The Impact of Corruption on FDI

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Abstract

We use a game theoretic model to study the possible effects of corruption on an MNE’s choice between FDI and exporting when it faces competition from a local firm in the host country. We show that non-discriminatory corruption might provide an incentive for the foreign firm to switch its mode of entry either from FDI to exporting or in the opposite direction. The latter effect can only arise when switching to FDI prevents entry by a host country firm that would be profitable when the MNE exports. In contrast to the conventional belief that increasing corruption reduces welfare in the host country, the model shows that a higher level of non-discriminatory corruption might increase welfare by shifting profits from the foreign firm to the domestic firm. We also show that discriminatory corruption can encourage a foreign firm to switch from exporting to FDI, or to increase output from an existing host-country plant. Discriminatory corruption could also increase host country welfare, depending on the market structure without discriminatory corruption. Our results provide a possible theoretical explanation for the mixed empirical results regarding the impact of corruption on FDI.

1 Introduction

This paper provides a theoretical analysis of the possible effects of corruption on FDI. Although business surveys and much empirical research suggest that corruption plays an important role in deterring FDI, some empirical evidence contradicts this conventional belief, as does experience in South East Asia in the early 1990s and China more recently. In an area that has received little attention from theorists, our model provides a possible explanation for the mixed evidence.

The “grabbing-hand” theory of corruption, supported by economists such as Shleifer and Vishny (1992,1993), Bliss and di Telia (1997) and Aidt (2003), claims that corruption in an economy is like a grabbing hand that increases the costs of carrying out economic activities in the market. Corruption is not rare in international business operations, instead it is a frequent occurrence for international investors. A World Bank study (1999) revealed that more than

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85 percent of polled multinational companies “always” or “mostly” encounter corruption while dealing with public sectors. Furthermore, according to TI’s Bribe Payers Index (BPI) the subsidiaries of MNEs are the main suppliers of bribes all over the world (TI, 2006). International organisations such as the OECD, World Bank, IMF and UN have long acknowledged the fact that MNEs have played an important role in spreading corruption over the world through intense globalisation. At the same time, it has been pointed out that MNEs are also part of the solution to control and fight corruption worldwide.

If we follow the reasoning of the “grabbing-hand” theory of corruption, it is seemingly uncontroversial to believe that corruption would increase the costs of foreign investors, just as it does to domestic investors, which would reduce the profitability of the investment projects and hence discourage FDI. This view is supported by surveys of international business. For instance, the survey carried out by Control Risks and Simmons & Simmons (2006) reveals that a quarter of its respondents claimed that corruption increased their costs of international investment by 0-5 percent. Also the reputation of the host country for being corrupt has deterred more than 35 percent of the MNEs surveyed, from projects that were otherwise attractive. The effect is far more substantial than other concerns such as human rights, labour and the environment (International Business Attitudes to Corruption Survey 2006). All of these findings show that corruption in the host country has been a major obstacle to international businesses and has discouraged FDI from taking place.

Even though business surveys and research indicate that MNEs view corruption in the host country as an extra cost for FDI, in recent years we have observed a large number of counter-intuitive examples, where large volumes of FDI have flowed into the countries that are known to have high levels of corruption. For instance, China has been ranked as one of the most corrupt countries in the world. Corruption is so widespread that any international business operating in China over a significant period of time will have encountered or heard of corruption in one form or another (China-Britain Business Council, 2005), while at the same time, China has been experiencing a sharp increase in FDI inflows since the late 1990s, and it is expected to be the most favored location for FDI in both the short and medium term by UNCTAD (2005). Similar examples can also be found in south-east Asian countries such as Indonesia, Malaysia and Thailand earlier in the 1990s.

The “helping-hand” theory of corruption, supported by economists such as Lui (1985), Beck

2For instance, the good practices to combat corruption suggested by the OECD, World Bank, UN and IMF normally involve encouragement for MNEs to resist bribe demands from host country officials, and severe penalties for MNEs that engage in corruption in the host countries.
3What is more, 7.9% of respondents claimed that it increase their costs by 50% and 7.1% claimed even higher percentage.
and Maher (1986) and Saha (2000), could be used to help explain this “counter-intuitive” phenomenon. In their view, corruption could be an efficient “lubrication” for rigid economic regulation and red-tape. This is especially true for international business. By bribing the host government, MNEs could get around the regulations or red-tape and potentially obtain a large amount of benefit from the host government in terms of profitable contracts, privileged access to markets or subsidies that cannot be obtained by exporting, which would act as an extra incentive for them to engage in FDI. For instance, as pointed out by Tanzi (1998), decisions to authorise major FDI projects often provide MNEs with monopoly power in the host country, which would be extremely profitable for the investors. This provides a great incentive for MNEs to bribe host government officials, and in this case a corrupt host government would be preferred by the MNEs over an honest host government.

The above discussion raises the interesting question of what the economic impact of corruption on MNEs’ FDI decisions could be. Despite more than a decades of empirical studies, the evidence on the sign of its effect is still unclear. Studies by Wei (2000a, 2000b, 2001), Smarzynska and Wei (2002), Drabek and Payne (2001), Habib and Zuzwicki (2002) and Egger and Winner (2006) found corruption to be a significant factor in reducing FDI in the host country, while Wheeler and Mody (1992) and Egger and Winner (2005) found results that contradict the others. These mixed results have not been well understood in the literature, which might be because of the lack of theoretical background that could be used to explain these contradictory findings.

One of the few studies was carried out by Luis et al. (2003). In their model, it is assumed that corruption takes place because the domestic and foreign firms try to reduce their settlement fixed costs and obtain illegal preferential tax treatment from the corrupt host government by offering bribes. Under Bertrand monopolistic competition, with consumers preferring different varieties and small firms, they showed that different forms of anti-corruption policy would have different impacts on MNEs’ investment decisions. It was shown that anti-corruption policies could encourage and discourage FDI into the host country.

Although Luis et al. (2003) paid some attention to the issue of how the corruption level in the host country would affect the entry choices of MNEs between FDI and exporting, they only do so implicitly through changes in anti-corruption policies. Unlike their study, here we will study the effect of different levels of corruption in the host country on MNEs’ FDI decisions explicitly. This could provide some insights into this important but rarely formally studied issue and provide some theoretical background to the mixed results observed by earlier empirical

\[4\text{There is another unpublished study by Glass and Wu (2002) that also focused on the issue of corruption and FDI. In their model they assume that MNEs are vertically organised and conclude that the effect of corruption on FDI is ambiguous and corruption might not necessarily be bad for FDI.}\]
studies.

We will study both the possible positive and negative effects of corruption on MNEs’ investment decisions, and derive the conditions under which corruption could discourage or encourage MNEs to switch their mode of entry from exporting to FDI. What is more, unlike the study by Luis et al. (2003), in this study we will show that corruption can improve the profitability of foreign firm from FDI, even when it does not reduce the costs of MNEs directly.

We will analyse the strategic behavior of a potential MNE when facing competition from a domestic producer and study the consequences of corruption on the foreign firm’s FDI choices and the foreign and domestic firms’ strategic behavior. Under this setting, host country market structure will be endogenously determined, which provides us with insights about the possible effects of various types of corruption on the market structure of the host country, as well as the possible welfare implications.

As the main focus of this paper is to understand how different types of corruption in the host country would alter a potential MNE’s entry mode choice between FDI and exporting, we shall concentrate on the host market and assume away the possibility of reverse exporting and FDI into the home country. Therefore, partial equilibrium models similar to those of Horstmann and Markusen (1987), Smith (1987) and Motta (1992) will be adopted here.

Shleifer and Vishny (1993) and Aidt (2003) pointed out that different types of corruption would have different impacts on individual firms and society. It follows that the presence of non-discriminatory and discriminatory corruption in the host country might affect a foreign firm’s entry mode choices differently, but despite this, a majority of studies in the literature fail to make this important distinction. In this paper we explicitly distinguish between different types of corruption and study their effects on FDI separately and jointly. They are “non-discriminatory” and “discriminatory” corruption. The main distinction between these types of corruption is that the former applies equally to all firms producing in a market, whereas the latter favours one firm over its potential rivals. Hence the former type is modelled as being similar to a licence fee, paid by all firms in the market to the government in return for the licence needed to carry out business in the host country, while the latter type effectively acts as a bribe that is offered by the domestic or foreign firm to prevent entry by its competitor, hence improving its own market position in the host country. This makes our study distinctive from that of Luis et al. (2003), where only the effect of discriminatory corruption on FDI was studied. In this chapter, we will concentrate on the impact of non-discriminatory corruption on MNEs’ entry choice and social welfare in the host country, and we shall delay the discussion of discriminatory corruption to the next chapter.

The rest of this paper is structured as follows. Section 2 sets out the model and describes the game played by host country and foreign firms and the host country government. Sections 3
and 4 analyse the effects of non-discriminatory and discriminatory corruption, respectively, on the firms’ entry choices and host country welfare. Finally, Section 5 concludes.

2 The Model

We make assumptions about the host market and the foreign and domestic firms’ cost structures that are similar to the game-theoretic models of MNEs’ choice of entry mode by Horstmann and Markusen (1987), Smith (1987) and Motta (1992). Country A is the (potential) host country, with an inverse demand function for a homogenous good that can be written as \( P = A - Q \). Country B is the foreign country, with an established supplier of the good. The foreign firm has already established a production plant in country B and produces the good at a constant marginal cost of \( C \). The foreign firm tries to decide its mode of entry into country A, which has one potential domestic firm, also with a constant marginal cost of \( C \).

If the domestic producer decides to start up a production plant in country A, it needs to pay a fixed enterprise start-up cost \( G \), a plant set-up cost \( F \) and a lump-sum licence fee \( T(\beta) \).\(^5\) The lump-sum licence fee is required by the host government to issue a license in order for any firm to produce legally in the country, which represents non-discriminatory corruption in the country.\(^7\) If the foreign firm chooses to supply country A’s demand by exporting, it would face a constant tariff of \( S \) per unit of export, in addition to its normal marginal cost. On the other hand, if it chooses to become an MNE and set up a production plant in the host country, it would be able to produce at the same marginal cost as in its home country. However, it needs to pay the same fixed plant set-up cost \( F \) and a lump-sum licence fee \( T(\beta) \) to the host government,

\(^5\)Here the fixed plant-set up cost \( F \) does not include the costs of obtaining the production licence from the government (i.e. \( T(\beta) \)).

\(^6\)Here \( \beta \) represents the corruption characteristic of the government in country A whose type is \( i \), and \( T(\beta) \) represents the level of lump-sum licence fee any producer needs to pay, in order to produce in country A, with a government whose type is \( i \). This will be discussed in more detail later.

\(^7\)The assumption of non-discriminatory corruption as a lump-sum licence fee demanded by the government is not particularly artificial or unrealistic. As has been noted by Shleifer and Vishny (1993) and Byardhan (1997), when the political system is centralised/coordinated, corruption in the host country can be approximated by a “lump-sum” payment from business to the leaders. For instance, corruption in countries like Indonesia and South Korea is often in the form of lump-sum corruption paid to the president, first family and the top military leadership (Bardhan, 1997).
as the domestic firm.\textsuperscript{8,9,10}

In addition, to capture the discriminatory power of corruption, we assume that as well as the uniform lump-sum licence fee $T(\beta_i)$, a producer may be able to bribe the government to restrict the entry of its competitor by paying a bribe, $B$ for the domestic firm and $B^*$ for the foreign firm. The host government could restrict the entry of the briber’s rival by denying the rival’s production licence, conditional on this being favorable for the government. Moreover, we assume that the bribe each firm offers is non-negative, i.e. $B \geq 0$ and $B^* \geq 0$, and the host government will not protect any firm that does not offer a strictly positive bribe. What is more, it will be assumed that both domestic and foreign firms are rational in the sense that the bribes they are willing to pay are less than or equal to the maximum gain they can obtain from restricting their rivals’ entry.

For the host government to receive an extra bribe (other than the uniform licence fee) from the foreign or domestic firms, we require that the number of licences issued by the government must be less than the number of licences demanded by the firms. This assumption is similar to Beck and Maher (1986), Shleifer and Vishny (1992) and Bliss and di Telia (1997), where a government creates a shortage in supply in order to generate payment from the agents that demand it (here the agent is the producer).\textsuperscript{11}

It has been shown by Ferejohn (1986) and Aidt and Dutta (2001) that democracy puts officials under pressure from the general public and makes them more accountable. This means that in a democratic society, in order to be re-elected, in addition to their own bribe revenue, the corrupt officials also need to take the welfare of producers and consumers into account when making decisions. Unlike the studies by Shleifer and Vishny (1992), Bliss and di Telia (1997) and Kaufmann and Wei (1999), to capture the effect of democracy on a host government, here we assume that a democratically elected government maximises a weighted sum of total social welfare and its own bribe revenue, rather than its own bribe revenue alone.\textsuperscript{12} Using this

\textsuperscript{8}Because the foreign firm is already established, it does not need to pay the enterprise set-up cost $G$ again if it chooses to set up a new plant in country A.

\textsuperscript{9}It is worth noting that in the main part of this chapter and the chapter that follows, we assume that if the foreign firm chooses to supply country A via exporting, the government would not require a lump-sum payment for an import licence. However, in reality, countries with a high level of corruption in issuing production licences could also suffer from a high level of corruption in issuing import licences. To capture this, the basic model will be extended to include a license for an exporting foreign firm in the appendix of this chapter. As will be shown, the inclusion of an import licence will not change the main results of our study.

\textsuperscript{10}Here partial equilibrium analysis of country A’s market will be carried out, for notational simplicity we will refer to country A’s market as “the market” or “the host market”, even though it is only a potential one. And we will refer the government in country A as “the government” or “the host government”.

\textsuperscript{11}This is because without scarcity, all the producers can get the licence, hence it is not rational for them to bribe the government.

\textsuperscript{12}In the studies by Shleifer and Vishny (1992), Bliss and di Telia (1997) and Kaufmann and Wei (1999), it was assumed that the only objective of the government is to maximise its own bribe revenue.
assumption gives us a more realistic prediction of the optimal strategy of the host government and enhances our understanding of the policy-making process of the host government, given the choices of the MNE and the domestic firm.

The host government takes the welfare of its voters into account when making decisions, therefore the objective function that country $A$’s government tries to maximise is a combination of consumer surplus, the domestic producer’s profits and its own revenues from tariff, licence fee and possible bribe. It can be written as follows:

$$
\Psi_i = \text{Consumer Surplus + Domestic producer’s profit + Government Revenue} \\
= \int_0^Q (A - Q)dQ - (A - Q)Q + \lambda_1[(A - Q)q - Cq - T(\beta_i)] - \lambda_2(F + G) \\
+ \xi[lSq^* + (1 - l)T(\beta_i)] + \lambda_1T(\beta_i) + B + B^*
$$

where $q$ and $q^*$ represent the levels of output supplied by the domestic and foreign firms, and $Q = q + q^*$. $\xi$ takes the value of 1 if the foreign firm produces positive output in the host market ($q^* > 0$) and 0 otherwise; $\lambda_1$ takes the value of 1 if the domestic firm produces positive output ($q > 0$), and 0 otherwise; and $\lambda_2$ takes the value of 1 if the domestic firm decides to enter the host market and 0 otherwise. $l$ takes the value of 1 if the foreign firm chooses to supply country $A$ through exports, while it takes the value of 0 if the foreign firm chooses to supply with FDI. $B$ and $B^*$ represent the level of bribe paid by the domestic and foreign firm, respectively to restrict the entry of their rival.

A higher level of licence fee $T(\beta_i)$ would mean higher costs and lower profit for the domestic firm, which could discourage the domestic firm from supporting the host government that imposes the licence fee in the next election. This means that imposing a high level of licence fee might reduce the chance of re-election for the host government. Also, the general public normally dislikes corrupt governments and it is not uncommon for a government to be overthrown by the general public for being corrupt (see Johnston (1997) for examples). Because here the level of lump-sum licence fee is the measure of non-discriminatory corruption in the country, if a higher level of licence fee is imposed, the general public would know that the host government is more corrupt, which might again reduce the probability of the host government being re-elected. If the host government is not re-elected, it will lose all future bribe revenues, so as a result, when trying to decide the level of licence fee, that is the level of non-discriminatory corruption in the country, a rational government would make a trade-off between the revenue obtained from a higher licence fee and the costs of not being re-elected and losing all future bribe revenue. Therefore, there must be an optimal level of licence fee that maximises the net benefit of its implementation.

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13 The support of the domestic producer for the government could involve votes from the owners and workers of the domestic firm and possible campaign contributions.
Given the objective function of the host government, for analytical simplicity it is assumed that the level of non-discriminatory corruption that maximises the welfare of the host government is \( T^*(\beta_i) \). What is more, for any level of licence fee that is below \( T^*(\beta_i) \), an increase in the level of non-discriminatory corruption would improve the welfare of the host government, \((\frac{d\Psi_i}{dT} \geq 0)\), however the rate of welfare improvement falls \((\frac{d^2\Psi_i}{dT^2} < 0)\). The above discussion means that in our model, even though the host government chooses the level of licence fee that will be imposed in the market, because of its own concerns on reelection, there is an optimal licence fee for the host government depending on its corruption characteristic \( \beta_i \) that is exogenously given. This implies the level of lump-sum licence fee imposed by the host government is effectively exogenously determined in our model.

Here \( \beta_i \) is the host government’s corruption characteristic, which represents the host government’s attitude towards the cost of a higher level of licence fee. More specifically, it shows how much a host government does not care about its reputation for being corrupt. Because a more corrupt government cares more about bribe revenue per se than its reputation for being corrupt, when compared to a less corrupt government, it is reasonable to assume that a more corrupt host government would value the costs of a high licence fee less than a more honest government. This means the more corrupt a host government is, the less it will care about its reputation for being corrupt (i.e. \( \frac{dT}{d\beta_i} < 0 \)), which implies \( \beta_1 > \beta_2 \) and \( T(\beta_1) < T(\beta_2) \) if the host government 2 is more corrupt than the host government 1.

In our model, the game that will be played by the foreign firm, the domestic firm and the host government can be represented as follows. The foreign firm moves first at \( t = 0 \), to make its entry and bribery choice.\(^ {14} \) If the foreign firm decides to enter the market via FDI it need to incur a non-recoverable fixed plant set-up cost \( F \) but does not need to pay the licence fee until \( t = 2 \). At \( t = 1 \), after the choice of the foreign firm is observed by all, the domestic firm makes its entry and bribery choice. Similarly to the foreign firm, if the domestic firm chooses to enter the market, it need to incur a non-recoverable fixed plant and enterprise set-up cost \( F + G \), again it does not need to pay the licence fee until \( t = 2 \).\(^ {15} \) At \( t = 2 \), after the choice of the domestic firm is observed by all, the host government decides whether it will accept the bribe(s) or not and whose bribe to accept, as well as the level of lump-sum licence fee that will be imposed. The host government prevents entry by one firm if bribed by the other, and would not prevent entry by any firm if it rejects all bribes or neither firm offers a bribe. The surviving firm pays the licence fee imposed and carries out its production. The game will end then and

\(^{14}\)Here the entry choice means the choice between whether to enter a market or not, as well as the entry mode and output will be supplied. The bribery choice is the choice between whether to bribe a host government or not.

