TRADE, CAPITAL MOBILITY AND SOVEREIGN IMMUNITY

by

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ABSTRACT

International capital mobility is limited by the possibility of expropriation or debt repudiation. This paper examines the nature of equilibrium when these hostile actions are deterred by interference with the host country's trade, possibly through the sovereign immunity laws. Both investors and hosts are rational, calculating agents. An outcome of perfect capital mobility, while optimal, may be time inconsistent for the host. The time-consistent, imperfect-capital-mobility equilibrium is analyzed. Characteristics of countries affecting capital mobility are discussed: tariffs, domestic factor endowments, factor-intensity of trade, income elasticities of demand, saving propensities, and uncertainty.
1. **Introduction**

International capital mobility is limited by the fear of investors that physical capital may be expropriated or loans may be repudiated. A capital importing government may wish to make a binding promise to foreign investors that it will not undertake these hostile actions with the goal of attracting investments. But such binding promises are not generally feasible since there is no international forum in which this type of contract can be enforced. Once the investments have taken place, the strategy of allowing a return to investors may be time inconsistent (Kydland and Prescott, 1977). It will be optimal for a government to renge on its promise. Rational investors, anticipating this situation, will invest less than otherwise or possibly not at all depending on a number of circumstances.

If governments of capital importing countries (the hosts) weigh costs and benefits in deciding on these hostile actions, the nature and extent of the sanctions that investors can use to increase these costs critically determine their willingness to invest abroad. These sanctions are likely to be quite indirect because international property law hardly exists and so international enforcement of contracts is severely circumscribed.

A potentially very important class of actions that may be available to foreign investors experiencing a loss of their capital involves the disruption of the foreign trade of the host country.1 This type of interference may be effected in any of several ways: through legal actions, by limitations on trade credit and the international transfer of funds, and on behalf of investors by their governments.

It may be hopeless to take legal action in courts located in the host country, and therefore under its control. There may, however, be scope for legal action in the courts of the investors' home country or even in the courts of
third countries. The prospects for this strategy depend in part on the doctrine of sovereign immunity prevailing in these jurisdictions. In some countries or for some types of claims, foreign governments may be exempt from legal liability. In other circumstances it may be possible to attach exports or imports of a country that has taken hostile actions, if this trade activity is undertaken by entities that have some government affiliation. A good target for this type of suit would be the expropriated enterprise when it attempts to export abroad. Moran (1973 p. 202) describes the strategy of Kennecott in dealing with the Allende government, which even included the attachment of Lanchile's airplanes when they landed in New York. The potential for ensuring the safety of investments in this way depends on the value to the host of its continued access to foreign trade as well as on the legal environment. Any country that finds the loss of trade less costly than meeting its obligations can simply withdraw from trade and make itself invulnerable to these claims.

Action under sovereign immunity laws does not involve investors in game-theoretic decision making as in some other actions to preserve the value of foreign investments (see fn. 1). If the host's valuation of its trade and the legal system make a suit to obtain compensation a meaningful option, the individual investor can obtain redress. It is not the same as a retaliating action which punishes the host without directly helping the investor. By contrast in the case of retaliation the issue of credibility arises: one must analyze whether the retaliation will be viewed as desirable by the investor after the fact. Further, there are often questions of coordination among investors. For instance, a refusal by one lender to lend in the future to a repudiating debtor may mean little if other lenders step in. If no retaliation
is credible, and investors are rational, foreign investment will disappear entirely in the absence of any other mechanisms for ensuring the safety of investments.

The threat of legal action even if of uncertain success can pose problems for a country in undertaking international exchange until the case is resolved. To the extent, however, that legal recourse is limited this paper may be viewed as an investigation of the implications of adopting legislation that would limit sovereign immunity and expand the legal options of investors. The recent tendency of legislation, for instance the U.S. Foreign Sovereign Immunities Act of 1976 (USCA, 28§1602-1611, 1982, pp. 105-127), has been to improve the position of claimants (Delaume, 1977).

