases}$$

2. *Proof of Proposition 2*

When $r^* = (\bar{r}/\delta\pi) - \sqrt{A}$, we have $V^{II}(r^*) = V^H(r^*) - c$ from period *II* and $V^H(\hat{r}) = V^I(\hat{r}) - e$ from period *I*. Note that the right side of $V^{II}(r)$ in (2) is exactly same as that of $V^I(r)$ in (4).

This is because investors have the same information structures in the beginning both periods, and the expected payoff from a reform project is *not* dependent on the realized alternative rate of return, r, which plays a critical role in investment decision. Thus $V^I(\hat{r})$ is equal to $V^{II}(r^*)$, which in turn derives $V^H(\hat{r}) + e = V^H(r^*) - c$. Solving this equation, $\hat{r}$ is derived as $r^* - e - c$. Therefore, when $r^* = (\bar{r}/\delta\pi) - \sqrt{A}$, the equilibrium cutoff rate of entry, $\hat{r} = \max[0, (\bar{r}/\delta\pi) - \sqrt{A} - e - c]$.

When $r^* = \bar{r}$, $V^{II}(r^*) > V^H(r^*) - c$ for any $\bar{r}$. In this case, therefore, we cannot use the relation, $V^H(\hat{r}) + e = V^H(r^*) - c$. By solving directly from $V^H(\hat{r}) = V^I(\hat{r}) - e$ with $r^* = \bar{r}$, we have $\hat{r} = -e - \delta c + \pi r^+ + (\delta\pi/2)\bar{r}$. If $\bar{r} > -e - \delta c + \pi r^+ + (\delta\pi/2)\bar{r}$, the equilibrium cutoff rate of entry, $\hat{r}$ is $-e - \delta c + \pi r^+ + (\delta\pi/2)\bar{r}$. Otherwise, $\hat{r} = \bar{r}$.

Therefore, the unique stable cutoff rate of exit decision, r^*, is,

$$\hat{r} = \begin{cases} \max[0, r^* - e - c] & \text{if } r^* = \dfrac{r}{\delta\pi} - \sqrt{A} < \bar{r} \\ \min[\bar{r}, -e - \delta c + \pi r^+ + \dfrac{\delta\pi}{2}\bar{r}] & \text{if } r^* = \bar{r}. \end{cases}$$

$$\text{Equivalently, } \hat{r} = \begin{cases} \max[0,\ r^* - e - c] & \text{if } \bar{r} > \dfrac{2}{2-\delta\pi}(c - \delta c + \pi r^+) \\ -e - \delta c + \pi r^+ + \dfrac{\delta\pi}{2}\bar{r} & \text{if } \dfrac{2}{2-\delta\pi}(-e - \delta c + \pi r^+) < \bar{r} \le \dfrac{2}{2-\delta\pi}(c - \delta c + \pi r^+) \\ \bar{r} & \text{if } \bar{r} \le \dfrac{2}{2-\delta\pi}(-e - \delta c + \pi r^+) \end{cases}$$

In summary, the equilibrium cutoff rates of entry and exit are arranged according to $\bar{r}$ as following,

$$(r^*,\ \hat{r}) = \begin{cases} \left(\dfrac{\bar{r}}{\delta\pi} - \sqrt{A},\ \max[0,\ r^* - e - c]\right) & \text{if } \bar{r} > \dfrac{2}{2-\delta\pi}(c - \delta c + \pi r^+) \\ \left(\bar{r},\ -e - \delta c + \pi r^+ + \dfrac{\delta\pi}{2}\bar{r}\right) & \text{if } \dfrac{2}{2-\delta\pi}(-e - \delta c + \pi r^+) < \bar{r} \le \dfrac{2}{2-\delta\pi}(c - \delta c + \pi r^+) \\ (\bar{r},\ \bar{r}) & \text{if } \bar{r} \le \dfrac{2}{2-\delta\pi}(-e - \delta c + \pi r^+). \end{cases}$$