\(^{15}\)Because it has been assumed that the foreign firm has already established, therefore it does not need to pay the fixed enterprise set-up cost \( G \). And because the domestic firm has not established itself, therefore a fixed enterprise set-up cost need to be paid.
payoff will be realised. The time-line of this game is represented by Figure 1.

Figure 1: Time-line of the game

The structure of the game outlined above is similar to Smith (1987) and Motta (1992). In this game, all players have perfect knowledge about past history, hence it can be solved backwards to derive the Sub-Game Perfect Nash Equilibrium (henceforth SPNE). From our assumptions we know that there is a well-defined licence fee $T^*(\beta_i)$ for the host government, which is determined by its corruption characteristic $\beta_i$ and maximises its objective function. This means that for any entry decisions and quantity choices made by the foreign and domestic firms, the optimal licence fee choice for the host government will always be $T^*(\beta_i)$. Therefore, it is rational for both the foreign firm and the domestic firm to expect the government to impose $T^*(\beta_i)$, when making their choices of entry. In other words, when they make their decisions they will take $T^*(\beta_i)$ as given.

Given the assumptions about the host market conditions and the structure of the game, the possible equilibria in the first period and the possible payoffs for the foreign and domestic producers are shown as follows.\footnote{16}{It is worth noting that in our model even though the host government chooses the level of licence fee that will be imposed in the market, but because of its own concerns over re-election, there is an optimal licence fee for the host government depending on its corruption characteristic $\beta_i$ that is exogenously given. This implies the level of lump-sum licence fee imposed by the host government is effectively exogenously determined.}

\footnote{17}{Here the foreign firm's profits and outputs are represented by a superscript of *'. The other superscript represents the entry mode chosen by the foreign firm, and the subscript represents the market structure.}
\[(\Pi^*_{EM}, 0)\] where the foreign firm is an exporting monopolist in country A.

\[(\Pi^*_{ED}, \Pi^E_D)\] where the foreign firm chooses to export and country A’s market is characterised by a duopoly.

\[(\Pi^*_{MF}, 0)\] where the foreign firm chooses FDI and becomes a monopolist in country A’s market.

\[(\Pi^*_{FD}, \Pi^F_D)\] where the foreign firm chooses FDI and country A’s market is characterised by a duopoly.

\[(0, \Pi_M)\] where the domestic producer is a monopolist in country A.

### 3 The impact of non-discriminatory corruption

In this section we assume that any corruption is non-discriminatory, before adding the possibility of discriminatory corruption in the following section. The profits of the domestic and foreign producers in different outcomes and the conditions under which they will be able to break even are stated below. If the market is characterised by a foreign exporting monopolist, then the profit of the domestic firm would be zero, and the profit of the foreign firm can be written as:

\[
\Pi^*_{ME} = (A - Q^*_{ME})Q^*_{ME} - (C + S)Q^*_{ME}
\]

\[
\hat{Q}^*_{ME} = \frac{(A-C-S)}{2}
\]

\[
\hat{\Pi}^*_{ME} = \frac{(A-C-S)^2}{4}
\]

This means the condition required for the foreign firm to be profitable is:

\[
S \leq A - C \quad (2)
\]

If the market is characterised by an exporting duopoly, then the profits of the foreign firm can be written as:

\[
\Pi^*_{ED} = (A - q^*_{ED} - q^E_D)q^*_{ED} - (C + S)q^*_{ED}
\]

\[
\hat{q}^*_{ED} = \frac{A-C-2S}{3}
\]

\[
\hat{\Pi}^*_{ED} = \frac{(A-C-2S)^2}{9}
\]

\[18\]Here the optimal outputs and maximum profit levels are represented with a hat over the variables.
The condition for the foreign firm to be profitable is:

\[ S \leq \frac{A - C}{2} \] \hspace{1cm} (3)

while the profit for the domestic firm in this case would be:

\[
\Pi_D^E = (A - q^*_D - q_D^E)q_D^E - Cq_D^E - F - G - T^*(\beta_i) \\
\hat{q}_D^E = \frac{A - C + S}{4} > \hat{q}_D^E \\
\hat{\Pi}_D^E = \frac{(A - C + S)^2}{9} - F - G - T^*(\beta_i)
\]

The condition for the domestic firm to be profitable is:

\[ A \geq 3\sqrt{F + G + T^*(\beta_i)} + C - S \] \hspace{1cm} (4)

If the market is characterised by a foreign FDI monopolist, the profit of the domestic firm would be zero, and the profit for the foreign firm is:

\[
\Pi_M^F = (A - Q_M^F)Q_M^F - CQ_M^F - F - T^*(\beta_i) \\
\hat{Q}_M^F = \frac{A - C}{2} \\
\hat{\Pi}_M^F = \frac{(A - C)^2}{4} - F - T^*(\beta_i)
\]

The condition for the foreign firm to be profitable is:

\[ A \geq 3\sqrt{F + T^*(\beta_i) + C} \] \hspace{1cm} (5)

If the market is characterised by a duopoly and the foreign firm supplies the country with FDI, the profit of the foreign firm can be written as:

\[
\Pi_D^F = (A - q_D^F - q_D^E)q_D^E - Cq_D^E - F - G - T^*(\beta_i) \\
\hat{q}_D^F = \frac{A - C}{3} \\
\hat{\Pi}_D^F = \frac{(A - C)^2}{9} - F - T^*(\beta_i)
\]

The condition for the foreign firm to be profitable is:

\[ A \geq 3\sqrt{F + T^*(\beta_i) + C} \] \hspace{1cm} (6)
The profit for the domestic firm in this case can be written as:

\[ \Pi_D = (A - q_D^*F - q_D^F)q_D^F - Cq_D^F - F - G - T^*(\beta_i) \]

\[ \hat{q}_D^F = \frac{A-C}{3} \]

\[ \hat{\Pi}_D^F = \frac{(A-C)^2}{9} - F - G - T^*(\beta_i) \]

The condition for the domestic firm to be profitable is:

\[ A \geq 3\sqrt{F + G + T^*(\beta_i) + C} \quad (7) \]

If the market is characterised by a domestic monopolist, then the profit of the foreign firm would be zero and the profit of the domestic firm is:

\[ \Pi_M = (A - Q_M)Q_M - CQ_M - F - G - T^*(\beta_i) \]

\[ \hat{Q}_M = \frac{A-C}{2} \]

\[ \hat{\Pi}_M = \frac{(A-C)^2}{4} - F - G - T^*(\beta_i) \]

The condition for the domestic firm to be profitable is:

\[ A \geq 2\sqrt{F + G + T^*(\beta_i) + C} \quad (8) \]

Also, for the foreign firm to favour FDI over exporting, for a given entry decision made by the domestic producer, we require that:

\[ \hat{\Pi}_M^F \geq \hat{\Pi}_M^E \]

\[ A \geq \frac{S^2 + 4[F + T^*(\beta_i)]}{2S} + C \quad (9) \]

\[ \hat{\Pi}_D^F \geq \hat{\Pi}_D^E \]

\[ A \geq \frac{4S^2 + 4[F + T^*(\beta_i)]}{4S} + C \quad (10) \]

**Proposition 1** Given the entry choice of the domestic firm, a higher level of non-discriminatory corruption in the host country would make the foreign firm more likely to prefer exporting over

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19 The slope of \( \Pi_M^F = \Pi_M^E \) equals \( \frac{1}{2} - \frac{2(F + T^*(\beta_i))}{4S} \). Because typically \( S \) is relatively small compared with \( F \) and \( T \), it is reasonable to assume that \( \frac{1}{2} - \frac{2(F + T^*(\beta_i))}{4S} < 0 \) and it is steeper than the slope of \( \Pi_D^F = 0 \) i.e. \( \frac{4}{4S} = -1 \). To change this assumption will not cause any changes to our main results. If the opposite is true, the only difference would be an enlarged area for FDI monopoly to occur in equilibrium. For simplicity, it is assumed that the slope of \( \Pi_D^F = \Pi_D^E \) which is \( 1 - \frac{9(F + T^*(\beta_i))}{4S^2} \), is steeper than the slope of \( \Pi_M^F = \Pi_M^E \). If the opposite is true, the main results and observations will not be affected, the only difference is a narrowed area for export duopoly to occur in the equilibrium.
FDI.

Proof. From the earlier discussion we know that the more corrupt a government is, the higher would be the level of licence fee imposed. This means that if initially the market in country $A$ was characterised by a foreign monopoly, the additional profit for the foreign firm from investing in country $A$ can be represented as:

$$
\Delta \Pi^*_M = \hat{\Pi}^*_M - \hat{\Pi}^*_E = 2S(A-C) - S^2 - F - T^* (\beta_i)
$$

This shows that, given that the domestic firm chooses to stay out of the market, the higher the level of corruption in the host country, the less likely the foreign firm would be to engage in FDI, if it was a monopolist in the market.\(^{20}\) Similarly, when the domestic firm chooses to enter the market, the additional profits for the foreign firm from choosing FDI over exporting can be represented as:

$$
\Delta \Pi^*_D = \hat{\Pi}^*_D - \hat{\Pi}^*_E = 4S(A-C) - S^2 - F - T^* (\beta_i)
$$

This shows that, given that the domestic firm chooses to enter the market, a higher level of corruption in the host country would make the foreign firm less likely to engage in FDI. ■

A fuller explanation of the effects of the level of non-discriminatory corruption requires us to consider possible changes to the market structure. Combining inequalities (4) to (10), the market equilibrium in country $A$ can be determined and is shown in Figure 2, where similar results to Motta (1992) are observed. First we observe that when the tariff is high (above $S_2$) and the market in country $A$ is small (market size is below $A_1$), there will be no supply of the good in the market. This is because given the market size, the tariff rate is too high for exporting to be profitable for the foreign firm and the fixed costs involved in setting up a production plant in the country by either the foreign or the domestic firm are too high. As a result, in this case the demand in the host country will not be met by either producer.

[Figure 2 here]

Given the high tariff rate (above $S_2$), as the market size increases (between $A_1$ and $A_2$), the already established foreign firm would find the demand in the host market large enough to set

\(^{20}\)It is worth remembering here that a lower value of $\beta$ represents a more corrupt host government.
up a production plant in the host country and make higher profits than by exporting, while the
domestic firm would initially find the demand too small to cover both its fixed enterprise and
plant set-up costs as well as the licence fee. As a result, the market would be supplied by an
FDI monopolist, with the lower marginal cost from FDI by avoiding the tariff leading to “tariff
jumping” FDI. As the host country market size continues to expand, for a range of market size
(between \( A_2 \) and \( A_3 \)), the demand would be large enough to cover the fixed enterprise and plant
set-up costs and licence fee for either a domestic or foreign monopolist. However, the demand
in the market is still to small to allow either the foreign or the domestic firm to break even as a
duopolist. Hence as the first mover the foreign firm would enter the market via FDI and to deter
the entry of the domestic firm. In this case, FDI is not only motivated by a lower marginal cost
than exporting, but also be motivated by the foreign firm’s incentive to pre-empt the market and
prevent entry of the domestic firm. This is what Smith (1987) and Motta (1992) call “strategic
investment” by the foreign firm.

If the market size increases further (between \( A_3 \) and \( A_4 \), given the high tariff (above \( S_2 \)), the
foreign firm will continue to supply the market via FDI. The foreign firm would remain profitable
if the domestic firm entered, but the domestic firm would not break even in a duopoly, so the
foreign firm remains a monopolist.

Given the high tariff rate (above \( S_2 \)), if the host market size is sufficiently large (above \( A_4 \)),
the market would be large enough for both the foreign and domestic firms to at least break even
as duopolists, while the foreign firm would make higher profits by choosing FDI over exporting.
As a result, both foreign and domestic firms will supply the market and the host country will
be characterised by an FDI duopoly.

If the tariff is at an intermediate level (between \( S_2 \) and \( S_1 \)), for a small market size (below
\( A_1 \)), the market might be profitable for the foreign firm to supply the country with exports,
while the demand in the host country might still be too small to cover the fixed set-up costs and
licence fee to produce in the country. In this case, the the market might be supplied entirely by
exports from the foreign firm. As the host country market size increases, the market structure
would change following the same line as discussed above when the tariff rate is high (above \( S_2 \)).

If the tariff rate is low (below \( S_1 \)), for a small market size (below \( A_2 \), similarly to when
the tariff is at the intermediate level (between \( S_1 \) and \( S_2 \), the market could be supplied by an
exporting monopoly.

Given the low tariff rate (below \( S_1 \), as the market size continues to increase (between \( A_2 \)
and \( A_3 \), the foreign firm, which has already established in its own country, might find the host
country market large enough to cover its fixed plant set-up costs and licence fee and makes a
higher profit as an FDI monopolist than an exporting monopolist. If this happens FDI would
become a more profitable mode of entry than exporting for the foreign firm, hence it might
switch from being an exporting monopolist to an FDI monopolist, even when the tariff is low (below $S_1$).

As the size of the host market expands (above $A_4$), given the low tariff rate (below $S_1$), the market might be large enough for both foreign and domestic firms to enter and at least break even, which means in this case the foreign firm would not be able to deter entry of the domestic firm by supplying with FDI. What is more, given the market size, the tariff is so low (below $S_1$) that it makes exporting a more profitable option than FDI for the foreign firm when the domestic firm enters. As a result, the foreign firm may switch its mode of entry back to exporting and the domestic firm would enter the market, hence the market structure would change to an exporting duopoly.

Because the level of licence fee represents the level of non-discriminatory corruption in the host country that is determined by the host government’s corruption characteristic $\beta_i$, a change in the level of non-discriminatory corruption in the host country caused by a change in the host government’s corruption characteristic (i.e. changes in $\beta_i$), can be represented by a change in the level of lump-sum licence fee $T^*(\beta_i)$. This means that to study the effect of a marginal change in the level of non-discriminatory corruption on the profits and entry choices of the foreign and domestic firms under the current setting would be the same as to analyse the local effect of a very small change in the level of lump-sum licence fee $T^*(\beta_i)$ on the foreign and domestic firms’ entry mode decisions.

Here we assume that the host government becomes marginally more corrupt, represented by a fall in its corruption characteristic $\beta_i$ from $\beta_1$ to $\beta_2$. From our assumption about the inverse relationship between the host government’s corruption characteristic $\beta$ and the level of licence fee, we know that this means the level of non-discriminatory corruption in the host country would increase marginally from $T^*(\beta_1)$ to $T^*(\beta_2)$.

The local effects of this change in the level of non-discriminatory corruption on the foreign firm’s incentives for FDI are shown in Figure 3. In this case, the higher level of non-discriminatory corruption causes the right hand sides of inequalities (4), (5), (6), (7), (8), (9) and (10) to increase, which is represented by the upward shift of lines $A_1$, $A_2$, $A_3$ and $A_4$ to $A'_1$, $A'_2$, $A'_3$, and $A'_4$. This indicates that holding other factors constant, when the government becomes more corrupt the fixed costs of both foreign and domestic firms would increase as a result. Therefore for both firms to break even, their revenues need to increase as well, which requires the market size in the country to increase accordingly.

[Figure 3 here]
Meanwhile, inequalities (2) and (3) remain unchanged, because these two conditions refer to the cases when the foreign firm produces outside the host country. Because exporting is corruption free, any change in the host country’s corruption level will not affect the firm’s production decision directly. Therefore, these two conditions will not be affected.

It is worth noting that here we are looking at a marginal increase in the level of licence fee and the results represented in Figure 3 are local results. For instance, Area 1 in Figure 3 shows that if initially the host market was characterised by an FDI monopolist, a marginal increase in the level of non-discriminatory would induce the foreign firm that is located at the boundary between entering via FDI and not entering the market to not enter, due to the increased licence fee associated with the higher level of corruption. For a similar reason, Area 2 in Figure 3 shows that where initially, with a low level of non-discriminatory corruption, the host market was characterised by an FDI monopolist, a marginally higher level of non-discriminatory corruption in the host country would induce the foreign firm to switch its mode of entry from FDI to exports, if initially the foreign firm is at the boundary between choosing FDI and exporting as its mode of entry.

Area 3 represents a case where a marginal increase in the level of non-discriminatory corruption causes the market equilibrium to change from an exporting duopoly to a foreign exporting monopolist, where initially the domestic firm is at the boundary of breaking even as an exporting duopolist. This happens because a higher level of non-discriminatory corruption raises the level of fixed set-up cost for the domestic firm, which pushes the domestic firm into an area where it can no longer break even as an exporting duopolist.21

Area 4 shows that a small increase in the level of non-discriminatory corruption might induce the host market to switch from an FDI monopoly to an exporting duopoly, when initially the foreign firm is at a boundary between choosing FDI and exporting as its mode of entry and the domestic firm is at the boundary between choosing to enter the market and not. This happens because with a low level of non-discriminatory corruption, the foreign firm would make a slightly higher profits from FDI than exporting even when the domestic firm chooses to enter the market. As a result, the foreign firm will enter the market via FDI under a low level of non-discriminatory corruption, while the domestic firm cannot break even if the foreign firm enters via FDI.

When there is a small increase in the level of non-discriminatory corruption, the profits of the foreign firm from FDI fall accordingly, which might push the foreign firm’s profit into an area where it can make a higher profit from exporting than FDI. As a result, the foreign firm

21Here a marginally higher level of non-discriminatory corruption could increase the fixed cost and reduce foreign firm’s profit from FDI. Meanwhile, changes in the level of licence fee will not affect the foreign firm’s profits from exporting directly. This makes exporting an even more attractive mode of entry when there is a small increase in the level of non-discriminatory corruption. As a result, the foreign firm will continue to supply via exporting.
will switch its mode of entry to exporting instead. By choosing exporting as its mode of entry,
the foreign firm would have a higher marginal cost than the domestic firm (i.e., $C + S > C$),
which might just be enough to enable the domestic firm to break even as an exporting duopolist.
Therefore, surprisingly in this case, a marginal increase in the level of non-discriminatory cor-
ruption might have the local effect of inducing the domestic firm to enter the market and shifting
the market equilibrium from an FDI monopoly to an exporting duopoly.

Area 5 in Figure 3 represents a switch of market equilibrium from an exporting duopoly to an
FDI monopolist caused by a marginal increase in the level of non-discriminatory corruption, if
initially the domestic firm is at a boundary between breaking even as an FDI duopolist and not.
Such a switch of market structure happens because a slightly higher level of non-discriminatory
corruption raises the fixed set-up costs of the domestic firm enough to make the domestic firm no
longer be able to break even as an FDI duopolist, but still be able to break even in an exporting
duopoly.\textsuperscript{22} The foreign firm can make a higher profit as an FDI monopolist than an exporting
duopolist, hence it will switch its mode of entry from exporting to FDI in order to pre-empt the
market. Therefore here we observe that a marginal increase in the level of non-discriminatory
corruption might have the effect of inducing the market equilibrium to switch from an exporting
duopoly to an FDI monopolist.