A second type of interference with foreign trade that aggrieved investors can undertake involves the disruption of international payments mechanisms. The efficient conduct of foreign trade requires the transfer of funds abroad, frequently in conjunction with the use of short-term trade credit. Since these arrangements must often be made with the same banks that are long-term lenders to LDC's, it may become necessary for a defaulting borrower to engage in international barter to avoid these banks. Here again, the issue of the credibility of the lender's reaction to a hostile action does not arise. If the host were to try to effect a transaction through its creditor, it would always be in the creditor's interest to seize the payment (to offset it in financial terminology). International banks often try to design contracts among themselves to ensure that they share equally in such offsets, thereby enhancing their cohesion in dealing with defaulters. Iran has been a recent prominent example of a country that found its opportunities for international trade severely circumscribed by problems in effecting transactions.
Finally the governments of investors may retaliate on their behalf against hostile hosts. One feasible form for these actions to take is the restriction of trade with the host. For instance, the U.S. Trade Act of 1974 automatically excludes countries taking certain hostile actions against U.S. investors from the generalized system of trade preferences (Eaton and Gersovitz, 1981b, p. 32). But this type of retaliation certainly runs up against the credibility issue. After-the-fact, the home country as a whole may be reluctant to give up the gains from trade with the host. To what extent the home country is irrevocably bound by such laws as the Trade Act is then of critical importance.

Of course, all these actions are only plausible remedies to the extent that foreign trade is an option that countries value. In what follows, I investigate the scope for capital mobility when the deterrent to hostile acts is a complete loss of the opportunity to trade. While this characterization is a stark representation of the varied situations discussed above, the qualitative propositions derived from this model provide a first step to understanding a wide range of issues. In the next section I describe equilibrium in this type of model. The third section presents the effects on foreign investments of: tariffs, the levels of domestic capital, the proportion of foreign debt used for physical investment, the rate of return on capital abroad, the levels of non-capital factors, and other additional penalties unrelated to trade.

In this way the theory is seen to provide an explicit framework for assessing how much capital investors can safely make available to hosts with different characteristics. A structural model of this type has the advantage of being able to determine endogenously the ultimate deterrence available to
investors. It contrasts in this respect with other models that postulate as a primal assumption a fixed disutility of hostile action based on moral or other vague grounds. In the concluding section, these results are used to analyze when the deterrent of a loss of access to trade may break down leading to repudiations and expropriations.
2. **Description of the Equilibrium**

In a two-good, two-factor model, free trade leads to factor-price equalization under certain assumptions, and there is consequently no incentive for international factor mobility. The two-good, three-factor model with one factor specific to each sector provides an alternative formulation that opens up a larger set of possibilities for behavior, and is an attractive simplification for studying international factor mobility. In particular, if one good is produced using capital as its sector-specific input, the country can export either good while importing capital.

In this model, two goods, manufactures (M) and food (F), are produced with a constant returns to scale technology using inputs of labor \( L_m \) and capital \( K \), and labor \( L_F \) and land \( T \), respectively. The value of the marginal products of labor, capital and land in the domestic economy are \( w, \rho \) and \( r \) respectively and the world return to capital is \( \delta \). \(^3\) (The variables \( \rho \) and \( \delta \) should be interpreted as gross rates of return including the restoration of capital to its owners).

It is convenient to represent the economy in the notation used by Jones (1965 and 1971). The log differential of a variable is denoted by a "\( \cdot \)".

Unit factor requirements for the production of the goods are denoted by \( a_{iJ} \), \( I = L, K, T \) and \( J = M, F \). The production structure of the economy is given by:

\[
\begin{align*}
(1) & \quad a^i_{LM} K^i + a^i_{LF} F^i = L & i = n, s \\
(2) & \quad a^i_{TP} F^i - T & i = n, s \\
(3) & \quad a^i_{KM} M^i = K & i = n, s \\
(4) & \quad L = L_M + L_F \\
\text{and} & \quad L = L_F + K_o
\end{align*}
\]
where a superscript \( i \) denotes whether foreign capital (\( K_F \)) is seized (s) or not seized (n), and \( K_0, T \) and \( L \) are initial domestic endowments given exogenously.