3. *Proof of Proposition 3*

The equations that derive the equilibrium cutoff rates of exit and entry are listed as following:

$$\text{S:}\quad r^* = c - \delta c + \pi r^+ + \frac{\delta\pi}{2\bar{r}} r^{*2} \tag{A1}$$

$$\hat{r} = r^* - e - c \tag{A2}$$

$$\text{N:}\quad r_1^* = c - \delta c + \pi\theta r^+ + \frac{\delta\pi}{2\bar{r}} r_1^{*2} \tag{A3}$$

$$r_2^* = c - \delta c + \pi r^+ + \frac{\delta\pi}{2\bar{r}}\left\{\frac{r_2^*}{\bar{r}} r_2^{*2} + \left(1 - \frac{r_2^*}{\bar{r}}\right) r_1^{*2}\right\} \tag{A4}$$

$$\hat{r}_1 = r_1^* - e - c = -e - \delta c + \pi\theta r^+ + \frac{\delta\pi}{2\bar{r}} r_1^{*2} \tag{A5}$$

$$\hat{r}_2 = r_2^* - e - c = -e - \delta c + \pi r^+ + \frac{\delta\pi}{2\bar{r}}\left\{\frac{r_2^*}{\bar{r}} r_2^{*2} + \left(1 - \frac{r_2^*}{\bar{r}}\right) r_1^{*2}\right\} \tag{A6}$$

$$\text{P:}\quad r_1{}^* = c - \delta c + \pi \theta r^+ + \frac{\delta \pi}{2\bar{r}} r_1{}^{*2} \tag{A7}$$

$$r_2{}^* = -e - \delta c + \pi \{\frac{r_2{}^*}{\bar{r}} r^+ + (1 - \frac{r_2{}^*}{\bar{r}}) \theta r^+\} + \frac{\delta \pi}{2\bar{r}} \{\frac{r_2{}^*}{\bar{r}} r_2{}^{*2} + (1 - \frac{r_2{}^*}{\bar{r}}) r_1{}^{*2}\} \tag{A8}$$

$$\hat{r} = -e - \delta c + \pi \{\frac{\hat{r}}{\bar{r}} r^+ + (1 - \frac{\hat{r}}{\bar{r}}) \theta r^+\} + \frac{\delta \pi}{2\bar{r}} \{\frac{\hat{r}}{\bar{r}} r_2{}^{*2} + (1 - \frac{\hat{r}}{\bar{r}}) r_1{}^{*2}\} \tag{A9}$$

Proof of Proposition 3 will be presented more or less by relying on intuition. The basic features of the order of the equilibrium cutoff rates of exit and entry are derived, and the analyses of the corner solutions are omitted. For each equation, the equilibrium cutoff rate, $\tilde{r}$, is the point at which the *right side function* of the equation, $R(r)$, is crossing the *left side function* of the equation that is the 45 degree line from the origin, $L(r)=r$, that is $R(\tilde{r})=\tilde{r}=L(\tilde{r})$. The existence of the equilibrium point, $\tilde{r}$, is guaranteed by the fixed point theorem along with the fact (1) in the following argument.

There are two important facts to be noted: (1) When each equation is derived, the expected present value of the reform project is reduced to the right side function, while that of the alternative project is reduced to the left side function. If r is less than the cross point, $r^*(\hat{r})$, the potential investors will stay in (enter into) the host country since $R(r)>L(r)$. And if r is greater than the cross point, $r^*(\hat{r})$, the potential investors will exit to (stay in) the alternative opportunity since $R(r)<L(r)$. Therefore, for the equation to have a stable equilibrium, the right side function needs to cross the 45 degree line from *above*, which implies that the right side function of an equation has a tangent slope of less than 1 at the equilibrium point. The point that crosses the 45 degree line from below does not constitute an equilibrium. (2) As a result of fact (1), if the value of the right side function in an equation at some point r is less than that in another equation, then the equilibrium point around r of the former equation is less than that of the latter. Given these facts, we can conjecture the order of the equilibrium points of the equations above.

To distinguish the notations for three cases, I use superscripts "S" for the symmetric case, "N" for the asymmetric but no-private information case, and "P" for the private information case.

(1) First, from (A1), (A3), and (A7), it is obvious that $(r^*)^S \geq (r_1{}^*)^N = (r_1{}^*)^P$, since $(R(r^*))^S \geq (R_1(r^*))^N = (R_1(r^*))^P$ since $\theta \leq 1$. Second, from (A1) and (A4), $(r^*)^S \geq (r_2{}^*)^N$ since $(r^*)^S \geq (r_1{}^*)^N$. And from (A1) and (A8), $(r^*)^S \geq (r_2{}^*)^P$ since $\theta \leq 1$ and $(r^*)^S \geq (r_1{}^*)^P$. Third, from (A3) and (A4), $(R_2((r_1{}^*)^N))^N \geq (R_1((r_1{}^*)^N))^N$ since $\theta \leq 1$. Therefore, $(r_2{}^*)^N$ is greater than $(r_1{}^*)^N$ because the slope of $(R_2(r))^N$ is less than 1. Similarly, from (A7) and (A8), $(r_2{}^*)^P \geq (r_1{}^*)^P$. Lastly, from (A4) and (A8), $(r_2{}^*)^N \geq (r_2{}^*)^P$ since $\theta \leq 1$.