Here we see the strategic switch of the foreign firm’s entry mode from exporting to FDI
caused by an increase in the level of non-discriminatory corruption, which is similar but not
exactly the same as the “strategic FDI” of the foreign firm caused by an increase in tariff rate
discussed by Smith (1989) and Motta (1992). In their models, a marginal increase in tariff rate
might increase the marginal cost of the exporting foreign firm to the extent that allows the
domestic firm to break even if the foreign firm continues to choose exporting as its mode of
entry. The rational foreign firm would foresight this and would deter the entry of the domestic
firm by choose FDI instead. There the higher level of tariff rate creates the opportunity for the
domestic firm to enter the market. To prevent the domestic firm from entering the market the
foreign firm uses FDI strategically.

In Area 5 of Figure 3, with a low level of non-discriminatory corruption even though the
domestic firm is close to the boundary between breaking even and not as an FDI duopolist, it
still can break even regardless of the entry choice made by the foreign firm. With a marginally
higher level of non-discriminatory corruption, the domestic firm’s profit from FDI would be
reduced and would be negative if the foreign firm enters via FDI. It is this profit reducing effect
that gives the foreign firm the chance to pre-empt the market by using FDI strategically. This

\textsuperscript{22}It is worth noting that because exporting is corruption free, therefore a marginal increase in the level of non-
discriminatory corruption would not affect the domestic firm’s profit from exporting. Therefore, the domestic
firm is still able to break even as an exporting duopolist even after the marginal increase in the level of non-
discriminatory corruption.
shows in our case, a marginally higher level of non-discriminatory corruption actually creates the opportunity for the foreign firm to deter the entry of the domestic firm, which the foreign firm cannot achieve under a slightly lower level of non-discriminatory corruption.

Area 6 in Figure 3 represents how a marginal increase in the level of non-discriminatory corruption might cause the host market structure to change from an FDI duopoly to an FDI monopolist, if initially the domestic firm is located at a boundary between breaking even as an FDI duopolist and not. Similarly to Area 3, this happens because a slightly higher level of non-discriminatory corruption reduces the domestic firm’s profit enough that it can no longer break even as an FDI duopolist, while a slightly higher level of non-discriminatory corruption may also reduce the foreign firm’s profit from FDI and force it to be close to the boundary between choosing FDI and exporting as it is mode of entry.

Area 7 in Figure 3 represents a change from an FDI duopoly to an exporting duopoly resulting from a marginal increase in the level of non-discriminatory corruption, if initially the foreign firm is on the boundary between choosing FDI and exporting as its mode of entry. This again might happen because a slightly higher level of corruption increases the fixed cost and hence reduces the profits of the foreign firm from FDI enough that it prefers exporting over FDI. Similarly, this increase in the level of non-discriminatory corruption pushes the domestic firm across the boundary between breaking even and not so that it is no longer able to break even if the foreign firm continues to supply with FDI. However, because the higher level of non-discriminatory corruption makes the foreign firm switch its mode of entry from FDI to exporting, the domestic firm would gain a cost advantage over the foreign firm in terms of marginal cost ($C < C + S$). This cost advantage enables the domestic firm to make a positive profit as an exporting duopolist and stay in the host market. As a result, a slightly higher level of non-discriminatory corruption might have the local effect of causing the host market to change from an FDI duopoly to an exporting duopoly.

**Proposition 2** (a) A marginally higher level of non-discriminatory corruption in the host country will only induce the foreign firm to switch from exporting to FDI if it can pre-empt the host market by doing so, (b) a marginally higher level of non-discriminatory corruption could increase the profitability of the foreign firm.

**Proof.** (a). Follows directly from the discussion above. ■

From the above discussion it is clear that when there is a small increase in the level of non-discriminatory corruption, the supply decisions of the foreign and domestic firms that are located at the boundary of their entry choices might be changed, as the higher level of non-discriminatory corruption pushes the firms from one side of the boundary to the other. If this happens as discussed above a marginal increase in the level of non-discriminatory corruption
might cause the market structure to switch, which could both encourage and discourage the foreign firm to choose FDI as its mode of entry. Furthermore, such change in foreign firm’s entry mode choices and market equilibrium caused by a very small increase in the level of non-discriminatory corruption might improve the profit of the foreign firm.

**Proof.** (b). Here we are going to study the possible local profit improving effect of a very small increase in the level of non-discriminatory corruption for the foreign firm.

In Area 3 in Figure 3, as discussed above, when there is a marginal increase in the level of non-discriminatory corruption the host market might switch from an exporting duopoly to an exporting monopoly, if initially the domestic firm is at the boundary between break even as an exporting duopolist and not. The changes in the foreign firm’s profit can be written as follows:\(^{24}\)

\[
\Delta \Pi^* = \hat{\Pi}^*_M - \hat{\Pi}^*_D = \frac{(A-C-S)^2}{4} - \frac{(A-C-2S)^2}{9} > 0
\]

In Figure 3, Area 5 shows a very small increase in the level of non-discriminatory corruption might cause the market equilibrium to change from an exporting duopolist to an FDI monopolist, if initially the domestic firm is at the boundary between break even as an exporting duopolist and not. In this case the changes in the foreign firm’s profit can be written as follows:\(^{25}\)

\[
\Delta \Pi^* = \hat{\Pi}^*_M - \hat{\Pi}^*_E = \frac{(A-C)^2}{4} - F - T(\beta_i) - \frac{(A-C-2S)^2}{9} > 0
\]

Also, as discussed earlier, Area 6 in Figure 3 shows a marginal increase in the level of non-discriminatory corruption might induce the host market to change from an FDI duopolist to an FDI monopolist, if initially the domestic firm is located at a boundary between break even as an FDI duopolist and not. If such switch in market equilibrium occurs, the changes in the foreign firm’s profit caused by a small increase in the level of non-discriminatory corruption can be written as follows:\(^{26}\)

\[
\Delta \Pi^* = \hat{\Pi}^*_M - \hat{\Pi}^*_D = \frac{5(A-C)^2}{36} > 0
\]

\(^{23}\)Here we are concentrate on the local effect of a very small increase in the level of non-discriminatory corruption on the profit of the foreign firm. Because the changes in the level of licence fee in this case is tiny, we can ignore the difference in licence fees on the foreign firm’s profit.

\(^{24}\)From Figure 3 we know that for the range of parameter values given, the foreign firm earns a higher profit as an exporting monopolist than an exporting duopoly, therefore \(\Pi^*_E > \Pi^*_D\) must be true.

\(^{25}\)From Figure 3 we know that for the range of parameter values given, the foreign firm can earn a higher profit as an FDI monopolist than an exporting monopolist and it can earn a higher profit as an exporting monopolist than an exporting duopolist, therefore we know that \(\Pi^*_M > \Pi^*_E\).

\(^{26}\)From Figure 3 we know that for the range of parameter values given, the foreign firm can earn a higher profit as an FDI monopolist than an FDI duopolist, which means \(\Pi^*_M > \Pi^*_D\) must be true.
These three cases above reveal that when initially the host market structure starts at a boundary between two possible market structures, a marginal increase in the level of non-discriminatory corruption might increase the profits of the foreign firm.

In Areas 5 and 6, a marginal increase in the level of non-discriminatory corruption increases the foreign firm’s profit from FDI. Because the foreign firm does not have to pay the fixed enterprise set-up cost $G$ to establish itself, the parameter values that put the domestic firm at a boundary between break even and negative profit would not put the foreign firm at the same boundary. In turn this would enable the foreign firm to continue to produce as an FDI supplier in the country with a higher level of non-discriminatory corruption (a higher licence fee) even when the domestic firm cannot. Here, the set-up costs of the enterprise play a vital role in making the equilibrium more favorable for the foreign firm under a marginally higher level of non-discriminatory corruption than under a lower level of non-discriminatory corruption. At the same time, it is the marginal increase in the level of non-discriminatory corruption that makes the saving from enterprise set-up costs significant enough to benefit the foreign firm and make it the monopolist in the host market. As a result, in these cases discussed above, a slightly higher level of non-discriminatory corruption might actually increases rather than reduces the profitability of the foreign firm from FDI.

3.1 Welfare effects of non-discriminatory corruption

Full analysis of the welfare effects of non-discriminatory corruption is provided in Zhou (2008). For reasons of space, here we limit ourselves to a discussion of the main findings. Total social welfare is defined to equal the sum of consumer surplus, domestic producer’s surplus and the government’s legal revenues (i.e. tariff revenue). Here the illegal revenue of the government (i.e. corruption revenue) is not included in the total social welfare function, mainly because as has been pointed out by Bennett and Estrin (2006), illegal revenue is normally hidden away from the public and often spent or deposited overseas rather than redistributed back to the society, therefore it would have a very limited impact on social well-being in that country. Also, as noted by Damania (2002), one of the drawbacks with the usual utilitarian welfare function is the inclusion of the government’s illegal revenue that could lead to a biased conclusion of the welfare improving effect of corruption/bribe. To avoid this we follows the approach adopted by Bliss and Di Tella (1997), Choi and Thum (2000) and Bennett and Estrin (2006), which excludes the illegal revenue of the government from total social welfare.

Interestingly, we find cases where a marginal increase in the level of non-discriminatory corruption can improve welfare in the host country. The kind of non-discriminatory corruption we have studied here is similar but not exactly the same as the sort of “helping-hand” corruption supported by Leff (1964), Lui (1985) and Bech and Maher (1986). Here non-discriminatory
corruption (the production licence) is not a lubrication for rigid regulation or red-tape. But rather it acts as the indirect red-tape to regulate the inefficient host country market due to the lack of entry control for the firms.

The areas where welfare can increase as a result of a rise in corruption correspond to Areas 2, 3 and 4 in Figure 3. In the cases represented by Areas 2 and 4, the host market is inefficient because initially with a lower level of non-discriminatory corruption the entry of the foreign firm reduces social welfare by diverting limited profits away from the domestic firm and the host government. In these cases, a marginally higher level of non-discriminatory corruption that forces the foreign firm, which located at the boundary between two possible entry modes to switch its mode of entry to the one with a higher marginal cost. This would provide the domestic firm with a cost advantage and the host government with higher tariff revenues, hence potentially improves total social welfare, locally. In these case, what we have observed is a slightly higher level of non-discriminatory corruption that has the local effect of harming the foreign firm, but because it shifts limited rents from the foreign firm to the domestic firm, government and consumers, therefore has the local effect of benefiting the host society.27

In Area 3 in Figure 3, with a lower level of non-discriminatory corruption the host market was inefficient because it allows the less efficient domestic firm supplies the host market. The domestic firm is less efficient as it has a higher set-up costs than the foreign firm \((F + G > F)\), therefore goods supplied by the domestic firm would be more expensive than goods supplied by the foreign firm to the host society. A marginal increase in the level of non-discriminatory corruption might have the local effect of inducing the domestic firm to stay out the market, if initially the domestic firm is at the boundary between break even and not. If this happens, a marginally higher non-discriminatory corruption would induce the more efficient foreign firm to replace the less efficient domestic firm in the market. As a result, we observe the local result of a slightly higher level of non-discriminatory corruption which replaces the more costly domestic firm’s products with the cheaper foreign firm’s products could improve total social welfare in the host country when the fixed set-up costs are high.28

\(^{27}\)It is worth noting that even though in these cases total social welfare of the host country may improve locally, world total social welfare, which not only includes total social welfare of the host country but also the profit of the foreign firm might fall, when falls in the foreign firm’s profits outweigh the gain in total social welfare of the host country. If this happens, non-discriminatory corruption would have the local effect of reducing total social welfare of the world while improving the total social welfare of the host country. This may happen because, when choosing the optimal level of non-discriminatory corruption, the host government is only concerned about welfare in its own country, but pays no attention to the welfare of the foreign firm. This shows that when we study the local effect of a marginal increase in the level of non-discriminatory corruption in a multi-country setting, it is important to distinguish between welfare of a particular country and welfare of the world as a whole. A failure to do so could generate unreliable results and predictions.

\(^{28}\)It is worth noting that in this case the profits of the foreign firm would increase as a result, which means that a marginally higher non-discriminatory corruption would not only raise total social welfare of the host country locally, but also total social welfare of the world locally.
In the cases discussed above, non-discriminatory corruption has the local effect of altering the supply choices of the foreign and domestic firms that is located at the boundary of two different entry choices, which indirectly corrects the pre-existing market inefficiency in the host market by shifting limited rents from the foreign firm to the domestic firm, government and consumers or replacing the less efficient domestic firm with the more efficient foreign firm. As a result, similar to the “Helping-hand” theory of corruption, in our model the local welfare improving effects of a marginally higher level of non-discriminatory corruption is the “second best” for the host society.

4 The Impact of Discriminatory Corruption

In this section we consider cases where the presence of discriminatory corruption can alter the market structure and benefit a foreign MNE. First we will study how discriminatory regulation imposed by a host government could affect a foreign firm’s strategic position and alter the entry choice of the foreign and domestic firms, when initially the host market is characterised by a (domestic or foreign) monopoly. Next, it will be shown that a foreign firm that was initially an FDI duopolist could become a monopolist. Finally, it will be shown that the presence of discriminatory corruption can encourage the foreign firm to switch its mode of entry from exporting to FDI, when initially the host market was characterised by an exporting duopoly. Also, as with non-discriminatory corruption, we will explain how the presence of discriminatory corruption could improve total social welfare of the host country by shifting profits from the foreign firm to the domestic firm. For reasons of space, we do not provide a full analysis of all possible outcomes of discriminatory corruption here.29

The game outlined in Section 2 above can be represented by the extensive form game in figure 4. From the discussion of the game above, we know that the actions the foreign firm need to take regarding to its entry and bribe decisions can be written as \((h, k)\), where \(h \in \{\text{Export, FDI, NE}\}\) indicates the entry choice and \(k \in \{B, NB\}\) indicates the bribe choice of the foreign firm.30,31,32

More detailed analysis and proofs can be found in Zhou (2008).

For instance the action (FDI, B) indicates that the foreign firm would choose FDI as its mode of entry and bribe the host government at \(t = 0\).

It is worth noting that when the foreign firm chooses exporting as its mode of entry, it would not be able to bribe the host government, as a result, its action would not contain a choice of bribe behavior. This also applies to the domestic firm when it chooses to stay out of the market, in which case its action would not contain a choice of bribe behavior.

The discussion above is about the actions of the players rather than their strategies. It is worth noting the difference between these two. The action represents the choice a player need to make at a single information set, while strategy is a completed plan of actions a play would take at all possible information sets. In this sequential game, the foreign firm has one single information set, therefore its action is the same as its strategy. However, the domestic firm has four information sets depending on the choice of the foreign firm at \(t = 0\), therefore each strategy choice of the domestic firm would include four actions. There is one action for each information set.

29 More detailed analysis and proofs can be found in Zhou (2008).
30 For instance the action (FDI, B) indicates that the foreign firm would choose FDI as its mode of entry and bribe the host government at \(t = 0\).
31 It is worth noting that when the foreign firm chooses exporting as its mode of entry, it would not be able to bribe the host government, as a result, its action would not contain a choice of bribe behavior. This also applies to the domestic firm when it chooses to stay out of the market, in which case its action would not contain a choice of bribe behavior.
32 The discussion above is about the actions of the players rather than their strategies. It is worth noting the difference between these two. The action represents the choice a player need to make at a single information set, while strategy is a completed plan of actions a play would take at all possible information sets. In this sequential game, the foreign firm has one single information set, therefore its action is the same as its strategy. However, the domestic firm has four information sets depending on the choice of the foreign firm at \(t = 0\), therefore each strategy choice of the domestic firm would include four actions. There is one action for each information set.
The actions the domestic firm needs to take regarding to its entry and bribe choices can be written as \((g, f)\), where \(g \in \{E, NE\}\) indicates the entry choice and \(f \in \{B, NB\}\) indicates the bribe choice of the domestic firm.\(^{33}\) The actions the host government needs to take regarding to its choice of whether to accept the bribe from the foreign firm, the domestic firm or no bribe at all, can be written as \((n, m)\), where \(n \in \{A, R\}\) indicates whether the host government accepts or rejects bribe(s) and \(m \in \{F, D\}\) indicates the nationality of the firm whose bribe is accepted by the host government.\(^{34,35}\) In Figure 4, each branch that connects the start and end node represents a unique history of what has been chosen by the players from \(t = 0\) to \(t = 2\).

The payoffs for the foreign and domestic firms are their profits, as derived in the previous section, net of the amount of bribes they pay to the host government \((B^*\) and \(B\) respectively), while the payoff for the host government is the value of its objective function, which is shown by (1). Their payoffs under various possible equilibria are shown in Figure 4 following each end node.\(^{36}\)

As before, we are looking to find a strategy profile that is an SPNE, where the foreign and domestic firms and the host government maximise their own payoff in every sub-game by playing their given strategies, given that all the others also adhere to their given strategies.\(^{37}\)

The possible SPNE in this game can be found by using backward induction. From the time-line outlined earlier, we know that this game will end at \(t = 2\), hence we can solve this game backward from \(t = 2\) to the beginning. We will start our discussion from the optimal choice for the host government at \(t = 2\). Then we will move one period back and consider the optimal choice for the domestic firm at \(t = 1\), given that the host government would only play its optimal choices. Finally, we shall study the optimal choice for the foreign firm at \(t = 0\), given

Similarly, the host government has eleven information sets depending on the choices of the foreign and domestic firms at \(t = 0\) and \(t = 1\), therefore each strategy choice of the host government would include eleven actions. Because we are studying an extensive form game here, it makes more sense to talk about the actions a player will take at each information set, instead of the strategies.

\(^{33}\)For instance, its action \((E,B)\) indicates that the domestic firm would enter the market and bribe the host government at \(t = 1\).

\(^{34}\)For instance, its action \((A,F)\) indicates that the host government would accept the bribe offered by the foreign firm at \(t = 2\).

\(^{35}\)It is worth noting that as was shown in the previous chapter, the host government will always impose its optimal licence fee \(T^*(\beta_i)\) in the equilibrium and both the foreign and domestic firms take this as given when choosing their optimal actions, therefore for notational simplicity we shall not include the licence fee as part of the host government’s action here.

\(^{36}\)Here for notational simplicity, we will ignore the hat over the maximum profits. The maximum profit of a firm will be written as \(\Pi_i^j\), where \(i\) represents the foreign firm’s choice of entry mode and \(j\) represents the market structure. An additional superscript of * is added to foreign variables.

\(^{37}\)Due to perfect information, there is a proper sub-game following each information set.
that both the domestic firm and the host government would only play their optimal choices. The
derivation of the optimal choices for the host government, the domestic and foreign firms are
shown in the appendix. We proceed by discussing possible impacts of discriminatory corruption
in the host country on the foreign and domestic firms’ investment and bribery decisions.