If foreign capital is not seized, then the value of national income is

\[
(6a) \quad Y^n = p^n_M M^n + p^n_F F^n - \Delta K_f^n
\]

where \( p^n_M, p^n_F \) are international prices, given exogenously. To fix the nominal price level, \( p^n_F \) is assumed given at some level. Indirect utility in this case is

\[
(7a) \quad U^n = U (Y^n, p^n_M, p^n_F)
\]

On the other hand, if foreign capital is seized, the value of national income is

\[
(6b) \quad Y^s = p^s_M M^s + p^s_F F^s
\]

where \( p^s_M, p^s_F \) are domestic prices. As a normalization convention, \( p^s_F = p^n_F \). Indirect utility is

\[
(7b) \quad U^s = U (Y^s, p^s_M, p^s_F)
\]

The domestic price ratio is determined by the autarky condition that the demand for each good equals its supply. (Demand functions are derivable via Roy's identity from (7b)).

The country chooses to seize \( K_F \) if \( U^s > U^n \), and not otherwise. Rational foreign capitalists know about this behavior rule, and provide capital only if \( U^s < U^n \). The borderline condition is another equation of the equilibrium:

\[
(8) \quad U^s = U^n.
\]
The equilibrium can usefully be illustrated in two diagrams. In figure 1, a traditional trade-theoretic depiction, AB represents the production possibility frontier for the equilibrium level of $K_f$. The curve A'B' is shifted in horizontally by an amount $\tilde{\delta}K_f/P^n_f$. This amount is the payment to foreign capital in terms of food if the capital is not seized. (The good used to measure $\tilde{\delta}K_f$ is of no significance since free trade can occur at fixed prices from any point on A'B'.) The point $P^n$ represents domestic production less the servicing of capital in the n case, and $C^n$ is the consumption point after trade. The level of $U^n$ reached is given by the indifference curve $U^S U^n$. A case where the M good is imported is illustrated, but this is only one possibility. In the s case, the production bundle is the same as the consumption bundle at point $P^S/C^S$. The indifference curve is also tangent to AB at this point, on the assumption that an equilibrium with $U^S = U^n$ is illustrated.

The second diagram, of a type first used in Eaton and Gersovitz (1984), is less structural but illustrates the constraint on capital mobility posed by the possibility of seizure more directly. The curve nn shows $U^n$ as a function of total capital $K$. Assuming $K_0$ to be fixed, a rightward movement along the x-axis implies an increase in foreign capital, $K_f$. The nn curve reaches a maximum at $K = K^*$ where the value of the marginal product of capital is $\tilde{\delta}$. The unimpeded mobility level of capital is $K^*$.

The curve ss shows that $U^S$ increases monotonically in $K$. Since foreign capital is seized under this regime, more capital is always desired. At point E, $U^S = U^n$ and the level of capital that can be sustained by the loss of trading privileges is determined ($K^E$). If the ss curve cuts the nn curve to the left of $K^*$, then foreigners will not provide $K^* - K_0$ and capital mobility is constrained to $K^E - K_0$. If the ss curve cuts the nn curve to the
right of K*, K=K*, capital mobility is perfect and U^S < U^N so that equation (8) does not apply. In this case, the ss curve is irrelevant to the determination of equilibrium since the maximum utility is achieved at K=K*. The country would never want more capital at rate \( \rho = \bar{\rho} \).

Either an unconstrained or constrained case is possible. For instance, if the F good could not be produced domestically but was essential to consumption so that U^S = 0 in absence of trade, the ss curve would coincide with the horizontal axis and capital mobility would be unconstrained. On the other hand, if the indifference curves were straight lines with the slope of the internationally given prices, no foreign capital could be safely provided. In what follows, the discussion is restricted to cases where capital mobility is constrained by the threat of seizure and the equilibrium, determined with the help of equation 8, is as illustrated in Figure 2.
Figure 1

Traditional Trade Theoretic Depiction of Equilibrium
Figure 2

The ns Depiction of Equilibrium
3. Comparative Statics

The model of the preceding section provides a framework for understanding the determinants of capital transfer. A number of traditional conclusions on capital movements are reversed or modified when hostile actions are deterred by the loss of the trade option.

For instance, in a standard two-good, three-factor model a tariff increases the return to capital if the country imports the capital-intensive good. If foreign capital is safe from seizure, the increased return provides an incentive for capital inflow. As a result, trade and capital transfers are substitutes in this case.