From the above relations, we have

$$(r^*)^S \geq (r_2{}^*)^N \geq (r_2{}^*)^P \geq (r_1{}^*)^N = (r_1{}^*)^P.$$

(2) Therefore, we have the relations $(\hat{r})^S \geq (\hat{r}_2)^N \geq (\hat{r}_1)^N$ from (A2), (A5), and (A6).

(i) To show $(\hat{r}_2)^N \geq (\hat{r})^P$, we need to compare the values of the two right side functions in (A6) and (A9) at the point $(\hat{r}_2)^N$: Since $\theta \leq 1$, $(r_1{}^*)^N = (r_1{}^*)^P$, $(r_2{}^*)^N \geq (r_2{}^*)^P$ and $(r_2{}^*)^N \geq (\hat{r}_2)^N$, we have $(R_2((\hat{r}_2)^N))^N \geq (R((\hat{r}_2)^N))^P$ at $(\hat{r}_2)^N$. This implies that $(\hat{r}_2)^N \geq (\hat{r})^P$ because the slope of $(R_2(r))^P$ is less than 1. Therefore, $(\hat{r}_2)^N \geq (\hat{r})^P$.

(ii) It is obvious that $(\hat{r})^P \geq (\hat{r})^N$ since $\theta \leq 1$ and $(r_2{}^*)^P \geq (r_1{}^*)^N$.

Therefore, we have the following order of the equilibrium cutoff rates of entry:

$$(\hat{r})^S \geq (\hat{r}_2)^N \geq (\hat{r})^P \geq (\hat{r}_1)^N.$$

Appendix B

TABLE 4

TRENDS OF WORLD AND DEVELOPING COUNTRIES' TRADE AND FDI

	World production[a]	World trade Total[b]	World trade DC share(%)	World FDI Total[c]	World FDI DC share(%)[d]
1983	100.0	100.0	13.1	100.0	24.2
1984	103.8	105.8	12.7	116.1	20.8
1985	107.5	106.2	12.0	119.0	23.6
1986	111.3	117.4	13.1	192.5	14.7
1987	113.8	137.8	14.7	298.0	11.6
1988	118.8	157.0	15.6	367.4	15.7
1989	122.5	170.3	18.2	470.6	14.7
1990	125.0	192.3	17.9	493.0	14.8
1991	123.8	197.5	19.6	392.9	26.5
1992	125.0	213.1	20.3	396.9	30.1
1993	127.5	212.5	23.8	460.7	36.0

Note: a: Real GDP index, 1983=100.
b: Average of world exports and imports of merchandise and commercial services, 1983=100.
c: Average of direct investment of abroad, 1983=100.
d: Developing countries' share in world inflows of FDI, excluding oil production country.

Source: Gundlach and Nunnenkamp, 1996, Table 1.

TABLE 5

DISTRIBUTION OF EXPORT (1992), INVESTMENT FLOWS AND POPULATIONS (1981-91)

	Population, 1990(%)	Exports, 1992(%)	Investment flows, 1980-91(%)
[*A*] The Triad	14	69.9	75
[*B*] Ten most important DC in terms of 1980s FDI flows[a]	29	14.0	16.5
[*C*] Nine most important DC & nine Chinese main provinces	14	14.0	16.5
[*A*]+[*B*]	43	83.9	91.5(approx.)
[*A*]+[*C*]	28	83.9	91.5(approx.)

Note: a: China, Singapore, Mexico, Brazil, Malaysia, Hong Kong, Argentina, Thailand, Egypt, Taiwan.

Source: Hirst and Thompson, 1996, based on Table 3.2 and Table 3.3

(Received May, 1998; Revised June, 1998)

References

Blanchard, Olivier, and Kremer, Michael. "Disorganization." Mimeograph, MIT, 1997.

Boycko, Maxim, Shleifer, Andrei, and Vishny, Robert. *Privatizing Russia*. Cambridge: The MIT Press, 1995.

Chia, Siow Yue, and Lee, Taso Yuan. "Subregional Economic Zones: A New Motive Force in Asia-Pacific Development." In C. Fred Bergsten and Marcus Noland eds., *Pacific Dynamism and the International Economic System*. Washington, DC: Institute for International Economics, 1993.