4.1 Initially the host market was characterised by a monopoly

In this section we will study the cases where the host market is small in the sense that initially
without discriminatory corruption, the market was characterised by a domestic or foreign mo-
nopolist and neither the domestic nor the foreign firm can break even as a duopolist.\textsuperscript{38} We will
study how the possibility of discriminatory corruption could affect the investment and bribery
choices of the foreign and domestic firms. In particular, we will consider the cases where the
foreign or domestic firm becomes a monopolist in the host market after discriminatory corrup-
tion is possible. Our main observations are shown in the propositions below. First we derive
the following proposition:

**Proposition 3** The presence of discriminatory corruption can alter the entry choices of the
foreign and domestic firms and change the host market structure, when initially without dis-
criminatory corruption the host market was characterised by a monopoly and neither the foreign
nor the domestic firm can break even as a duopolist.

**Proof.** See Appendix. ■

The proof shows that the presence of discriminatory corruption could provide the firm with a
disadvantaged market position (without favoritism) with an incentive to deviate from the choice
it made without discriminatory corruption and bribe the host government in order to improve
its market position and profitability.

In particular, when the domestic firm can make a non-negative profit as a domestic monop-
olist, i.e. $\Pi_M \geq 0$ and the fixed set-up costs are within the range specified by condition (43),
the presence of discriminatory corruption could induce the domestic firm to switch its entry
choice from not entering to entering, even though it would not be able to break even by doing
so without discriminatory corruption.

Similarly, when the foreign firm can make a non-negative profit as an FDI monopolist, i.e.
$\Pi^*_M \geq 0$ and the fixed set-up costs are sufficiently high as specified by conditions (40), (41) and

\textsuperscript{38}From Chapter 3, we know that this is the case where

\begin{align}
A & < C + 2S \\
A & < 3\sqrt{F + G + T^*(B_i)} + C - S \\
A & < 3\sqrt{F + T^*(B_i)} + C \\
A & < 3\sqrt{F + G + T^*(B_i)} + C
\end{align}
the presence of discriminatory corruption could induce the foreign firm to switch its entry choice from staying out to FDI, even in absence of discriminatory corruption the foreign firm chooses to stay out off the host market.

This means the total social welfare in the host country with discriminatory corruption could be very different from that without. As in Section 3, here we comment on the welfare effects without supplying the full analysis, which can be found in Zhou (2008).

When the presence of discriminatory corruption induces the host market to shift from an FDI monopolist to a domestic monopolist, the domestic producer’s surplus would rise, while the host government’s legal welfare remains the same. Consumer surplus is unchanged as the marginal cost of the domestic firm is the same as that of the foreign firm. Hence a switch of market equilibrium from an FDI monopolist to a domestic monopolist would definitely improve total social welfare.

This observation is similar to, but not exactly the same as, the “helping-hand” corruption arguments of Leff (1964), Lui (1985) and Beck and Maher (1986), who claimed that corruption can improve social welfare by “greasing” the pre-existing red-tape or distortion. Unlike the “helping-hand” theory of corruption, here discriminatory corruption acts as an indirect market entry regulation, rather than a lubrication for pre-existing regulation or red-tape. But still in this case, similarly to non-discriminatory corruption discussed in Section 3, discriminatory corruption improves total social welfare by shifting limited profit from the foreign firm to the domestic firm, hence eliminate pre-existing market inefficiency. This implies the welfare improving effect of discriminatory corruption also follows the “second best” principle.

Initially without discriminatory corruption the host market was inefficient because the entry of the foreign firm shifts limited profit away from the domestic firm and the host economy. The presence of discriminatory corruption allows the domestic firm to replace the foreign firm in the host market and shifts the limited profit back to the domestic firm, therefore improves the total social welfare in the host country.

On the other hand, if initially the market was characterised by a domestic monopolist, the proof of Proposition 3 shows when discriminatory corruption is present, provided that $\Pi^{F}_M \geq 0$ and conditions (40), (41) and (44) are satisfied, the market equilibrium could switch from a domestic monopolist to an FDI monopolist. In contrast to the discussion above, we know that such a change in market structure will induce a loss in total domestic social welfare as now the producer’s surplus is acquired by the foreign firm. When this happens, the foreign firm and the host government improves its own welfare, at the expense of the lowered welfare of the domestic producer.39

39Here the host government is at least as well off as before discriminatory corruption is possible, otherwise it would not accept the foreign bribe in the equilibrium. See appendix for details. And because $\Pi^{F}_L \geq 0$, the foreign
The above discussion shows that discriminatory corruption is not necessarily socially undesirable, even though it perverts fair competition in the host market. Its effect on total social welfare of the host country depends crucially on initial market equilibrium and fixed set-up costs in the host market. This is summarised in the remark below:

**Remark 1** Similarly to non-discriminatory corruption, discriminatory corruption in our model can improve or reduce total social welfare of the host country, depending on the initial market equilibrium and fixed set-up costs in the host market.

**4.2 Initially the host market was characterised by a duopoly**

Because our main attention is on studying how discriminatory corruption would affect FDI as the foreign firm’s preferred mode of entry into the host country, here we will concentrate on a possible SPNE where on the equilibrium path the foreign firm chooses FDI as its mode of entry and bribes the host government to become an FDI monopolist in the host market, when initially without discriminatory corruption, the host market was characterised by a duopoly. From the analysis in the appendix we know that there are number of cases where the foreign firm chooses FDI and bribes the host government to become an FDI monopolist can be on the equilibrium path, in the study that follows we shall discuss one of these cases in detail. Particularly, we will show that the strategy profile (FDI,B; NE,E,NB E,NB E,NB; A,F A,F A,F R R R A,D R R R R) can be a SPNE in this sequential game.

From the discussion in the appendix we know that when the host government prefers an FDI monopoly with a bribe to either an FDI duopoly or a domestic monopoly with a bribe, and the host government prefers either an FDI duopoly or an exporting duopoly to a domestic monopoly with a bribe, while at the same time the domestic firm can make non-negative profit as either an FDI duopolist or an exporting duopolist, (i.e. conditions (21), (22), (27) and (29) hold, but conditions (23) and (24) fail), the best choice for the host government would be to accept the foreign bribe, when the foreign firm chooses (FDI,B) and the domestic firm chooses either (E,B), (E,NB) or (NE). The best choice for the host government would be to reject all bribes, when the foreign firm chooses (FDI,NB) and the domestic firm chooses either (E,B), (E,NB) or (NE); when the foreign firm chooses (NE) and the domestic firm chooses (E,NB); or when the foreign firm chooses (Export) and the domestic firm chooses (E,B), (E,NB) or (NE). The best choice for the host government in this case is to accept the domestic bribe, when the foreign firm choose (NE) and the domestic firm chooses(E,B).

firm is better off.

40 Other cases where the domestic firm pays a bribe and becomes a monopolist can be easily derived, but as the focus of this study is on the effects of corruption on FDI, we will not discuss the other cases here.
In this case, given that the foreign firm will only play its optimal choices, the domestic firm’s best choice would be to not enter the host market if the foreign firm chooses (FDI,B), to enter the market but does not bribe the host government if, the foreign firm chooses (FDI,NB), (NE) or (Export).

This shows, given that both the host government and the domestic firm will only play their optimal choices, when conditions (21), (22), (27) and (29) hold, but conditions (23) and (24) fail, the foreign firm will get a payoff equal to $\Pi^*_M - B^*$ if it enters via FDI and bribes the host government, $\Pi^*_D$ if it enters via FDI but does not bribe the host government, 0 if it does not enter the market and $\Pi^*_E$ if it enters via exporting. In this section, it has been assumed that initially without discriminatory corruption, the host market was characterised by a duopoly, (i.e. $\Pi^*_D \geq 0$ and $\Pi^*_E \geq 0$), which means that if the foreign firm can get a higher payoff as an FDI monopolist than either an FDI duopolist or an exporting duopolist, (i.e. $\Pi^*_M - B^* \geq \Pi^*_D$ and $\Pi^*_M - B^* \geq \Pi^*_E$), it is optimal for the foreign firm to choose FDI as its mode of entry and bribes the host government to become an FDI monopolist in the host market.

This indicates that when conditions (21), (22), (27) and (29) hold, but conditions (23) and (24) fail, $\Pi^*_M - B^* \geq \Pi^*_D$ and $\Pi^*_M - B^* \geq \Pi^*_E$, the foreign and domestic firms and the host government maximise their payoffs in every sub-game by following the strategy profile (FDI,B; NE E,NB E,NB E,NB E,NB; A,F A,F A,F R R R A,D R R R), given that the others also follow this strategy profile. This means the given strategy profile (FDI,B; NE E,NB E,NB E,NB; A,F A,F A,F R R R A,D R R R) is an SPNE in this sequential game. On the equilibrium path, the foreign firm becomes an FDI monopolist in the host market by bribing the host government, when initially without discriminatory corruption, the host market was characterised by a duopoly.

The conditions above show the general conditions under which the given strategy profile would be an SPNE in this sequential game, in the discussion that follow we will discuss the meaning of each condition under our assumption that initially without discriminatory corruption the host market was characterised by a duopoly.

The above discussion shows that for the given strategy profile to be a SPNE, conditions (21), (22), (27) and (29) must hold, at the same time conditions (23) and (24) must fail, which does not restrict the amount of bribe the domestic firm would pay in this case. To derive the sufficient condition required for the given strategy profile to be an SPNE, here we assume that the domestic firm would pay the host government the maximum amount of bribe it could offer among all possible scenarios. It has been assumed that the domestic firm is rational, therefore $B \geq \Pi_M$, which means the maximum amount of bribe the domestic firm would pay equals $B_{max} = \Pi_M$.

From the above discussion we know that in this case the foreign firm would only be willing to become an FDI monopolist by bribing the host government if $\Pi^*_M - B^* \geq \Pi^*_D$ and $\Pi^*_M - B^* \geq
$\Pi^*_E$. This means the maximum amount of bribe the rational foreign firm would pay equals the difference between the maximum profit it can obtain as an FDI monopolist by bribing the host government and the maximum amount of profit it can obtain from playing its alternative strategies, which equals

$$B^*_{max} = \min[\Pi^*_M - \Pi^*_D, \Pi^*_M - \Pi^*_E]$$  \hspace{1cm} (14)$$

The maximum amount of bribe that would be offered by the foreign firm depends on the initial market structure in the host market without discriminatory corruption. In particular, the maximum bribe the foreign firm would be willing to pay equals $\Pi^*_M - \Pi^*_D$ if, initially without discriminatory corruption, the host market was characterised by an FDI duopoly; and the maximum bribe it would be willing to pay equal $\Pi^*_M - \Pi^*_E$ if, initially without discriminatory corruption, the host market was characterised by an exporting duopoly. In the discussion that follows, we will study these two cases, where initially without discriminatory corruption, the host market was characterised by an FDI and exporting duopoly in turn.

### 4.2.1 Initially FDI duopoly

Firstly, the case where initially, without discriminatory corruption, the host market was characterised by an FDI duopoly will be studied. From the above discussion we know that for the given strategy profile to be an SPNE, the host government needs to prefer either an FDI duopoly or an exporting duopoly to a domestic monopoly with a bribe, i.e. conditions (23) and (29) fail. We know that in this case, the maximum amount of bribe the domestic firm would offer equals $B^*_{max} = \Pi^*_M$, which means given the maximum amount of bribe the domestic firm is willing to pay, the host government would prefer either an FDI duopoly or an exporting duopoly to a domestic monopoly with a bribe, when the fixed set-up costs are sufficiently high as shown below:

$$\Phi^*_M + \Pi^*_M < \Phi^*_D$$

$$F + G > \frac{5(A-C)^2}{8} - \frac{(2(A-C))^2}{18} - \frac{(A-C)^2}{9} - 2T^*(\beta_i)$$  \hspace{1cm} (15)$$

$$\Phi^*_M + \Pi^*_M < \Phi^*_E$$

$$F + G > \frac{5(A-C)^2}{8} - \frac{(2A-2C-S)^2}{18} - \frac{S(A-C-2S)}{3} - \frac{(A-C-S)^2}{9} - T^*(\beta_i)$$  \hspace{1cm} (16)$$

If the above conditions (15) and (16) are satisfied, the host government would prefer either an FDI duopoly or an exporting duopoly to a domestic monopoly with a bribe, which means in the equilibrium the host government would not accept the domestic bribe.

What is more, for the given strategy profile to be an SPNE, the host government needs to
prefer an FDI monopoly with a bribe to either a domestic monopoly with a bribe or an FDI duopoly. The discussion earlier shows that if initially without discriminatory corruption, the host market was characterised by an FDI duopoly, the maximum amount of bribe would be offered by the foreign firm would equal $B_{\text{max}}^* = \Pi_M^F - \Pi_D^F$. This means, given the maximum bribe would be offered by the foreign firm, in the equilibrium the host government would prefer an FDI monopolist with a bribe to an FDI duopoly if,

$$\phi^F_M + \Pi_M^F - \Pi_D^F - F - G \geq \phi^F_D$$

(17)

When the above condition (17) is satisfied, the host government would prefer an FDI monopoly with a bribe to an FDI duopoly. The discussion above shows that when condition (15) holds, the host government would prefer an FDI duopoly to a domestic monopoly with a bribe, which indicates that in this case, when conditions (15) and (17) hold at the same time, the host government would also prefer an FDI monopoly with a bribe to a domestic monopoly with a bribe, i.e. condition (21) would hold automatically if condition (17) and (15) hold.

The above discussion indicates that when conditions (15), (16) and (17) hold simultaneously, the given strategy profile would be a SPNE and the foreign firm can become an FDI monopolist in the host market by bribing the host government, when initially the host market was characterised by an FDI duopoly. The equilibrium path is represented by the red highlighted path in figure 4.3, where the foreign firm chooses FDI as its mode of entry and bribes the host government, the domestic firm chooses to stay off the market and the host governments accepts the foreign bribe and withhold the domestic firm’s licence.

Because the payoff of the foreign firm equals its profit net of the bribe paid, a higher bribe offered would reduce its own payoff, therefore to maximise its own payoff, the foreign firm would pay the minimum amount of bribe required to induce the host government to accept its bribe and prevent entry by the domestic firm. From the earlier discussion we know that the minimum amount of bribe that is required by the host government to prefer an FDI monopoly with a bribe to either a domestic monopoly with a bribe or an FDI duopoly can be written as the follow:

$$\phi^F_M + \Pi_M^F - \Pi_D^F - F - G = \phi^F_D$$

(18)

This shows when conditions (15), (16) and (17) are satisfied, the foreign firm will enter the market via FDI and pay a bribe equals $B_{\text{min}}^* = \phi^F_D - \phi^F_M + F + G$, to become an FDI monopolist in

\[\text{It is worth noting that because here the host government prefers an FDI duopoly to a domestic monopoly with a bribe, therefore condition (22) is binding, while condition (21) is not, i.e. $\phi^F_M + B_{\text{min}}^* - F - G = \phi^F_D$ and $\phi^F_M + B_{\text{min}}^* - F - G > \phi_M + B$.}\]
the host market. This means, given that conditions (15), (16) and (17) were satisfied, if initially without discriminatory corruption the foreign firm chose FDI as its mode of entry, it would again choose FDI as its mode of entry once discriminatory corruption was possible. Discriminatory corruption in this case would not alter the foreign firm’s entry mode decision.

**Remark 2** If initially, without discriminatory corruption, the host market was characterised by an FDI duopoly, when conditions (15), (16) and (17) are satisfied, the foreign firm will continue to supply the market via FDI, but the presence of discriminatory corruption would induce the host market to shift from an FDI duopoly to an FDI monopoly.

In the case discussed above, despite the fact that discriminatory corruption will not alter the foreign firm’s investment decision, it will induce the host market to switch from an FDI duopoly to an FDI monopoly. This has important implications for host country welfare. A lower total output is supplied, which means lower consumer surplus, while the domestic firm no longer sells in the market, which means the domestic producer’s surplus drops to zero, while such a switch in market equilibrium has no effect on the host government’s legal revenue. As a result, the presence of discriminatory corruption clearly reduces total social welfare in the host country.

On the other hand, from the earlier discussion we know that, by paying the host government a bribe \( B_{\text{min}}^* = \Phi_D^F - \Phi_M^F + F + G \leq B_{\text{max}}^* \), the total payoff for the foreign firm would increase, i.e. \( \Pi_M^F - B_{\text{min}}^* > \Pi_D^F \). Also, the host government would be at least as well off by accepting a bribe from the foreign firm as from choosing its other strategies, \( \Phi_M^F + B_{\text{min}}^* \geq \Phi_D^F \geq \Phi_M + B_{\text{max}}^* \). This shows that the presence of discriminatory corruption here improves the welfare of the foreign firm and the host government, but reduces the welfare of the domestic firm and consumers.

### 4.2.2 Initially exporting duopoly

The discussion in the previous subsection considered the conditions that is required for the foreign firm to become an FDI monopolist in the host market by bribing the host government after discriminatory corruption is possible, when initially without discriminatory corruption, the host market was characterised by an FDI duopoly, here we will study the other case where initially without discriminatory corruption, the host market was characterised by an exporting duopoly. We observe that:

**Proposition 4** The presence of discriminatory corruption could induce a foreign firm to switch its mode of entry from exporting to FDI, when initially without discriminatory corruption the host market was characterised by an exporting duopoly.

\[42\] Otherwise the host government would choose other strategies over accepting a bribe from the foreign firm.
Proof. From the earlier discussion we know that the given strategy profile (FDI,B; NE E,NB E,NB E,NB E,NB; A,F A,F A,F R R R A,D R R R R) can be a SPNE in this sequential game when conditions (21), (22), (27) and (29) hold, but conditions (23) and (24) fail and at the same time $\Pi_{M}^{*F} - B^{*} \geq \Pi_{D}^{*F}$ and $\Pi_{M}^{*F} - B^{*} \geq \Pi_{D}^{*E}$. The earlier discussion shows the maximum amount of bribe the rational domestic firm would pay in this case equals $B_{max} = \Pi_{M}$. This means same as in the previous case where initially the host market was characterised by an FDI duopoly, given the maximum bribe would be offered by the domestic firm, the host government would prefer either an FDI duopoly or an exporting duopoly to a domestic monopoly with a bribe, (i.e. conditions (23) and (24) fail), when condition (15) and (16) hold.

When initially the host market was characterised by an exporting duopoly, the foreign firm can earn a higher profit from choosing exporting as its mode of entry than FDI, (i.e. $\Pi_{D}^{*E} \geq \Pi_{D}^{*F}$), therefore the maximum amount of bribe would be offered by the foreign firm in this case equals $B_{max}^{*} = \Pi_{M}^{*F} - \Pi_{D}^{*E}$. This shows given the maximum amount of bribe would be offered by the foreign firm to become an FDI monopolist in the host market, the host government would prefer an FDI monopoly with a bribe to an FDI duopoly if,

$$\Phi_{M}^{*F} + \Pi_{M}^{*F} - \Pi_{D}^{*F} - F - G \geq \Phi_{D}^{*F}$$

When the above condition (19) is satisfied, given the maximum bribe would be offered by the foreign firm, the host government would prefer an FDI monopolist to an FDI duopoly. We also know that for the maximum bribe would be offered by the domestic firm, when conditions (15) and (19) are satisfied at the same time, the host government will prefer an FDI monopoly with a bribe to a domestic monopoly with a bribe.