In the ns model of section 2, however, trade and capital transfers are always complements as given by

**Theorem 1**: An increase in the tariff always lowers $K_f$.

**Proof**: A tariff lowers the benefits from trade. The nn curve is shifted down in Figure 2 since $U^n$ falls for any level of $K$. The ss curve is unaffected.\(^4\)

This result suggests that outward oriented economies such as South Korea's are able to sustain relatively more foreign investment than inward, import substituting economies.

Another contrast between a traditional approach and the ns model arises with respect to the effect of an increase in domestic capital ($K_o$) on foreign capital. When foreign capitalists do not need to consider the possibilities of hostile actions, an increase in domestic capital will generally lead to a one-for-one decrease in foreign capital, the total capital stock remaining constant. In the ns model, the response of total capital is always positive, and foreign capital can even increase as given by
Theorem 2: \[ \frac{dK}{dK_0} = \frac{\beta n \pi \pi_K}{(n_s \pi_K - n^n \pi^n) + \beta n \pi} > 0 \]

Proof: The value of \(\frac{dK}{dK_0}\) is computed by total differentiation of the equations of section 2 with
\[ \eta^i = \frac{U^i Y^i}{U^i} \quad \text{the income elasticity of utility,} \]
\[ \pi^i_K = \frac{y^i_K}{y^i} \quad \text{the profit share in national income and} \]
\[ \beta = \frac{\sigma}{\sigma^n}. \]

The sign is determined from Figure 2 since an increase in \(K_0\) for a given \(K\) raises the \(nn\) curve but not the \(ss\) curve.

In the special case where the utility function is homothetic, \(n^s = n^n\) and a stronger result obtains: ⁵

Theorem 3: \(0 < \frac{dK}{dK_0} < 1\) and \(\frac{dK^e}{dK_0} < 0\) iff \(M\) is the importable

while \(\frac{dK}{dK_0} > 1\) and \(\frac{dK^e}{dK_0} > 0\) iff \(F\) is the importable.

Proof: As can be seen from Theorem 2, with \(n^n = n^s\) the magnitude of \(dK/dK_0\) relative to one is determined by the magnitude of \(\pi^n_K\) relative to \(\pi^s_K\).

To establish the relationship between \(\pi^n_K\) and \(\pi^s_K\), I construct a continuum of economies indexed by \(P_M\) so that the \(n\)-economy and the \(s\)-economy are both members of this set.
By varying $p_M$, one can move from the n-economy to the s-economy and observe the conditions under which $\pi_K$ rises or falls in the transition. In this way, I solve the problem of comparing two economies that appear to be separated.

Consider, then, all economies given by equations (1)-(5), $K = K^E$ and $U = U^E$ with $\beta$ endogenized to maintain $U = U^E$ and $p_M$ exogenous but varied.

Three members of this family of economies are illustrated in Figure 3.

Let $\pi_K = \rho K/Y$, $Y$ given by (6a).

When $p_M$ and $\beta$ equal their world values, $U = U^E$ and $\pi_K = \pi_K^n$.

When $p_M = p_M^s$ and $\beta = 0$, $\pi^s = \pi^s$.

Now $\dot{\pi}_K = \beta - \dot{Y} = \beta - m \hat{p}_M$ where $m$ is the average propensity to consume the M good, a result derived by setting the log differential of $U(Y, p_M, P_F)$ to zero.

It is easily shown that in absolute values, $\beta > \hat{p}_M$ a variant of the magnification effect of Jones (1971).

When $M$ is imported, $\pi^s_K$ is reached from $\pi^n_K$ by increasing $p_M$ (see Figure 1) and so $\pi^s_K > \pi^n_K$ and $dK/dK_O < 1$ from Theorem 2. When $F$ is imported the result is reversed.

Like Theorem 1, this result suggests that countries pursuing import-substituting strategies will obtain small increases in total capital relative to outward-looking countries. In this case, import substitution is achieved through a domestic investment program that favors the import-competing
Figure 3
A Family of Economies Traced by Varying $\bar{\rho}$ and $P_M$ to Maintain $U = U^E$
sector, as in Nigeria. By contrast, for a country like South Korea, additional domestic investment means increased export orientation that can crowd in foreign investment.