Department of Commerce. *Survey of Current Business*. Washington DC: Department of Commerce, 1988.

_____. *Survey of Current Business*. Washington DC: Department of Commerce, 1990.

Dunning, John. *American Investment in British Manufacturing Industry*. London: George Allen & Unwin, 1958.

_____. *Multinational Enterprises and the Global Economy*. Wokingham, England: Addison-Wesley, 1993.

Graham, Edward M., and Krugman, Paul R. *Foreign Direct Investment in the United States*. Washington, DC: Institute for International Economics, 1995.

Grindle, Merilee S., and Thomas, John W. *Public Choices and Policy Change: The Political Economy of Reform in Developing Countries*. Baltimore: The Johns Hopkins University Press, 1991.

Gundlach, Erich, and Nunnenkamp, Peter. "Some Consequences of Globalization for Developing Countries." Kiel Working Paper No. 753. Germany: Kiel Institute of World Economics, 1996.

Haggard, Stephan. *Developing Nations and the Politics of Global Integration*. Washington, DC: The Brookings Institution, 1995.

Hart, Jeffrey A., and Spero, Joan E. *The Politics of International Economic Relation*. New York: St. Martin's Press, 1997.

Hirst, Paul, and Thompson, Graham. *Globalization in Question: The International Economy and the Possibilities of Governance*. Cambridge: Polity Press, 1996.

Hymer, Stephen. *The International Operations of National Firms*. Cambridge: The MIT Press (originally Ph.D. Dissertation, MIT, accepted 1959), 1976.

Jun, Yongwook, and Simon, Denis Fred. "The Pattern of Korean's

Foreign Direct Investment: Implication of China's Economy." In Ross Garnaut and Liu Guaguang eds., *Economic Reform and Internationalization.* St. Leonards: Australian National University, 1992.

Keohane, Robert O., and Milner, Helen V. "Internationalization and Domestic Politics: Introduction." In Robert O. Keohane and Helen V. Milner eds., *Internationalization and Domestic Politics.* New York: Cambridge University Press, 1996.

Krueger, Anne O. *Political Economy of Policy Reform in Developing Countries.* Cambridge: The MIT Press, 1993.

Krugman, Paul. "The Myth of Asia's Miracle." *Foreign Affairs* (Nov.-Dec. 1994): 63-75.

_____. "Growing World Trade: Causes and Consequences." *Brookings Papers on Economic Activity* 1 (1995): 327-77.

Lawrence, Robert Z. *Regionalism, Multilateralism, and Deeper Integration.* Washington, DC: The Brookings Institution, 1996.

Lipson, Charles. *Standing Guard: Protecting Foreign Capital in Nineteenth and Twentieth Centuries.* Berkeley: University of California Press, 1985.

Murphy, Kevin M., Shleifer, Andrei, and Vishny, Robert W. "Industrialization and the Big Push." *Journal of Political Economy* 98 (1989): 1003-26.

OECD. *International Direct Investment: Policies and Trends in the 1980s.* Paris: OECD, 1992.

Rodrik, Dani. "Policy Uncertainty and Private Investment in Developing Countries." NBER Working Paper No. 2999, 1989.

Rosenstein-Rodan, Paul N. "Notes on the Theory of the 'Big Push.'" In Howard S. Ellis and Henry C. Wallich eds., *Economic Development for Latin America.* New York: St. Martin's Press, 1961.

Sachs, Jeffrey D., and Warner, Andrew M. "Natural Resource Abundance and Economic Growth." NBER Working Paper No. 5398, 1995.

Shirk, Susan L. *How China Opened Its Door: The Political Success of the PRC's Foreign Trade and Investment Reforms.* Washington, DC: The Brookings Institution, 1994.

Spero, Joan E., and Hart, Jeffrey A. *The Politics of International Economic Relations.* New York: St. Martin's Press, 1997.

Stallings, Barbara. *Global Change, Regional Response: The New International Context of Development.* New York: Cambridge University Press, 1995.

Strange, Susan. *States and Markets*. New York: Pinter Publishers, 1988.

United Nations Center on Transnational Corporations (UNCTC). *Transnational Corporations in World Development: Trends and Prospects*. New York: United Nations, 1988.

Williamson, John, ed. *Latin American Adjustment: How Much Has Happened?* Washington, DC: Institute for International Economics, 1990.

World Bank. *World Debt Tables*. Washington, DC: World Bank, various issues.