The discussion above shows that if conditions (15), (16) and (19) hold simultaneously, the given strategy profile (FDI,B; NE E,NB E,NB E,NB E,NB; A,F A,F A,F R R R A,D R R R R) would be an SPNE in this sequential game. On the equilibrium path that is highlighted in red in figure 5, the foreign firm would choose FDI as its mode of entry and bribe the host government, the domestic firm would not enter the market and the host government would accept the foreign bribe when discriminatory corruption is possible, even though initially without discriminatory corruption, the foreign firm prefers exporting over FDI and the host market was charaterised by an exporting duopoly.
Here conditions (15), (16) and (19) can be rewritten as follows:

\[
\frac{3(A-C)^2}{8} - \frac{(A-C-2S)^2}{9} - \frac{(2(A-C))^2}{18} - \frac{(A-C)^2}{9} - T^*(\beta_i) \geq F > \frac{5(A-C)^2}{8} - \frac{(2(A-C))^2}{18} - \frac{(A-C)^2}{9} - 2T^*(\beta_i) - G
\]

\[
\frac{3(A-C)^2}{5} - \frac{(A-C-2S)^2}{9} - \frac{(2(A-C))^2}{18} - \frac{(A-C-2S)^2}{5} - \frac{(A-C-S)^2}{9} - T^*(\beta_i) \geq F > \frac{5(A-C-2S)^2}{3} - \frac{(A-C-S)^2}{9} - T^*(\beta_i) - G
\]

As in the case where initially the host market was characterised by an FDI duopoly, the minimum amount of bribe demanded by the host government to accept the foreign bribe equals \( B_{\text{min}} = \Phi_D^F - \Phi_M^F + F + G \). Because the payoff for the foreign firm equals its profit net of the amount of bribe it pays, therefore in this case, to maximise its payoff the foreign firm would pay \( B_{\text{min}} = \Phi_D^F - \Phi_M^F + F + G \) to induce the host government to accept its bribe. This shows that when discriminatory corruption is possible and condition (20) holds, the foreign firm would choose FDI as its mode of entry into the host market and pay a bribe \( B_{\text{min}} = \Phi_D^F - \Phi_M^F + F + G \) to the host government to become an FDI monopolist in the host market, when initially without discriminatory corruption the host market was characterised by an exporting duopoly.

The case discussed above shows that when the fixed set-up costs are in the appropriate range as shown by condition (20), discriminatory corruption could encourage the foreign firm to change its investment choice from exporting to FDI partly because by engaging in FDI, the foreign firm could pay a bribe to the host government to improve its market position (i.e. to become a monopolist), which cannot be achieved by exporting, as here an exporting foreign firm cannot participate in discriminatory corruption.\(^43\) Also, partly because the foreign firm can supply at a lower marginal cost by engaging in FDI than exporting \((C < C + S)\), it is able to make a higher profit as an FDI monopolist. This would provide the foreign firm with a greater incentive to choose FDI as its entry mode over exporting.

In the case discussed above, when the fixed set-up costs are within the range specified by condition (20), the foreign firm would switch its mode of entry from exporting to FDI and the host government would prevent the entry of the domestic firm into the market, which means the presence of discriminatory corruption could induce the host market structure to shift from an exporting duopoly to an FDI monopoly. Domestic producer surplus falls to zero and consumer surplus also falls, while the host government’s legal revenue falls to zero. As a result, the presence of discriminatory corruption in the host country clearly reduces total social welfare in the host country.

\(^43\) Zhou (2008) shows that, even when the exporting foreign firm can bribe the host government to become a monopolist in the market, when the fixed set-up costs are high the existence of discriminatory corruption can still encourage FDI.
country.\textsuperscript{44}

However, this does not mean that all agents in the host country are worse off. As has been discussed earlier, by accepting the bribe from the foreign firm, the host government cannot be worse off, i.e. $\Phi_M^* + B^*_m \geq \Phi_D^* \geq \Phi_M + B_{max}$, and the foreign firm can also make a higher payoff with discriminatory corruption than without, i.e. $\Pi_M^* - B^*_m \geq \Pi_D^*$.\textsuperscript{45} This shows that as a result of discriminatory corruption, both the participants in the corruption (the host government and the foreign firm) gain, while the non-participants would lose.\textsuperscript{46} This observation is not particularly surprising, as Bardhan (1997) points out that there are many cases in history where the emergence of an entrepreneurial class is associated with corruption in dispensing licences. For instance, the development of the “new” entrepreneurial class in Europe was largely fueled by sales of monopoly rights.

5 Conclusion

This paper has studied the foreign firm’s entry mode choice between FDI and exporting under both non-discriminatory and discriminatory corruption in the host country. It has been shown that a marginal increase in the level of non-discriminatory corruption might have the effect of increasing the profitability of the foreign firm. Such an increase in the foreign firm’s profits from FDI caused by a marginally higher level of non-discriminatory corruption would only provide enough incentive for the foreign firm to switch its mode of entry from exporting to FDI, if by doing so the foreign firm can pre-empt the host market and deter the entry of the domestic firm.

What is more, in contrast to the conventional belief that the relationship between non-discriminatory corruption and social welfare is monotonically negative, our model shows that an increase in the level of non-discriminatory corruption might improve or worsen total social welfare in the host country, depending on the initial market equilibrium and host market size, tariff rate and fixed set-up costs.

When adding an extra licence restriction bribe in order to capture the well observed discriminatory power of corruption, we observed that when fixed set-up costs are in the appropriate range, the presence of discriminatory corruption can induce a change in the investment decisions

\textsuperscript{44}It is worth noting that if initially the market was characterised by a duopoly and the domestic firm bribed the host government to become a monopolist, the host country’s total social welfare could increase, provided that the reductions in consumer surplus and government legal revenue are lower than increases in the domestic producer’s profit.

\textsuperscript{45}This is always true, as otherwise either the foreign firm or the host government would not follow the given strategy profile.

\textsuperscript{46}When the domestic firm bribes the host government to become a monopolist, both the domestic firm and host government would gain from discriminatory corruption, at the expense of the domestic consumers and the foreign firm, which again highlights the discriminatory nature of corruption that benefits the participants while damaging others in the society.
of the firms, when initially the market was characterised by a monopolist. In these cases the market structure, as well as total social welfare, will change, which could be beneficial or harmful for the host country, depending crucially on the initial market structure without discriminatory corruption and the fixed set-up costs in the host market.

Furthermore, our study shows that when the fixed plant and enterprise set-up costs satisfy certain conditions, discriminatory corruption could allow the foreign firm to become an FDI monopolist by bribing the host government, when initially without discriminatory corruption the host market was characterised by a duopoly. Here we found that corruption can actually encourage rather than discourage FDI, as is conventionally believed.

Appendix

The derivation of the optimal choices for the host government, the domestic and foreign firms.

Because the game we are studying in this chapter is a sequential game with perfect information, we can find the possible SPNE by backward induction. From the time-line outlined in the main part of this chapter, we know that this game will end at \( t = 2 \), which means we can solve this game backward from \( t = 2 \). We will start our discussion about the optimal choices for the host government at \( t = 2 \). Then we will move one period back and consider the optimal choices for the domestic firm at \( t = 1 \), given that the host government would only play its optimal choices. Finally, we shall study the optimal choice for the foreign firm at \( t = 0 \), given that both the domestic firm and the host government would only play their optimal choices.

The optimal choice for the host government at \( t = 2 \)

In this subsection, we will consider the optimal choices for the host government at \( t = 2 \). From the outline of this game and the extensive form game represented in Figure 4, we know that depending on the choices of the foreign and domestic firms at \( t = 0 \) and \( t = 1 \), respectively the host government would end up at different information sets following different histories in the extensive game (i.e. the yellow dots in the extensive game). We will study the optimal choice for the host government for each sub-game that follows different histories in turn.

First of all, let us consider the sub-game following the history that the foreign firm chooses (FDI,B) at \( t = 0 \) and the domestic firm chooses (E,B) at \( t = 1 \). Figure 4 shows the host government will get \( \Phi_{M}^{*} + B^{*} - F - G \) if, it accepts the foreign bribe and withholds the domestic firm’s licence; \( \Phi_{M} + B \) if, it accepts the domestic bribe and withholds the foreign firm’s licence or \( \Phi_{D}^{F} \) if, it rejects all bribes. This indicates that if

\[
\Phi_{M}^{*} + B^{*} - F - G \geq \Phi_{M} + B \tag{21}
\]

and

\[
\Phi_{M}^{*} + B^{*} - F - G \geq \Phi_{D}^{F} \tag{22}
\]
the host government would get a higher payoff by accepting the foreign bribe than all its other options. Therefore when conditions (21) and (22) hold, the best choice for the host government would be to accept the foreign bribe.

On the other hand, in this sub-game when condition (21) fails and \( \Phi_M + B \geq \Phi_F^D \), the best choice for the host government would be to accept the domestic bribe. And when condition (22) fails and \( \Phi_M + B < \Phi_F^D \), the best choice for the host government would be to reject all bribes.\(^{47}\)

After considering the sub-game following the history that the foreign firm chooses (FDI,B) and the domestic firm chooses (E,B), here we will consider the sub-game where the foreign firm chooses (FDI,B) at \( t = 0 \) as above, but the domestic firm chooses (E,NB) at \( t = 1 \).

From the extensive form game in Figure 4, we know that the host government would again get \( \Phi_M^F + B^* - F - G \) if, it accepts the foreign bribe and \( \Phi_F^D \) if, it accepts the domestic bribe or reject all bribe.\(^{48}\) In this sub-game, because the domestic firm does not offer a bribe to the host government at \( t = 1 \), the host government would not withhold the licence of the foreign firm at \( t = 2 \), therefore the payoffs for all players would be the same regardless the host government chooses to protect the domestic firm or reject all bribes. This shows that in this sub-game, if condition (22) holds, the host government would get a higher payoff by accepting the foreign bribe. Therefore the optimal choice for the host government in this sub-game would be to accept the foreign bribe. Alternatively, when condition (22) fails, the best choice for the host government would be to reject all bribes.\(^{49}\)

Having studied the two sub-games where the foreign firm chooses (FDI,B) at \( t = 1 \) and the domestic firm chooses either to enter the market and bribe or enter the market but does not bribe at \( t = 1 \), here we will consider the sub-game following the history that the foreign firm chooses (FDI,B) at \( t = 0 \), the domestic firm chooses not to enter the market at \( t = 1 \). The extensive form game in Figure 4 reveals that in this case, the host government would get \( \Phi_M^F + B^* \) if, it accepts the foreign bribe and \( \Phi_F^D \) if, it accepts the domestic bribe or rejects all bribes. Under our assumption that the bribe offered by the foreign firm is non-negative, i.e. \( B^* \geq 0 \), it is always optimal for the host government to accept the foreign bribe in this sub-game.

The discussions above studied the optimal choice for the host government in the sub-games where the foreign firm chooses FDI and offer a bribe to the host government at \( t = 0 \), now we will study the alternative cases where the foreign firm chooses FDI but does not offer a bribe to the host government at \( t = 0 \).

If the foreign firm chooses (FDI,NB) at \( t = 0 \) and the domestic firm chooses (E,B) at \( t = 1 \), from Figure 4 we know that the host government would get \( \Phi_F^D \) if, it accepts the foreign bribe or rejects all bribes.\(^{50}\) And the host government would get \( \Phi_M + B \) if, it accepts the domestic

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\(^{47}\)The condition that \( \Phi_M + B \geq \Phi_F^D \) is the same as condition (23) will be discussed later.

\(^{48}\)It is worth noting that here we are discussing all the possible action for each player, regardless of whether they will be played in the equilibrium or not.

\(^{49}\)If condition (22) fails it is also optimal for the host government to accept the domestic bribe. But because in this sub-game when the domestic firm does not bribe the host government, the payoff for all players would be the same regardless whether the host government accepts the domestic bribe or reject all bribes, therefore we shall only consider the case where the host government rejects all bribes here.

\(^{50}\)Here because the foreign firm did not bribe the host government, the host government would not withhold the licence of the domestic firm, therefore the payoff for all players would be the same regardless the host government chooses to accept the foreign bribe or to reject all bribes.
bribe. This indicates that if

\[ \Phi_M + B \geq \Phi_D^F \]  

(23)

it would be optimal for the host government to accept the domestic bribe. On the other hand, if condition (23) fails, it would be optimal for the host government to reject all bribes.\(^{51}\)

After discussing the sub-game where the foreign firm chooses (FDI,NB) at \( t = 0 \) and the domestic firm chooses (E,B) at \( t = 1 \), here let us consider the sub-game following the history that the foreign firm chooses (FDI,NB) at \( t = 0 \) but the domestic firm chooses (E,NB) at \( t = 1 \). In this case, we know that either the foreign nor the domestic firm would offer a bribe, which means the host government would not withhold any licence. As a result, the market equilibrium and payoff for the host government would be the same regardless of its choice. And Figure 4 reveals that the host government would always get \( \Phi_D^F \). This indicates that in this sub-game, it is always optimal for the host government to reject all bribes.\(^{52}\)

Similarly, in the sub-game where the foreign firm chooses (FDI,NB) at \( t = 0 \) and the domestic firm chooses not to enter at \( t = 1 \), the extensive form game represented in Figure 4 shows that the market equilibrium and the host government’s payoff would be independent of the choice the host government make at \( t = 3 \). And the host government would always get \( \Phi_M^F \), therefore it is always optimal for the host government to reject all bribes.

The discussions above show the best choices for the host government in these sub-games where the foreign firm chooses FDI as its mode of entry at \( t = 0 \), in the discussion that follows we shall consider the sub-games where the foreign firm chooses exporting as its mode of entry at \( t = 0 \).

If the foreign firm chooses exporting at \( t = 0 \) and the domestic firm chooses to enter the market and offer a bribe to the host government (i.e. (E,B)) at \( t = 1 \), Figure 4 shows that the host government would get \( \Phi_M + B \) if, the host government accepts the domestic bribe, and \( \Phi_D^E \) if, it accepts the foreign bribe or rejects all bribes. This indicates that if

\[ \Phi_M + B \geq \Phi_D^E \]  

(24)

the host government would get a higher payoff from accepting the domestic bribe than all its other options. Therefore, it is optimal for the host government to accept the domestic bribe. On the other hand, if condition (24) fails, it would be optimal for the host government to reject all bribes in this sub-game.

In the sub-game where the foreign firm chooses exporting at \( t = 0 \) and the domestic firm chooses (E,NB) at \( t = 1 \), either of the firms would bribe the host government. This means the host government would not withhold any licence. As a result, the market equilibrium and the host government’s payoff would be independent from the choice made by the host government at \( t = 2 \). And from Figure 4 we know that the host government would always get \( \Phi_D^E \). Therefore,

\(^{51}\)If condition (23) fails it is also optimal for the host government to accept the foreign bribe. But because in this sub-game when the foreign firm does not bribe the host government, the payoff for all players would be the same regardless whether the host government accepts the foreign bribe or rejects all bribes, therefore we shall only discuss the case where the host government rejects all bribe here.

\(^{52}\)Because when either the foreign or the domestic firm offers a bribe to the host government, the payoff for all players would be the same regardless the choice made by the host government, therefore we shall only discuss the case where the host government rejects all bribe here.
in this sub-game it is always optimal for the host government to reject all bribes.

Similarly, in the sub-game following the history that the foreign firm chooses exporting at \( t = 0 \) but the domestic firm chooses to stay out of the market at \( t = 1 \), Figure 4 shows that the host government would always get \( \Phi_M \). This indicates that in this case, it is always optimal for the host government to reject all bribes as well.

Having studied the sub-games where the foreign firm chooses FDI or exporting as its mode of entry at \( t = 0 \), in the discussion follows we shall consider the sub-games where at \( t = 0 \) the foreign firm chooses to stay out of the market.

When the foreign firm chooses to stay out of the market at \( t = 0 \) and the domestic firm chooses \((E,B)\) at \( t = 1 \), the extensive form game in Figure 4 indicates that the host government would get \( \Phi_M + B \) if, it accepts the domestic bribe, and \( \Phi_M \) if, it rejects all bribes or accepts the foreign bribe. Under our assumption that the bribe offered by any firm is non-negative, i.e. \( B \geq 0 \), we know that \( \Phi_M + B \geq \Phi_M \). Therefore, it is always optimal in this sub-game for the host government to accept the domestic bribe.

And in the sub-game following the history that the foreign firm chooses to stay out of the market at \( t = 0 \) and the domestic firm chooses to enter the market but does not bribe the host government at \( t = 1 \), we know that again the host government would not withhold any licence and neither the market equilibrium nor the host government’s payoff would be affected by the choice made by the host government at \( t = 2 \). The extensive form game represented in Figure 4 shows that in this case, the host government would always get \( \Phi + M \). Therefore, in this sub-game it is always optimal for the host government to reject all bribe.\(^{53}\)

The optimal choice for the domestic firm at \( t = 1 \)

The discussions in the above subsection studied the optimal choices for the host government and the conditions required for these actions to be optimal for the host government at \( t = 2 \) in different sub-games. Having studied that we can now go one period back and study the optimal choice for the domestic firm at \( t = 1 \), given that the host government would only play its optimal choices.

Similar to the discussion of the optimal choices for the host government above, here we will study the domestic firm’s optimal choice for each sub-game following its different information sets (i.e. the red dots in Figure 4) in turn.

First of all, the sub-game following the history that the foreign firm chooses FDI and offers a bribe to the host government (i.e. the foreign firm chooses \((FDI,B)\)) at \( t = 0 \) will be considered. From the discussion above and the extensive form game represented in figure 4.2, we know that in this case if conditions (21) and (22) are satisfied, the host government would accept the foreign bribe and withhold the domestic firm’s licence. This shows if the domestic firm decides to enter the market it will get a payoff equals \(-F - G\), and if it decides to stay out it will get a payoff equal to zero.\(^{54}\) Because \(-F - G < 0\), we know that in this sub-game when conditions (21) and (22) are satisfied, the optimal choice for the domestic firm would be to not enter the market.

\(^{53}\)When either foreign nor the domestic firm enters the market, the game will end without the choice of the host government. Therefore, in this case the optimal choice of the host government does not matter.

\(^{54}\)Here the domestic firm will get \(-F - G\) regardless of its bribery choice.
On the other hand, in this sub-game if condition (21) fails but condition (23) holds, the host government would choose to accept the domestic bribe and withhold the foreign firm’s licence if, the domestic firm chooses to enter and bribe the host government. And in this case from figure 4.2 we know that the domestic firm would get $\Pi_M - B$ as payoff. If the domestic firm chooses to enter the market but does not bribe the host government, from the discussion in the last section, it is clear that when condition (21) fails but conditions (22) and (23) hold, the best choice for the host government would be to accept the foreign bribe and withhold the domestic firm’s licence, which means the domestic firm would get $-F - G$; alternatively, when conditions (21) and (22) fail and condition (23) holds, the best choice for the host government would be to reject all bribes, which means the domestic firm would get $\Pi_D^F$. What is more, if the domestic firm chooses to not enter the market in this case, the host government would again choose to accept the foreign bribe and the domestic firm would get a payoff equals zero.