It is valuable to consider the intuition behind Theorems 2 and 5. Total capital always increases because a change in $K_0$ only affects the level of $K_f$ that can be sustained to the extent that the value of the trade option is affected. Consider for purposes of argument the case where $dK/dK_0 = 0$. If this case were to occur, the value of the trade option would be untouched, but with $K_f$ lowered the gain to seizing capital would fall. Consequently this result is impossible and $dK/dK_0$ is strictly positive. Now consider increasing $K$ from its initial level by increasing $K_f$ toward its initial level. If an increase in $K$ lowers the value of the trade option (i.e., when $M$ is the importable), $K$ can never rise so far as to restore $K_f$ to its original value.

On the other hand, when increases in $K$ increase the value of the trade option ($M$ is the exportable), $K_f$ can be increased safely above its initial level.

The ns model and these results allow a formal investigation of the oft-noted assertion [e.g., Sachs (1981), pp. 243-7] that countries investing loans are better credit risks than those using them for consumption. Consider a country that borrows $D$ in an initial period, chooses to invest $0 < \alpha < 1$ of this debt ($K_f = \alpha D$) and to consume the rest in the initial period. The loan is due in the second period when the economy will look like the model of section 1 except that

$$(6a') \quad Y^N = P_M M + P_F F - \bar{\rho} D.$$ 

In this case, the effect of $\alpha$ on total debt is given by
Theorem 4: \[
\frac{dD}{d\alpha} = \frac{dK_f}{dK_0}
\]

**Proof:** By total differentiation of the model.

Thus, only if the effect of an increase in \(K_0\) is to crowd in foreign capital rather than to decrease it does an increase in \(\alpha\) increase foreign capital. As shown in Theorem 3, when utility is homothetic, the conjecture obtains if and only if \(M\) is the exportable. The intuition is clear: an increase in \(\alpha\) is equivalent to an increase in \(K_0\) at a given \(\alpha\) and \(K_0\). This result does not mean that the hypothesis of a positive relation between \(\alpha\) and \(K_f\) is unlikely to obtain - merely that it requires a special type of situation, namely countries for which increased investment means increased trade orientation. For instance, it might apply to NICs that import natural resource based goods (F the importable) and export manufactures, but not to natural resource exporters.

Finally, among the results relating to changes in parameters directly associated with the capital stock, is

Theorem 5: An increase in the world return to capital, \(\delta\), decreases \(K_f\) and \(U\).

**Proof:** In Figure 2, an increase in \(\delta\) lowers the nn curve for any level of \(K\) while leaving the ss curve in its original position.

Hosts that take hostile actions may suffer additional penalties. In this case the ss curve will be lowered for any level of \(K\) while the nn curve will remain fixed. The equilibrium level of capital and of the host's utility will rise.

The effect of an increase in land is given by
Theorem 6: \[
\frac{dK}{dT} = \frac{\eta \pi_T - \eta_s \pi_T}{\eta_s + \beta \eta \pi_T} \frac{K}{T}
\]

Proof: Computed as in Theorem 2 with \(\pi_T^i \equiv r_i T / Y_i\).

In the case of a homothetic utility function

Theorem 7: \(\frac{dK}{dT} > 0\) iff M is the importable

Proof: Continuing the discussion of Theorem 3, let \(\pi_T^i = r_i T / Y_i\)

Then \(\pi_T^i = \bar{r} - m \bar{P}_M\) and \(\bar{r}\) is easily shown to be negatively related to \(P_M\), again a result that is analogous to the Jones magnification effect.

Thus if M is imported, \(\pi_T^S\) is reached from \(\pi_T^N\) by increasing \(P_M\) and hence \(\pi_T^S < \pi_T^N\). The denominator of Theorem 6 is always positive, see Theorem 2.

The intuition for this result is straightforward, since if M is the importable, an increase in T makes maintenance of the trade option relatively more valuable.

The effect of an increase in labor is given by

Theorem 8: \[
\frac{dK}{dL} = \frac{\eta \pi_L - \eta_s \pi_L}{\eta_s + \beta \eta \pi_L} \frac{K}{L}
\]

Proof: Computed as in Theorem 2 with \(\pi^i_L \equiv \omega_i L / Y_i\).

In contrast to the corresponding results for \(K_0\) and T, the formula for \(dK/dL\) is difficult to sign even in the case where utility is homothetic. In particular, the analogy to the Jones magnification effects remarked on in the proofs of Theorem 3 and 7 breaks down, and the characteristics of demand enter into the determination of the sign of \(dK/dL\). Sufficient conditions are given by
Theorem 9: If the $M$ good is the importable and \[ \frac{\lambda_{LM}^{\theta TF} \sigma M}{\lambda_{LM}^{\theta TF} \sigma M + \lambda_{LF}^{\theta} \sigma F} \geq m \] everywhere then $dK/dL \leq 0$. If $M$ is the exportable and \[ \frac{\lambda_{LM}^{\theta TF} \sigma M}{\lambda_{LM}^{\theta TF} \sigma M + \lambda_{LF}^{\theta} \sigma F} < m \] everywhere then $dK/dL \leq 0$, where $m$ is the average propensity to consume $M$, $\lambda = L_J/L$, $\theta_{IJ}$ is the share of the $I$th factor in the value of good $J$, and $\sigma_J$ is the elasticity of substitution.

Proof: Consider again the set of economies constructed in Theorem 3.

\[ \hat{\pi}_L = \hat{\omega} - \hat{\gamma} \], where $\omega$ is the wage. It can be shown that

\[ \hat{\omega} = \frac{\lambda_{LM}^{\theta TF} \sigma M}{\lambda_{LM}^{\theta TF} \sigma M + \lambda_{LF}^{\theta} \sigma F} \hat{p}_M \], and that

\[ \hat{\gamma} = \frac{\pi^S}{\hat{p}_M} \].

Therefore, if $M$ is imported $\pi^S_L$ is reached from $\pi^n_L$ by increasing $P_M$ and if in addition the inequality condition of the theorem is everywhere positive then $\pi_L > 0$, $\pi^S_L > \pi^n_L$ and $dK/dL < 0$. The other cases follow in a similar fashion.
4. Random Shocks, the Breakdown of Deterrence and the Occurrence of Hostile Acts

In a world without uncertainties, rational investors will ensure that foreign investment never occurs to a point that seizure becomes optimal. When various variables are random, however, investors may invest knowing that if certain eventualities occur the host may choose to seize capital. In this case, investors will require that they are compensated for the risk of loss by correspondingly high returns in situations where they retain control of their capital. A thorough investigation of this type of equilibrium is a complicated task beyond the scope of this paper. In what follows, I indicate some types of issues that arise.

Denote the random variable affecting seizure by $\Theta$, with $\Theta \in \Theta$ the set of events that do not lead to seizure while $\Theta \notin \Theta$ are the remaining events that do lead to seizure. For instance, the country's terms of trade could be random or domestic production of either good could be subject to shocks. Depending on the type of investment and the structure of contracts, the return owed to foreigners could also be random. With syndicated bank loans, the interest rate on fairly long-term loans is recalculated at given intervals as a fixed markup over the prevailing LIBOR, a short-term rate. As is well-known, many current reschedulings are related to the particular interest-rate outcomes that this system has generated; whether some of these episodes will result in outright repudiations is an open question. In the case of direct investments, the investor's return depends on the success of the project, and hence on production and price shocks.

What are the characteristics of states of nature that result in seizure? Assume a given value of $K_f$, implicitly chosen if investors are risk neutral so that their expected returns taking into account the probability of seizure just equals the expected return on alternative investments. Sections 2 and 3
can be used to provide an analysis. If the only variable that is random is \( \tilde{\sigma} \), then clearly relatively high values of \( \tilde{\sigma} \) will lead to hostile acts. In the case of the terms of trade, or production shocks, however, extreme values in either direction will lead to a relatively high valuation of the trade option and so intermediate values of these variables will be associated with hostile acts.