This shows that when conditions (23) and (22) hold but condition (21) fails if,

$$\Pi_M - B \geq 0 > -F - G$$

the domestic firm would get a higher payoff from entering the market and bribing the host government than all its other options. Therefore, when condition (25) holds, the optimal choice for the host government in this sub-game would be to play (E,B). On the other hand, if condition (25) above fails, the domestic firm would get a higher payoff by not enter the market. Therefore, the optimal choice for the domestic firm in this sub-game would be to choose (NE).

When condition (23) holds, but conditions (21) and (22) fail if, the domestic firm’s profit satisfies the conditions below

$$\Pi_M - B \geq \Pi_D^F$$

$$\Pi_D^F \geq 0$$

the domestic firm would get a higher payoff from playing (E,B) at $t = 1$. Hence its optimal choice in this sub-game would be to play (E,B). And when condition (27) fails but condition (25) holds (i.e. $\Pi_M - B \geq 0$), it is still optimal for the domestic firm to choose (E,B) at $t = 1$. However, when condition (26) above fails, the domestic firm would get a higher payoff by playing (E,NB) if, condition (27) holds, (i.e. $\Pi_D^F \geq 0$), and get a higher payoff by playing (NE) if, condition (27) fails. This indicates that in this sub-game, when condition (26) fails, the optimal choice for the domestic firm would be (E,NB) if condition (27) holds, and (NE) otherwise.

Alternatively, if both conditions (22) and (23) fail. From the extensive form game represented in figure 4, we know that the domestic firm would get $\Pi_D^F$ if, it chooses to enter the market (either (E,B) or (E,NB)), and zero if, it chooses to stay out of the market. This indicates that, when condition (27) holds (i.e. $\Pi_D^F \geq 0$), the optimal choice for the domestic firm would be to choose (E,NB), while when condition (27) fails (i.e. $\Pi_D^F < 0$), the optimal choice for the domestic firm would be to stay out of the market.\(^{55}\)

\(^{55}\)Figure 4 shows that when condition (27) holds (i.e. $\Pi_D^F \geq 0$), the optimal choice for the domestic firm would be to choose either (E,B) or (E,NB). For analytical simplicity let us assume that if it is both optimal for any firm to offer or not offer a bribe, the firm will choose not to bribe. Changing of this assumption would not affect our
Having discussed the optimal choices for the domestic firm in the sub-game following the history that the foreign firm chooses FDI and bribe the host government at \( t = 0 \) and the host government would only play its optimal choice at \( t = 2 \), the discussion follows will study the optimal choice for the domestic firm in the sub-game where the foreign firm chooses FDI but does not bribe the host government at \( t = 0 \).

Again, here we assume that the host government will only play its optimal choices at \( t = 2 \). From the above discussion we know that if condition (23) holds, the optimal choice for the host government would be to accept the domestic bribe when the foreign firm chooses (FDI,NB) at \( t = 0 \) and the domestic firm chooses (E,B) at \( t = 1 \). In this case, figure 4 shows the domestic firm would get \( \Pi_M - B \) by playing (E,B).

When the foreign firm chooses (FDI,NB) at \( t = 0 \) if, the domestic firm chooses (E,NB) or (NE), from the earlier discussion we know that the host government would choose to reject all bribes in both cases. And Figure 4 shows that the domestic firm would get a payoff equals \( \Pi_D^F \) and zero, respectively.

This reveal that when condition (23) holds if, conditions (26) and (27) are also satisfied, or when condition (27) fails but condition (25) holds, the domestic firm would get a higher payoff from enter the market and bribe the host government than all its other options (i.e. \( \Pi_M - B \geq \Pi_D^F \geq 0 \) or \( \Pi_M - B \geq 0 \) when \( \Pi_D^F < 0 \)). Therefore when conditions (23), (26) and (27) hold; or when conditions (23) and (25) holds but condition (27) fails, it is optimal for the domestic firm to enter the host market and bribe the host government in this sub-game. However, in this sub-game when condition (27) holds but condition (26) fails, the domestic firm would get a higher payoff by playing (E,NB) than all its other options (i.e. \( \Pi_D^F \geq \Pi_M - B \) and \( \Pi_D^F \geq 0 \)), therefore it is optimal for the domestic firm to enter the host market but does not bribe the host government. And when both conditions (26) and (27) fall, the domestic firm would get its highest payoff by not enter the market (i.e. \( \Pi_M - B < 0 \) and \( \Pi_D^F < 0 \)), hence its optimal choice in this sub-game would be to play (NE).

On the other hand, when condition (23) fails, the host government’s optimal choice would be to reject all bribes. Figure 4 shows in this case, the domestic firm would get \( \Pi_D^F \) if it enters the market, and zero if it stays out. This means when the above condition (23) fails but condition (27) holds, it would be optimal for the domestic firm to enter the host market but not bribe the host government. However, when both conditions (23) and (27) fail, the domestic firm would get a higher profit from not enter than enter the host market. Therefore, its optimal choice in this case would be to play (NE).

The above discussion considering the sub-games following the histories that the foreign firm chooses (FDI,B) and (FDI,NB) at \( t = 0 \), in the discussion follows we will concentrate on the sub-game where the foreign firm chooses export as its mode of entry at \( t = 0 \). In this case, from the earlier discussion regarding to the optional choice for the host government we know that if condition (24) holds, the optimal choice for the host government would be to accept the domestic firm. Figure 4 shows that in this case, the domestic firm would get \( \Pi_M - B \) if, it chose to enter the host market and bribe the host government at \( t = 1 \). And the domestic firm would get \( \Pi_D^F \) if, it chose to enter the host market but not offer a bribe, and zero if, it chose to stay out at \( t = 1 \).
This means that in this sub-game, if condition (24) holds, and the profit of the domestic firm satisfies the conditions below
\[ \Pi_M - B \geq \Pi_D^E \] (28)
\[ \Pi_D^E \geq 0 \] (29)
the domestic firm would be able to get a higher profit from playing (E,B) than any of its other options. Also if condition (29) fails but condition (25) holds (i.e. \( \Pi_M - B \geq 0 \)), again the domestic firm would get its highest payoff by entering the host market and bribing the host government. Therefore if condition (24), (28) and (29) hold, or when conditions (24) and (25) hold but condition (29) fails, the optimal choice for the domestic firm would be to enter the host market and pay a bribe in the sub-game follows the history that the foreign firm chooses (Export). Furthermore, when condition (24) and (29) still hold, but the above condition (28) fails, the optimal choice for the domestic firm in this case would be to enter the host market but not bribe the host government at \( t = 1 \). And when condition (24) holds, but conditions (28) and (29) fail, the domestic firm would get its highest payoff by stay out the country, therefore its optimal choice would be to play (NE).

On the other hand, if condition (24) fails, the host government would chose to reject all bribes, which indicates that the domestic firm would get \( \Pi_D^E \) if, it chose to enter the market and zero if, it chose to stay out off the host market at \( t = 1 \). This shows that if condition (29) holds, it is optimal for the domestic firm to play (E,NB), while it is optimal for the domestic firm to play (NE) otherwise.

Having discussed the optimal choice for the domestic firm in the sub-game where the foreign firm enters the host market at \( t = 0 \), here we are going to consider the sub-game where the foreign firm chooses not to enter the host market at \( t = 0 \). In this case, from the pervious discussion we know that the host government would accept the domestic bribe if the domestic firm enters the market and pays a bribe. And from Figure 4 we know that the domestic firm would get \( \Pi_M - B \) if it chose (E,B) at \( t = 1 \). On the other hand, if the domestic firm enters the market but does not bribe the host government, Figure 4 shows it would get \( \Pi_M \), and if it chooses to stay out at \( t = 1 \), it will get zero profit.

The above discussion indicates that under our assumption of non-negative bribe, i.e. \( B \geq 0 \), it is clear that \( \Pi_M \geq \Pi_M - B \). Therefore, in this sub-game the optimal choice for the domestic firm would be to enter the host market but not bribe the host government, if
\[ \Pi_M \geq 0 \] (30)
On the other hand, when the above condition (31) fails, the optimal choice for the domestic firm would be to stay out off the market.

The optimal choice for the foreign firm

Having discussed the optimal choices for the domestic firm at \( t = 1 \), now we can move one period back and consider the optimal choice for the foreign firm at \( t = 0 \), given that both the host government and the domestic firm would only play their optimal choice at \( t = 2 \) and \( t = 1 \).

From the discussions above and the extensive form game represented in Figure 4, we know
that if the foreign firm chooses (FDI,B), when conditions (22), (23) and (25) hold but condition (21) fails, the best choice for the host government would be to accept the domestic bribe if, the domestic firm chooses (E,B), and to accept the foreign bribe if, the domestic firm chooses (E,NB) or (NE). And in this case, the best choice for the domestic firm would be to choose enter and bribe. Given that both the host government and the domestic firm would only play their optimal choice, the foreign firm would get a payoff equals \(-F\) by playing (FDI,B).

Similarly, if the foreign firm chooses (FDI,B), when conditions (23), (26) and (27) hold, but conditions (21) and (22) fail; or when conditions (23) and (25) hold, but conditions (21), (22) and (26) fail, the optimal choice for the host government would be to accept the domestic bribe if, the domestic firm chooses (E,B), to reject all bribes if, the domestic firm chooses (E,NB) and to accept the foreign bribe if, the domestic firm chooses (NE). And the best choice for the domestic firm in this case again is to enter and bribe the host government. Given this, we know that the foreign firm would get a payoff equals \(-F\), if it chooses FDI and bribes the host government at \(t = 0\).

And when conditions (23) and (27) are satisfied, but conditions (21), (22) and (26) fail, if the foreign firm chooses (FDI,B), the best choice for the host government would be to accept the domestic bribe if, the domestic firm chooses (E,B), to reject all bribes if, the domestic firm chooses (E,NB), and to accept the foreign bribe if, the domestic firm chooses (NE). And the best choice for the domestic firm is to enter the market but not bribe the host government. Given that both the host government and the domestic firm only play their optimal choice, the payoff the foreign firm would get from playing (FDI,B) would be \(\Pi^{FD}_{FM}\).

When condition (27) holds but conditions (22) and (23) fail, if the foreign firm chooses (FDI,B), the best choice for the host government would be to reject all bribes regardless the choice of the domestic firm, and the best choice for the domestic firm is to choose (E,NB). In this case, the foreign firm will get a payoff equals \(\Pi^{FD}_{FM} \) from playing (FDI,B).

If the foreign firm chooses (FDI,B) at \(t = 0\), when conditions (21) and (22) hold at the same time, the best choice for the host government is to accept the foreign bribe regardless the choice of the domestic firm, and the best choice for the domestic firm is to not enter the host market. In this case, the payoff for the foreign firm from playing (FDI,B) would be \(\Pi^{FD}_{FM} - B^*\).

When conditions (22) and (23) hold, but conditions (21) and (25) fail, if the foreign firm chooses (FDI,B), the best choice for the host government would be to accept the domestic bribe if, the domestic firm chooses (E,B), and to accept the foreign bribe if, the domestic firm chooses (E,NB) or (NE). And the best choice for the domestic firm would be to choose (NE). In this case, again the payoff for the foreign firm would get equals \(\Pi^{FD}_{FM} - B^*\).

Similarly, when condition (23) holds but conditions (21), (22), (26) and (27) fail, if the foreign firm chooses (FDI,B), the best choice for the host government would be to accept the domestic bribe if, the domestic firm chooses (E,B), to reject all bribes if, the domestic firm chooses (E,NB) and to accept the foreign bribe if, the domestic firm chooses (NE). And the best choice for the domestic firm would be to stay out off the host market. In this case, the payoff for the foreign firm from playing (FDI,B) equals \(\Pi^{FD}_{FM} - B^*\).

Furthermore, if the foreign firm chooses (FDI,B) at \(t = 0\), when conditions (22), (23) and (27) fail, the best choice for the host government would be to reject all bribes if, the domestic firm chooses either (E,B) or (E,NB), and to accept the foreign bribe if, the domestic firm chooses (NE). In this case, as discussed in the previous subsection the best choice for the domestic firm
is (NE). This means same as the cases explained earlier, the payoff for the foreign firm from playing (FDI,B) would be $\Pi^F_M - B^*$. 

Having studied the payoff for the foreign firm when it plays (FDI,B) at $t = 0$, here we will discuss the payoff for the foreign firm when it chooses (FDI,NB).

If the foreign firm chooses FDI but does not pay a bribe to the host government, from the previous discussion and Figure 4, we know that when conditions (23), (26) and (27) hold simultaneously, or when conditions (23) and (25) hold, but condition (27) fails, the best choice for the host government would be to accept the domestic bribe if, the domestic firm chooses (E,B), and to reject all bribes if, the domestic firm chooses (E,NB) or (NE). And the best choice for the domestic firm is to enter the host market. Given that both the host government and the domestic firm would only play their optimal choices, the payoff for the foreign firm from playing (FDI,NB) would be $-F$.

And when conditions (23) and (27) hold, but condition (26) fails, if the foreign firm chooses (FDI,NB), the best choice for the host government would be to accept the domestic bribe if, the domestic firm chooses (E,B), and to reject all bribes if, the domestic firm chooses (E,NB) or (NE). And the best choice for the domestic firm would be to enter the market but does not bribe. In this case, the payoff for the foreign firm from playing (FDI,NB) would be $\Pi^F_D$.

Similarly, if the foreign firm chooses (FDI,NB) at $t = 0$, when condition (27) is satisfied but condition (23) fails, from the earlier discussion we know that the best choice for the host government would be to reject all bribes regardless the choice of the domestic firm, and the best choice for the domestic firm would be (E,NB). This shows, in this case the payoff for the foreign firm from playing (FDI,NB) would be $\Pi^F_M$.

When condition (23) holds, but conditions (26) and (27) fail, if the foreign firm chooses (FDI,NB), we know that the best choice for the host government would be to accept the domestic bribe if, the domestic firm chooses (E,B), and to reject all bribes if, the domestic firm chooses (E,NB) or (NE). And the best choice for the domestic firm is to stay out of the market. Given that both the host government and the domestic firm would only play their optimal choices, the payoff for the foreign firm from playing (FDI,NB) would be $\Pi^F_M$.

Moreover, if the foreign firm chooses (FDI,NE) at $t = 0$, when conditions (23) and (27) fail, the best choice for the host government would be to reject all bribes regardless the choice of the domestic firm, and the best choice for the domestic firm would be (NE). In this case again the payoff for the foreign firm from playing (FDI,NB) would be $\Pi^F_M$.

The discussions above studied the payoff for the foreign firm if, it chooses FDI as its mode of entry, here we will study the payoff for the foreign firm if it chooses exporting.

If the foreign firm enters the host country via exporting at $t = 0$, from the discussion in the last two subsections and Figure 4, we know that when conditions (24), (28) and (29) hold at the same time, or conditions (24) and (25) hold but condition (29) fails, the best choice for the host government would be to accept the domestic bribe if, the domestic firm chooses (E,B), and to reject all bribes if, the domestic firm chooses (E,NB) or (NE). The best choice for the domestic firm would be to enter the host market and bribe. Given that both the host government and the domestic firm would only play their optimal choices, the payoff for the foreign firm from playing (Export) would be zero.

When conditions (24) and (29) hold, but condition (28) fails, if the foreign firm chooses (Export), the best choice for the host government would be to accept the domestic bribe if,
the domestic firm choose (E,B), and to reject all bribes if, the domestic firm chooses (E,NB) or (NE). And the best choice for the domestic firm would be to enter the host market but does not bribe. In this case, the payoff for the foreign firm from playing (Export) would be $\Pi^*_{M}$. 

Similarly, if the foreign firm chooses (Export) at $t = 0$, when condition (29) holds but condition (24) fails, the best choice for the host government would be to reject all bribes regardless the choice of the domestic firm, and the best choice for the domestic firm would be to enter the market but does not bribe. Here again the payoff for the foreign firm from playing (Export) would be $\Pi^*_{D}$.

Furthermore, when condition (24) holds but conditions (28) and (29) fail, if the foreign firm chooses (Export), the best choice for the host government would be to accept the domestic bribe if, the domestic firm chooses (E,B), and to reject all bribes if, the domestic firm chooses (E,NB) or (NE). And the best choice for the domestic firm would be to not enter the market. Given that both the host government and the domestic firm would only play their optimal choices, the payoff for the foreign firm from choosing exporting would be $\Pi^*_{E}$.

Similarly, if the foreign firm chooses exporting at $t = 0$, when conditions (24) and (29) fail, the best choice for the host government would be to reject all bribes regardless the choice of the domestic firm, and the best choice for the domestic firm would be (NE). This means the payoff for the foreign firm from playing (Export) would be $\Pi^*_{M}$.

Finally, if the foreign firm chooses not to enter the host country at $t = 0$, the best choice for the host government would be to accept the domestic bribe if, the domestic firm chooses (E,B), and to reject all bribes if, the domestic firm chooses (E,NB). And the the domestic firm’s best choice is to enter the market but does not bribe. In this case, given that both the host government and the domestic firm would only play its optimal choice, if the foreign firm chooses (NE), it would get zero payoff.

From the discussion above, it can be seen that when conditions (21), (22), (23), (24), (26), (27), (28) and (29) hold at the same time; when conditions (21), (22), (23), (24), (25), (26) and (27) hold, but condition (29) fails; when conditions (21), (22), (23), (24), (25) and (27) hold, but conditions (26), (29) fails; when conditions (21), (22), (24), (25) and (27) hold, but conditions (23) and (29) fail; or when conditions fail, the foreign firm would make a higher payoff by playing (FDI,B) than all of its other options, which indicates that in this case, the optimal choice for the foreign firm would be to enter the host market via FDI and bribe the host government at $t = 0$. On the other hand, if the above condition (31) fails, the best choice for the foreign firm would be to stay out off the host market or enter via exporting.

And, when conditions (21), (22), (23), (24), (27), (28) and (29) hold, but conditions (26) fails; when conditions (21), (22), (24), (27), (28) and (29) hold, but condition (23) fails; when conditions (21), (22), (23), (24), (25) and (27) hold, but conditions (26), (29) fails; when conditions (21), (22), (24), (25) and (27) hold, but conditions (23) and (29) fail; or when conditions
the foreign firm would get the highest payoff by entering the host market via FDI and bribes the host government. This means in this case the best choice for the foreign firm would be to choose (FDI,B). However, when condition (32) fails, the foreign firm would get a higher payoff by entering the host country via FDI but does not bribe the host government, therefore the optimal action for the foreign firm would be to choose (FDI,NB). On the other hand, if $\Pi^*_D < 0$, the best choice for the foreign firm would be to choose (FDI,B) when condition (31) holds, and to choose (NE) or (Export) otherwise.