This last observation leads to the result that mean-preserving increases in uncertainty can increase the amount of foreign capital provided to the economy, possibly making a risk-averse host better off. For instance consider the model of section 2 in which the terms of trade are fixed, yielding a particular value of \( K_F \). Compare this to a situation of an uncertain \( P_M \) with the same mean, but taking a high value in which the country exports the M-good and a low value in which it exports the F-good. The country may value trade more in each case in comparison to the mean \( P_M \), thereby making a higher value of \( K_F \) possible.
5. Conclusions

This paper has provided a framework for analyzing impediments to capital mobility arising from hostile actions taken against foreign investors by host countries when these actions are deterred by trade retaliation. Both countries and investors have been assumed to be rational, calculating agents. The implied characteristics of countries that lead to greater foreign investment have been identified. The processes involved can be rather complex. For instance, an increase in domestically owned capital decreases foreign investment if the country imports the capital-using good but actually increases foreign investment if the capital-using good is exported.

In the future I hope to extend the observations in section 4 to a formal theory of the determinants of the probability of hostile actions as well as the quantity of foreign investment in situations of uncertainty.
NOTES

1. Other sanctions include a loss of access to capital in the future arising from the acquisition of a bad reputation. For a detailed examination of this mechanism see Eaton and Gersovitz (1981a and 1983). In the case of direct investments, investors may be able to withdraw irreplaceable managerial or other specialized factors that are foreign owned and cannot be seized. This penalty can also support a certain amount of foreign investment; see Eaton and Gersovitz (1984).

2. On the doctrine of sovereign immunity see Brownlie (1979, chs XV and XVI) and Stevenson and Browne (1980).

3. Note that foreign investors are assumed to receive their opportunity cost of capital, rather than the domestic marginal product (see equation 6a). The latter is higher if capital mobility is constrained. A host facing many competitive investors is always in a position to ensure only a return of ̄ by taxing capital. Further, this tax on capital actually increases the amount of foreign capital the country can obtain. Without this tax, the nn curve of Figure 2 would be lower for any given K since the return to ̄ would be higher. Consequently, without the tax, the equilibrium value of country welfare and foreign investment would also be lower. For a longer discussion of this point, see Eaton and Gersovitz (1984).

4. Note that there is no need to consider the possibility of immiserizing foreign investment in the proof of this proposition. For instance, Brecher and Diaz (1977) show that tariff-induced foreign investment in a two-good, two-factor model always decreases welfare relative to free trade. In the same way, in the model of this paper, once a tariff
is imposed the nn curve need not be monotonically increasing up to $K^*$, the perfect capital mobility level of capital. But if one considers a family of nn curves, each indexed by a tariff, it is still true that, for a given level of $K$, nn curves corresponding to successively higher tariffs are lower. Since the ss curve is upward sloping and invariant to the tariff, this property of the nn curves ensures that the result of Theorem 1 holds.

5. It is easily shown that the value of $\eta$ decreases along an indifference curve like $U^S U^n$ of Figure 1 as $p_M$ falls iff the M-good has an income elasticity less than one. That is, $\eta^n < \eta^s$ if M is the importable and is income inelastic. Since $\pi_K^s > \pi_K^n$ if the M-good is the importable, Theorem 3 part 1 holds for income inelastic M. If, on the other hand, the M-good is highly income elastic, the results of Theorem 3 part 1 could be reversed. If F is the importable and M is income elastic, the result of Theorem 3 part 2 could also be reversed, with $dK/dK_o < 1$ possible. The expectation is that M, the capital-intensive good, is indeed elastic, so that demand factors do work to reverse the results of Theorem 3.

The intuition is that when M is income elastic and M is the importable, the increase in income consequent on an increase in $K_o$ makes trade proportionately more valuable, while if M is the exportable it makes trade less valuable.

6. In the model of Eaton and Gersovitz (1984), mentioned in fn. 1, foreign capital is crowded in if capital and managerial labor are Hicksian complements. In the reputation-based model of Eaton and Gersovitz (1983),
an increase in domestic capital always lowers foreign capital. Thus there would seem to be no strong presumption that increased domestic investment improves a country's credit rating in the sense of increasing foreign investment.

7. For similar conclusions in the context of very different models of imperfect capital mobility see Eaton and Gersovitz (1981a and 1984).
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