Also from the discussion above it can be seen that when conditions (21), (22), (23), (24), (26), (27) and (29) hold, but condition (28) fails; when conditions (21), (22), (23), (26), (27) and (29) hold, but conditions (24) fails; when conditions (22), (23), (24), (26), (27) and (29) hold, but conditions (21), (25) and (28) fail; or when conditions (22), (23), (26), (27) and (29) hold, but conditions (21), (24) and (25) fail, the foreign firm will get $\Pi^*_M - B^*$ if, it enters via FDI and bribes the host government, $-F$ if, it enters via FDI but does not bribe the host government, zero if it stays out and $\Pi^*_E$ if, it enters via exporting. This indicates that if the payoff of the foreign firm satisfies condition (32) and (33), the foreign firm would make a higher payoff by playing (FDI,B) than all of its other options. This indicates that in this case, the optimal choice for the foreign firm would be to enter the host market via FDI and bribe the host government at $t = 0$. However, if the above condition (33) fails, the best choice for the foreign firm would be to enter the host market via exporting. On the other hand, if $\Pi^*_D < 0$, the best choice for the foreign firm again would be to enter the market via FDI and bribes the host government, when condition (31) holds, and not to enter the market, when condition (31) fails.

When conditions (21), (22), (23), (24), (27) and (29) hold, but conditions (26) and (28) fail; when conditions (21), (22), (24), (27) and (29) hold, but conditions (23) and (28) fail; when conditions (21), (22), (23), (27) and (29) hold, but conditions (24), (26) and (28) fail; when conditions (21), (22), (27) and (29) hold, but conditions (23) and (24) fail; when conditions (22), (23), (24), (27) and (29) hold, but conditions (21), (25), (26) and (28) fail; or when conditions (22), (23), (27) and (29) hold, but conditions (21), (24), (25) and (26) fail, from the earlier discussion we know that the foreign firm would get $\Pi^*_M - B^*$ if, it enters via FDI and bribes the host government, $\Pi^*_D$ if, it enters via FDI but does not bribe the host government, zero if, it stays out, and $\Pi^*_E$ if, it enters via exporting. This indicates that if the payoff of the foreign firm satisfies condition (32) and (33), the foreign firm would get its highest payoff by
playing (FDI,B). However, when condition (33) or (32) fail, if $\Pi^*_{FD} \geq \Pi^*_{ED}$ and $\Pi^*_{FD} \geq 0$, the best choice for the foreign firm would be to choose FDI and not bribe the host government. On the other hand, when $\Pi^*_{FD} < \Pi^*_{FD}$ and $\Pi^*_{FD} \geq 0$, the best choice for the foreign firm would be to chose exporting. And when both $\Pi^*_{FD} < 0$ and $\Pi^*_{FD} < 0$, the best choice for the foreign firm would be to not enter the host market.

Furthermore, when conditions (21), (22), (23), (24), (26) and (27) hold, but conditions (28) and (29) fail; when conditions (21), (22), (23), (26) and (27) hold, but conditions (24) and (29) fail; when conditions (22), (23), (24), (26) and (27) hold, but conditions (21), (25), (28) and (29) fail; or when conditions (22), (23), (26) and (27) hold, but conditions (21), (24), (25) and (29) fail, from the earlier discussion we know that the foreign firm will get $\Pi^*_{FM} - B^*$ if, it enters via FDI and bribes the host government, $-F$ if, it enters via FDI but does not bribe the host government, zero if, it stays out and $\Pi^*_{EM}$ if, it enters via exporting. This indicates that when the foreign firm’s payoff satisfies condition (31) (i.e. $\Pi^*_{FM} - B^* \geq 0$) and $\Pi^*_{EM} \geq 0$, if the condition below is satisfied:

$$\Pi^*_{FM} - B^* \geq \Pi^*_{EM}$$  \hspace{1cm} (34)

the foreign firm would make a higher payoff by playing (FDI,B) than all of its other options, which indicates that in this case, the optimal choice for the foreign firm would be to enter the host market via FDI and bribe the host government at $t = 0$. However, if the above condition (34) fails, the best choice for the foreign firm would be to enter the host market via exporting. On the other hand, if $\Pi^*_{EM} < 0$, then the best choice for the foreign firm again would be to enter the market via FDI and bribes the host government when condition (31) holds, and not to enter the market when condition (31) fails.

What is more, when conditions (21), (22), (23), (24) and (27) hold, but conditions (26), (28) and (29) fail; when conditions (21), (22), (24) and (27) hold, but conditions (23), (28) and (29) fail; when conditions (21), (22), (23) and (27) hold, but conditions (24), (26) and (29) fail; when conditions (21), (22) and (27) hold, but conditions (23), (24) and (29) fail; when conditions (22), (23), (24) and (27) hold, but conditions (21), (25), (26) and (29) fail; or when conditions (22), (23) and (27) hold, but conditions (21), (24), (25), (26) and (29) fail, from the earlier discussion we know that the foreign firm would get $\Pi^*_{FM} - B^*$ if, it enters via FDI and bribes the host government, $-F$ if, it enters via FDI but does not bribe the host government, zero if it stays out and $\Pi^*_{EM}$ if, it enters via exporting. This indicates that if the payoff of the foreign firm satisfies condition (32) and (34), the foreign firm would get its highest payoff by playing (FDI,B). However, when condition (34) or (32) fail, if $\Pi^*_{FD} \geq \Pi^*_{EM}$ and $\Pi^*_{FD} \geq 0$, the best choice for the foreign firm would be to choose FDI and not bribe the host government. On the other hand, when $\Pi^*_{FD} < \Pi^*_{EM}$ and $\Pi^*_{EM} \geq 0$, the best choice for the foreign firm would be to chose exporting. And when both $\Pi^*_{EM} < 0$ and $\Pi^*_{FD} < 0$, the best choice for the foreign firm would be to not enter the host market.

Alternatively, when conditions (23), (24), (28) and (29) hold, but conditions (21), (22), (26) and (27) fail; when conditions (23), (24), (25) hold, but conditions (21), (22), (26), (27) and (29) fail; when conditions (22), (23), (24), (28) and (29) hold, but conditions (21), (25), (26) and (27) fail; when conditions (24), (28) and (29) hold, but conditions (22), (23) and (27) fail; when conditions (24) and (25) hold, but condition (22), (23), (27) and (29) fail; when conditions (21),
(22), (24), (28) and (29) hold, but conditions (23) and (27) fail; when conditions (21), (22), (23), (24), (28) and (29) hold, but conditions (26) and (27) fail; when conditions (21), (22), (24) and (25) hold, but conditions (23), (27) and (29) fail; or when conditions (21), (22), (23), (24) and (25) hold, but conditions (26), (27) and (29) fail, from the earlier discussion we know that the foreign firm would get $\Pi^*_{MF} - B^*$ if, it chooses (FDI,B), it will get $\Pi^*_{MF}$ if, it chooses (FDI,NB) and it will get zero if it chooses either (NE) or (Export). This means for any non-negative bribe $B^* \geq 0$, the following must be true

$$\Pi^*_{MF} \geq \Pi^*_{MF} - B^* \quad (35)$$

This shows that under our current assumption of non-negative bribe, i.e. $B^* \geq 0$, as long as $\Pi^*_{MF} \geq 0$, the foreign firm would get the highest payoff by entering the host country via FDI but not bribing the host government at $t = 0$. This means in this case, the optimal choice for the foreign firm would be to choose (FDI,NB). On the other hand, if $\Pi^*_{MF} < 0$, the best choice for the foreign firm would be to choose not to enter the host market or enter via exporting.

Similarly, when conditions (22), (23), (24), (25), (28) and (29) hold, but conditions (21), (26) and (27) fail; when conditions (22), (23), (24) and (25) hold, but conditions (21), (26), (27) and (29) fail, from the earlier discussion it is known that the foreign firm would get $-F$ if, it enters the host market via FDI and bribes the host government, $\Pi^*_{MF}$ if, it enters the host market via FDI but does not bribe the host government and zero if it enters the market via exporting or stays out. This means if $\Pi^*_{MF} \geq 0$, the optimal choice for the foreign firm would be to play (FDI,NB). On the other hand, if $\Pi^*_{MF} < 0$, the optimal choice for the foreign firm would be to not enter the host market or enter the market via exporting.

And, when conditions (23), (24), (27), (28) and (29) hold, but conditions (21), (22) and (26) fail; when conditions (23), (24), (25) and (27) hold, but conditions (21), (22), (26) and (29) fail; when conditions (24), (27), (28) and (29) hold, but condition (22) and (23) fail; or when conditions (24), (25) and (27) hold, but condition (22), (23) and (29) fail, from the discussion above we know that the foreign firm will get $\Pi^*_{DF}$ if it plays (FDI,B) or (FDI,NB), and zero if it choose (NE) or (Export). Therefore, as long as $\Pi^*_{DF} \geq 0$, it is optimal for the foreign firm to enter the host market at $t = 0$ by FDI but not offering a bribe. On the other hand, if $\Pi^*_{DF} < 0$, it would be optimal for the foreign firm to not enter the host market or enter the market via exporting.

What is more, when conditions (22), (23), (24), (25), (27), (28) and (29) hold, but conditions (21) and (26) fail; or when conditions (22), (23), (24), (25) and (27) hold, but conditions (21), (26) and (29) fail, from the earlier discussion it is known that the foreign firm would get $-F$ if, it enters the host market via FDI and bribes the host government, $\Pi^*_{DF}$ if, it enter the host market via FDI but does not bribe the host government and zero if, it enters the market via exporting or stays out. This means if $\Pi^*_{DF} \geq 0$, the optimal choice for the foreign firm would be to play (FDI,NB). On the other hand, if $\Pi^*_{DF} < 0$, the optimal choice for the foreign firm would be to not enter the host market or enter the market via exporting.

From the earlier discussion we know that when conditions (23), (24) and (29) hold, but conditions (21), (22), (26), (27) and (28) fail; when conditions (23) and (29) hold, but conditions (21), (22), (24), (26) and (27) fail; when conditions (22), (23), (24) and (29) hold, but conditions (21), (25), (26), (27) and (28) fail; or when conditions (22), (23) and (29) hold, but conditions
(21), (24), (25), (26) and (27) fail; when conditions (21), (22), (24) and (29) hold, but conditions (23), (27) and (28) fail; when conditions (21), (22), (23), (24) and (29) hold, but conditions (26), (27) and (28) fail; when conditions (21), (22) and (29) hold, but conditions (23), (24) and (27) fail; when conditions (21), (22), (23) and (29) hold, but conditions (24), (26) and (27) fail; when conditions (24) and (29) hold, but conditions (22), (23), (27) and (28) fail; or when condition (29) holds, but conditions (22), (23) and (27) fail; or when condition (29) holds, but conditions (22), (23), (24) and (27) fail, the foreign firm would get $\Pi^*_F - B^*$ if, it chooses (FDI,B), $\Pi^*_M$ if, it chooses (FDI,NB), zero if it chooses (NE) and $\Pi^*_E$ if it chooses (Export). This means when $\Pi^*_D \geq 0$ if, the foreign firm’s payoff satisfies the condition below

$$\Pi^*_M \geq \Pi^*_D$$ \hspace{1cm} (36)

under our assumption of non-negative bribe, i.e. $B^* \geq 0$, the foreign firm would get the highest payoff by entering the host country via FDI but not bribing the host government at $t = 0$. This means in this case, the optimal choice for the foreign firm would be to choose (FDI,NB). However, if condition (36) fails, the best choice for the foreign firm would be to enter the market via exporting, when $\Pi^*_E \geq 0$ and not to enter the host market, when $\Pi^*_D < 0$. On the other hand, when condition (36) holds but $\Pi^*_E < 0$, the best choice for the foreign firm would still be (FDI,NB), as long as $\Pi^*_M \geq 0$ and (NE) when $\Pi^*_M < 0$.

Moreover, when conditions (22), (23), (24), (25) and (29) hold, but conditions (21), (26), (27) and (28) fail; or when conditions (22), (23), (25) and (29) hold, but conditions (21), (24), (26) and (27) fail, from the earlier discussion it is known that the foreign firm would get $-F$ if it enters the host market via FDI and bribes the host government, $\Pi^*_M$ if, it enter the host market via FDI but does not bribe the host government, zero if, it stays out and $\Pi^*_D$ if, it enters via exporting. This means if $\Pi^*_D \geq 0$, and the above condition (36) is satisfied, the optimal choice for the foreign firm would be to play (FDI,NB). However, when condition (36) fails, the best choice for the foreign firm would be to choose exporting. On the other hand, if $\Pi^*_D < 0$, the optimal choice for the foreign firm would be to choose (FDI,NE) if $\Pi^*_M \geq 0$ and not enter the host market if $\Pi^*_M < 0$.

When conditions (23), (24), (27) and (29) hold, but conditions (21), (22), (26) and (28) fail; when conditions (23), (27) and (29) hold, but conditions (21), (22), (24) and (26) fail; when conditions (24), (27) and (29) hold, but conditions (22), (23) and (28) fail; or when conditions (27) and (29) hold, but conditions (22), (23) and (24) fail, from the earlier discussion it is known that the foreign firm will get $\Pi^*_D$ if, it plays (FDI,B) or (FDI,NB), zero if, it choose (NE) and $\Pi^*_E$ if, it enters via exporting. Therefore, when $\Pi^*_D \geq 0$ and

$$\Pi^*_D \geq \Pi^*_E$$ \hspace{1cm} (37)

it is optimal for the foreign firm to enter the host market at $t = 0$ by FDI but does not offer a bribe. When the above condition (37) fails, the best choice for the foreign firm would be to enter the host market via exporting. On the other hand, if $\Pi^*_D < 0$, when $\Pi^*_E \geq 0$ it would be optimal for the foreign firm to choose (FDI,NB), however when $\Pi^*_E < 0$ it is optimal for the foreign firm to not enter.

What is more, when conditions (22), (23), (24), (25), (27) and (29) hold, but conditions (21), (26) and (28) fail; or when conditions (22), (23), (25), (27) and (29) hold, but conditions
(21), (24) and (26) fail, from the earlier discussion it is known that the foreign firm would get $-F$ if, it enters the host market via FDI and bribes the host government, $\Pi^{FB}_D$ if, it enters the host market via FDI but does not bribe the host government, zero if, it stays out off the market and $\Pi^{FE}_D$ if, it enters the host market via exporting. This means if the above condition (37) is satisfied, the best choice for the foreign firm would be to choose (FDI,NB). However, when condition (37) fails, the best choice for the foreign firm would be to choose (Export) if $\Pi^{*E}_D \geq 0$ and to choose (NE) if $\Pi^{*F}_D < 0$.

Furthermore, from the discussion earlier it is known that when conditions (23) and (24) hold, but conditions (21), (22), (26), (27), (28) and (29) fail; when conditions (23) holds but conditions (21), (22), (24), (26), (27) and (29) fail; when conditions (22), (23) and (24) hold, but conditions (21), (25), (26), (27), (28) and (29) fail; when conditions (22) and (23) hold, but conditions (21), (24), (25), (26) and (29) fail; when conditions (21), (22) and (24) hold, but conditions (23) (27), (28) and (29) fail; when conditions (21), (22), (23) and (24) hold, but conditions (26), (27), (28) and (29) fail; when conditions (21) and (22) hold, but conditions (23), (24), (27) and (29) fail; when conditions (21), (22) and (23) hold, but conditions (24), (26), (27) and (29) fail; when conditions (24) holds but conditions (22), (23), (27), (28) and (29) fail; or when conditions (22), (23), (24), (27) and (29) fail, the foreign firm would get $\Pi^{*FB}_M - B^*$ if, it chooses (FDI,B), $\Pi^{*FB}_M$ if, it chooses (FDI,NB), zero if, it chooses (NE) and $\Pi^{*E}_M$ if, it chooses (Export). This means when $\Pi^{*E}_M \geq 0$ if, the foreign firm’s payoff satisfies the condition below

$$\Pi^{*F}_M \geq \Pi^{*E}_M$$

(38)

the foreign firm would get the highest payoff by entering the host country via FDI but does not bribe the host government at $t = 0$. This means in this case, the optimal choice for the foreign firm would be to choose (FDI,NB). However, if condition (38) fails, the best choice for the foreign firm would be to enter the market via exporting when $\Pi^{*F}_M \geq 0$ and not to enter the host market when $\Pi^{*F}_M < 0$. on the other hand, when $\Pi^{*F}_M < 0$ the best choice for the foreign firm would be to choose (FDI,NB) when $\Pi^{*F}_M \geq 0$, and to choose (NE) when $\Pi^{*F}_M < 0$.

What is more, when conditions (22), (23), (24) and (25) hold, but conditions (21), (26), (27), (28) and (29) fail; or when conditions (22), (23) and (25) hold, but conditions (21), (24), (26), (27) and (29) fail; from the earlier discussion it is known that the foreign firm would get $-F$ if, it enters the host market via FDI and bribes the host government, $\Pi^{FB}_M$ if, it enter the host market via FDI but does not bribe the host government, zero if, it stays out and $\Pi^{FE}_M$ if, it enters via exporting. This means if $\Pi^{*E}_M \geq 0$ and the above condition (38) is satisfied, the optimal choice for the foreign firm would be to play (FDI, NB). However, if condition (38) fails, the best choice for the foreign firm would be to choose exporting when $\Pi^{*E}_M \geq 0$. On the other hand, if $\Pi^{*E}_M < 0$, the optimal choice for the foreign firm would be to choose (FDI, NE) if $\Pi^{*F}_M \geq 0$ and not enter the host market if $\Pi^{*F}_M < 0$.

When conditions (23), (24) and (27) hold, but conditions (21), (22), (26), (28) and (29) fail; when conditions (23) and (27) hold, but conditions (21), (22), (24), (26) and (29) fail; when conditions (24) and (27) hold, but conditions (22), (23), (28) and (29) fail; or when conditions (27) holds but conditions (22), (23), (24) and (29) fail, from the earlier discussion it is known that the foreign firm will get $\Pi^{*E}_D$ if, it plays (FDI,B) or (FDI,NB), zero if, it choose (NE) and
$\Pi^*_M$ if, it enters via exporting. Therefore, when $\Pi^*_M \geq 0$ and

$\Pi^*_D \geq \Pi^*_M$\hspace{1cm}(39)$

it is optimal for the foreign firm to choose enter the host market at $t = 0$ by FDI but does not offer a bribe. When the above condition (39) fails, the best choice for the foreign firm would be to enter the host market via exporting. On the other hand, if $\Pi^*_M < 0$, when $\Pi^*_D \geq 0$ it would be optimal for the foreign firm to choose (FDI,NB), however when $\Pi^*_D < 0$ it is optimal for the foreign firm to not enter.

Similarly, when conditions (22), (23), (24), (25) and (27) hold, but conditions (21), (26), (28) and (29) fail; when conditions (22), (23), (24), (25) and (27) hold, but conditions (21), (26), (24) and (29) fail; from the earlier discussion it is known that the foreign firm would get $-F$ if, it enters the host market via FDI and bribes the host government, $\Pi^*_D$ if, it enter the host market via FDI but does not bribe the host government, zero if, it stays out and $\Pi^*_M$ if, it enters the host market via exporting. This means if the above condition (39) is satisfied, the best choice for the foreign firm would be to choose (FDI,NB). However, when condition (39) fails, the best choice for the foreign firm would be to choose (Export) if $\Pi^*_M \geq 0$ and to choose (NE) if $\Pi^*_D < 0$.

Instead of (39): $\Pi^*_M < 0$, $\Pi^*_F \geq 0$ but conditions (21), (26), (24) and (29) fail; or when conditions (22), (24) and (29) hold, but conditions (21), (22), (27) and (29) fail, from the earlier discussion it is clear that the foreign firm would get $-F$ if, it enters the host market via FDI, and zero if, it enter the host market via exporting or stays out. Because $-F < 0$, in this case the best choice for the foreign firm would be to stay out of the host market or enter the market via exporting.

Moreover, when conditions (22), (23), (24), (25), (26), (27) and (29) hold, but conditions (21) and (28) fail; when conditions (22), (23), (24), (25), (26) and (27) hold, but conditions (21) and (24) fail; when conditions (23), (24), (26), (27) and (29) hold, but conditions (21) and (22) fail; when conditions (23), (24), (26), (27) and (29) hold, but conditions (21), (22) and (28) fail; when conditions (23), (24), (26), (27) and (29) hold, but conditions (21), (22) and (24) fail; when conditions (23), (24), (25) and (29) hold, but conditions (21), (22), (27) and (28) fail; or when conditions (23), (25) and (29) hold, but conditions (21), (22), (24) and (27) fail, from the earlier discussion it is clear that the foreign firm would get $-F$ if, it enters the host market via FDI, zero if, it stays out and $\Pi^*_F$ if, it enters via exporting. Because $-F < 0$, therefore in this case $\Pi^*_F > 0$, the best choice for the foreign firm would be to enter the host market via exporting. On the other hand, if $\Pi^*_F < 0$, the best choice for the foreign firm would be to stay out of the host market.

Furthermore, when conditions (22), (23), (24), (25), (26) and (27) hold, but conditions (21), (28) and (29) fail; when conditions (23), (24), (26) and (27) hold, but conditions (21), (22), (28) and (29) fail; when conditions (23), (26) and (27) hold, but conditions (21), (22), (24) and (29) fail; when conditions (23), (24) and (25) hold, but conditions (21), (22), (27), (28) and (29) fail; or when conditions (23) and (25) hold but conditions (21), (22), (24), (27) and (29) fail, from
the above discussion we know that in this case, the foreign firm would get \(-F\) if it enters the host market via FDI, zero if it stays out, and \(\Pi^*_{EM}\) if, it enters the market via exporting. When \(\Pi^*_{EM} > 0\), the best option for the foreign firm would be to choose export as its mode of entry, alternatively when \(\Pi^*_{EM} < 0\), the best choice for the foreign firm would be to stay out off the market.

**Proof of proposition 3**

In this section, a proof of Proposition 3 is provided. It will be shown that the presence of discriminatory corruption could encourage the foreign and domestic firms to change their entry mode choices and become a monopolist by bribing the host government.

**Proof.** In the main part of this chapter, it has been assumed that both the foreign and domestic firms are rational in a sense that the amount of bribes they would offer is less or equal to the maximum gain it can obtain from bribing the host government. This means for the domestic firm, the maximum amount of bribe it would offer equals the difference between the profit it could obtain as a domestic monopolist by bribing the host government, and the amount of profit it would get otherwise. Similarly, the maximum amount of bribe the foreign firm would pay equals the difference between the profit it can obtain as an FDI monopolist by bribing the host government and the amount of profit it can obtain otherwise. Because neither the foreign nor the domestic firm can break even as a duopolist, therefore the maximum amount of bribe the foreign and domestic firms would offer to the host government equal \(B^*_M = \Pi^*_{EM}\) and \(B_{max} = \Pi_M\), respectively.

Because here we assumed that initially the host market was characterised by a domestic monopoly, which means \(\Pi_M \geq 0\), and the highest bribe the domestic firm would pay to become a monopolist in the host country equals \(B_{max} = \Pi_M \geq 0\), here we know that condition (25) will always being satisfied, i.e.\(\Pi_M - B \geq 0 > -F - G\).

From the discussion above we know that for the given strategy profile to be a SPNE, conditions (23) and (24) must hold. Condition (23) requires that given the bribe the domestic firm would pay, the host government would prefer a domestic monopolist with a bribe in the host market than an FDI duopoly. And condition (24) requires that given the bribe the domestic firm would offer, the host government prefers a domestic monopolist with a bribe than an exporting duopoly. Here we know that the maximum bribe would be offered by the domestic firm is \(B_{max} = \Pi_M\), therefore we know that in our case, the conditions required for (23) and (24) to hold is that:

\[
\Phi_M + \Pi_M \geq \Phi^*_{D_R} \quad F + G \leq \frac{5(A-C)^2}{8} - \frac{(2A-C^*-C)^2}{18} - \frac{(A+C^*-2C)^2}{9} - 2T^* \tag{40}
\]

\[
\Phi_M + \Pi_M \geq \Phi^*_{D_R} \quad F + G \leq \frac{5(A-C)^2}{8} - \frac{(2A-C^*-C-S)^2}{18} - \frac{S(A-2C^*-2S+C)}{3} - \frac{(A-2C^*-2S+C)^2}{9} - T^* \tag{41}
\]

If the above conditions are satisfied, then the host government would prefer a domestic monopolist with a bribe to either an FDI duopoly or an exporting duopoly.
Moreover, for the given strategy profile to be a SPNE, it is required that conditions (21) and (22) must fail. The failure of conditions (21) and (22) indicate that given the bribes paid by the foreign firm and the domestic firm, the host government prefers either a domestic monopolist with a bribe or an FDI duopolist to an FDI monopolist with a bribe.

We know that when initially the host market was characterised by a domestic monopoly, the foreign firm would make negative profit as either an FDI or an exporting duopolist, i.e. $\Pi^F_D < 0$ and $\Pi^E_D$. Here we assumed that the foreign firm would be able to make a positive profit as an FDI monopolist, i.e. $\Pi^F_M \geq 0$, which means in this case, the maximum bribe would be offered by the foreign firm $B^*_{\text{max}} = \Pi^F_M \geq 0$. This shows for condition (22) to fail, it is necessary and sufficient that

$$\Phi^F_M + \Pi^F_M - F - G < \Phi^F_D$$

if the above condition is satisfied, the host government would prefer either an FDI duopoly or a domestic monopolist with a bribe to an FDI monopolist with a bribe. And as discussed above, when condition (40) is satisfied, the host government prefers a domestic monopolist with a bribe to an FDI monopolist with a bribe, therefore in our case when conditions (40) and (42) hold at the same time, the host government would prefer a domestic monopolist with a bribe to an FDI monopolist with a bribe, i.e. condition (21) would fail as well.

The above discussion shows that when conditions (40), (41) and (42) hold simultaneously, the host government, the foreign and domestic firms would be able to maximise their own payoff in every sub-game by playing the given strategy, given that the others also adhere to the given strategy, which means the given strategy profile would be a SPNE, if initially without discriminatory corruption the host market was characterised by a domestic monopoly and neither firm can break even as a duopolist. The red path highlighted in Figure 5 represents the equilibrium path in this game, on which the domestic firm becomes a monopolist without pay a bribe. The conditions (40), (41) and (42) can be written together as the follows:

$$\frac{5(A-C)^2}{8} - \frac{(2A-C^*-C)^2}{18} - \frac{(A+C^*-2C)^2}{9} - 2T^* - G \geq F$$

The equilibrium path shows that when condition (43) holds, it is still possible for the domestic firm to become a domestic monopolist in the host market without bribing the host government, after discriminatory corruption is possible, when initially without discriminatory corruption, the host market was characterised by a domestic monopoly and neither the foreign nor the domestic firm can break even as a duopolist. From the earlier discussion we know that in this case, the host market could be characterised by either an FDI, exporting or domestic monopolist without discriminatory corruption and neither the foreign nor the domestic firm can break even as a duopolist. We will now study the investment choices of the foreign and domestic firms under various initial market equilibria in turn.
Here we will start our discussion from the case where the presence of discriminatory corruption allows the domestic firm to become a monopolist in the market by bribing the host government, when initially the market was characterised by a foreign monopolist.

From the discussion in the previous sections we know that when conditions (23), (24) and (25) hold, but conditions (21), (22), (27) and (29) fail, it is optimal for the host government to accept the domestic bribe if, the domestic firm chooses (E,B) and the foreign firm chooses (FDI,B), (FDI,NB), (NE) or (Export). It is optimal for the host government to reject all bribes if, the domestic firm chooses (E,NB) and the foreign firm chooses (FDI,B), (FDI,NB), (NE) or (Export) or if, the domestic firm chooses (NE) and the foreign firm chooses (FDI,NB) or (Export). And it is optimal for the host government to accept the foreign bribe if, the domestic firm chooses (NE) and the foreign firm chooses (FDI,B).

Given that the host government would only play its optimal choices, in this case the best option for the domestic firm would be to choose (E,B) when the foreign firm enters the market via FDI and bribes the host government; when the foreign firm enters the market via FDI but does not bribe the host government; or when the foreign firm enters the market via exporting. And the best choice for the domestic firm is to choose (E,NB), when the foreign firm chooses to stay out of the market.

Again given that both the domestic firm and the host government only play their optimal choices, the foreign firm would get a payoff equals $-F$ if, it enters the host market via FDI, and zero if, it enters via exporting or stays out. Because $-F < 0$, it is optimal for the foreign firm to choose either stays out of the market or enters the market via exporting, when conditions (23), (24) and (25) hold, but conditions (21), (22), (27) and (29) fail. In the last section we studied the case where the foreign firm chooses to not enter the host market, and showed that on the equilibrium path the domestic firm can become a domestic monopolist without bribing the host government, when initially the host market was characterised by a domestic monopoly. Here we will study the other case where the foreign firm chooses to enter the host market via exporting and show that on the equilibrium path the domestic firm can become a monopolist by bribing the host government, when initially the host market was characterised by a foreign monopoly.

The discussion above shows that when conditions (23), (24) and (25) hold, the strategy profile (Export; E,B E,B E,NB, E,B; A,D R A,F A,D R R A,D R R) would be a SPNE. The conditions above show the general condition under which the given strategy profile would be a SPNE, in the discussion follows we will study what does these conditions mean in the case where initially the host market was characterised by a domestic monopoly and neither the foreign nor the domestic firm can break even as a duopolist.

From the discussion above we know that for the given strategy profile to be a SPNE, conditions (25) need to be satisfied, i.e. $\Pi_M - B \geq 0$. Here we assume that the domestic firm can make a non-negative profit as a domestic monopolist, i.e. $\Pi_M \geq 0$. And from the discussion in the last section we know that the maximum amount of bribe a rational domestic firm would pay equals $B_{max} = \Pi_M$, therefore condition (25) would always be satisfied.

What is more, for the given strategy profile to be a SPNE, conditions (23) and (24) must be satisfied.
satisfied. Same as in the previous section where initially the host market was characterised by a domestic monopolist, we know that given the maximum bribe would be offered by the domestic firm to become a monopolist in the host market $B_{\text{max}} = \Pi_M$, the host government would prefer a domestic monopolist with a bribe to either an FDI duopoly or an exporting duopoly, i.e. condition (23) and (24) to hold, if the fixed set-up costs in the host market are sufficiently low, i.e. conditions (40) and (41) need to be satisfied. If the fixed set-up costs are sufficiently low, the host government would prefer a domestic monopoly with a bribe to either an FDI duopoly or an exporting duopoly.

From the discussion in the last section, we know that the maximum amount of bribe the foreign firm would be willing to pay to become an FDI monopolist in the host market would equals $B^*_{\text{max}} = \Pi^F_M$. This indicates that same as the case discussed earlier where initially the host market was characterised by a domestic monopolist, here again given $B^*_{\text{max}} = \Pi^F_M$, the host government would prefer an FDI duopoly to a foreign monopoly with bribe, i.e. condition (22) fails, when the fixed set-up costs are sufficiently high as represented by condition (42). It is worth noting that because in this case condition (23) holds, the host government would prefer a domestic monopoly with a bribe to an FDI duopoly; therefore we know that if conditions (40) and (42) hold, the host government would also prefer a domestic monopoly with a bribe to a foreign monopoly with a bribe. This indicates that in this case, the host government would accept the bribe offered by the domestic firm in the equilibrium. Once again conditions (40), (41) and (42) can be written together as (43).

This shows that if initially the host market was characterised by a foreign monopoly and the host market is small that neither the foreign nor the domestic firm can break even as a duopolist, the domestic market can become a monopolist in the host market by bribing the host government when fixed set-up costs satisfy the conditions represented by (43). If this happens the given strategy profile (Export; E,B E,B E,NB, E,B; A,D R A,F A,D R R A,D R A,D R R) is a SPNE and the equilibrium path is represented by the red path highlighted in Figure 6. It is worth noting that when condition (43) is satisfied, there are two possible SPNE could occur (Export; E,B E,B E,NB, E,B; A,D R A,F A,D R R A,D R A,D R R) and (NE; E,B E,B E,NB, E,B; A,D R A,F A,D R R A,D R A,D R R). In this case, SPNE is not unique.

Having discussed the case where after discriminatory corruption is possible, the domestic firm can become a monopolist in the host market by bribing the host government, when initially without discriminatory corruption the host market was characterised by a foreign monopoly; now let us discuss the case where after discriminatory corruption is possible, the foreign firm can become an FDI monopolist in the host market by bribing the host government, when initially without discriminatory corruption the host market was characterised by a domestic monopoly.

From the discussion in the previous section we know that when conditions (21), (22), (23), (24), (26), (27), (28) and (29) hold simultaneously, the optimal choice for the host government would be to accept the foreign bribe when the foreign firm chooses (FDI,B) and the domestic firm chooses either (E,B), (E,NB) or (NE). The best option for the host government would be to reject all bribes when the foreign firm chooses (FDI,NB) and the domestic firm chooses (E,NB) or (NE); when the foreign firm chooses (NE) and the domestic firm chooses (E,NB); or when the foreign firm chooses (Export) and the domestic firm chooses (E,NB) or (NE). And the best choice for the host government would be to accept the domestic bribe when the foreign firm chooses (FDI,NB) and the domestic firm chooses (E,B); or when the foreign firm chooses
Given that the host government would only play its optimal choice, in this case the best choice for the domestic firm would be to not enter the market if, the foreign firm chooses (FDI,B), to enter and bribe the host government if, the foreign firm chooses (FDI,NB) or (Export), and to enter but does not bribe the host government if, the foreign firm chooses (NE).

This means in this case, when both the host government and the domestic firm only play their optimal choice, the foreign firm would get a payoff equals $\Pi^F_M - B^*_{\text{max}}$ if, it enters via FDI and bribes the host government, $-F$ if, it enters via FDI but does not bribe the host government, 0 if, it does not enter the host market or enters via exporting. Because here we assumed that $\Pi^F_M \geq 0$ and the foreign firm is rational, i.e. $B^*_{\text{max}} = \Pi^F_M$, therefore we know that $\Pi^F_M - B^*_{\text{max}} \geq 0 > -F$, the foreign firm will get the highest payoff by choosing (FDI,B).

The above discussion indicates that if conditions (21), (22), (23), (24), (25) hold, but conditions (27) and (29) fail and $\Pi^F_M - B^*_{\text{max}} \geq 0 > -F$, the host government, the foreign and domestic firms will maximise their own payoff in every sub-game by following the strategy profile (FDI,B; NE E,B E,NB E,B; A,F A,F A,D R R A,D R A,D R), given that the others also adhere to their given strategies. This means in this case, the given strategy profile would be a SPNE.

The conditions above show the general condition under which the given strategy profile would be a SPNE, in the discussion follows we will study what does these conditions mean in the case where initially the host market was characterised by a domestic monopoly and neither the domestic nor foreign firm can break even as a duopolist.

Initially the host market was characterised by a domestic monopoly that means $\Pi_M \geq 0$ and from the earlier discussion we know that the maximum amount of bribe the domestic firm would pay equals $B^*_{\text{max}} = \Pi_M$. This indicates that in this case, condition (25) would always hold, i.e. $\Pi_M - B^*_{\text{max}} \geq 0$.

For the above strategy profile to be a SPNE, it is required that conditions (23) and (24) hold, which means given the maximum amount of bribe the domestic firm would pay equals $B^*_{\text{max}} = \Pi_M$, the host government prefers a domestic monopoly with a bribe to either an FDI duopoly or an exporting duopoly. From the discussion in the previous section, we know that when the fixed set-up costs are sufficiently low represented by conditions (40) and (41), the host government would prefer a domestic monopoly with a bribe to either an FDI duopoly or an exporting duopoly as required.

Also for the foreign firm to become an FDI monopolist in the host market by bribing the host government in this case, conditions (21) and (22) need to be satisfied. They show that the host government would prefer an FDI monopolist with a bribe to either a domestic monopoly with a bribe or an FDI duopoly. Because here the host government prefers a domestic monopoly with a bribe to an FDI duopoly, (i.e. condition (23) holds), therefore we know that if the host government prefers an FDI monopolist with a bribe to a domestic monopoly with a bribe, then automatically the host government would prefer an FDI monopolist with a bribe to an FDI duopoly. In other words, condition (22) would hold automatically if condition (21) is satisfied.

From the earlier discussion we know that the maximum amount of bribe the foreign firm would be willing to pay equals $B^*_{\text{max}} = \Pi^F_M$. And for the foreign firm to be willing to become an FDI monopolist in the host market, it is required that $\Pi^F_M \geq 0$. Therefore, in this case for the host government to prefer an FDI monopolist with a bribe to a domestic monopoly with a
bribe, it is required that:

\[
\Phi_M^* + \Pi_M^* - F - G \geq \Phi_M + \Pi_M
\]

\[
G \geq \frac{5(A-C)^2}{8} - \frac{2(A-C^*)^2}{8} - T^*(\beta_i)
\]  \hspace{1cm} (44)

If the above condition is satisfied, then the host government would prefer an FDI monopoly with a bribe to either a domestic monopoly with a bribe or an FDI duopoly, which indicates that in equilibrium the host government would accept the foreign bribe and protect the foreign firm. This shows if initially the host market was characterised by a domestic monopoly, when conditions (40), (41) and (44) hold simultaneously, the given strategy profile (FDLB; NE E,B E, NB E,B; A,F A,F A,F A,D R R A,D R A,D R) would be a SPNE. And on the equilibrium path highlighted in red in figure 4.8, the foreign firm becomes an FDI monopolist in the host market by bribing the host government after discriminatory corruption is possible.

The above discussions reveal that after discriminatory corruption is possible, the foreign and domestic firm can become a monopolist in the host market by bribing the host government, even though initially without discriminatory corruption, they choose not to enter the host market. The presence of discriminatory corruption could alter the entry choice of the domestic and foreign firms.

**References**


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