Foreign direct investment, corruption, and institutional reforms

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Summary: Corruption impacts the competitive conditions among firms and the flow of foreign investment. Institutional reforms made for fighting against corruption are sometimes useless. We develop a model in which a corrupted government tries to set an optimal institutional level taking into account the cost of this policy on foreign investment, the benefit of a corrupted domestic firm and the benefit of local citizens. A political contribution is made by a corrupted lobby group in order to benefit from a lower institutional level. Our results suggest that the optimal institutional level depends on the degree of efficiency of firms and the level of corruption of the host government.

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Corruption is a multi-dimensional and persistent problem (Avinash Dixit 2018). Arvind Jain (2001) argues that corruption is an act in which the power of a government office is used for public personal gain against the rules of the game. Since the economic costs of corruption have been well recorded in the literature (Dixit 2018), we do not intend to delve into this topic; however, we recognize that corruption may negatively affect the inflow of Foreign Direct Investment (FDI). Additionally, we follow the efficient corruption approach presented by Toke S. Aidt (2003) in which corruption facilitates beneficial and efficient trade between agents that would not be possible otherwise.

On the other hand, we agree with Olli Hellmann (2017) and Della Porta and Alberto Vannucci (2012) that corruption is not only driven by individualistic interest, but also by an informal system of norms and practices that govern and stabilize the links between those who corrupt and those who are corrupted. Therefore, following Hellmann (2017) and Aidt (2003), we consider corruption a part of the traditions and the rules of the game in some developing countries. Along the lines of Douglas C. North (1990), we consider corruption an institution that needs to be addressed in order to reduce transaction costs.

An appropriate institutional environment may significantly reduce corruption and may increase the flow of foreign firms (Dani Rodrik, Arvind Subramanian, and Francesco Trebbi 2004). However, to get a higher institutional quality, proper reform-oriented institutions are needed to fight against corruption as in Omar Ghazy Aziz (2018). The aim of this paper is to analyze the failure or success of institutional policy reforms implemented to reduce corrupt malpractices in order to attract FDI, taking into account the benefit that corruption may produce. We develop a partial equilibrium model of oligopolistic competition between domestic and foreign firms. Corruption gives the domestic firm a competitive advantage over foreign firms which affects FDI flows. The domestic firm offers government officials a bribe to gain a competitive advantage, and the corrupted officials lobby the government to discourage strict institutional policies. The government's optimal institutional policy takes into account the benefit for FDI, consumer and producer surplus, and the income received from political contributions.

This paper is organized as follows. Section 1 presents the theoretical and empirical literature. Section 2 explains the theoretical model. Section 3 determines and analyzes the optimal institutional level, and Section 4concludes.

1 Literature Review

Integrating the ideas of Hellmann (2017) and Aidt (2003), we consider corruption a complex phenomenon which is not only a bad social and economic practice, but also an institution. Therefore, our analysis is based on the institutional economics approach (IEA) presented in North (1990). Corruption is an informal and efficient institution that needs to be addressed in order to reduce transaction costs, and should be understood in a multidisciplinary context that includes not only economics but also sociology, law, political science, and organization theory, among others. The IEA tries to explain what institutions are, how they arise, what purposes they serve, how they change, and how – if at all– they should be reformed. Peter G. Klein (2000), Ronald H. Coase (1937), Olivier E. Williamson (1996), Elinor Ostrom (1990), and North (1990) are the best-known representatives of this branch in economics.

According to Dennis F. Thompson (2018), the study of corruption as an institution has taken a new turn as theorists have developed a concept that differs from that of conventional corruption in both its individual and structural forms (Seumas Miller 2010, 2017; Lawrence Lessig 2011). Additionally, Jan Teorell (2007) argues that the principal-agent model is the dominant view of corruption in economics, but modelling corruption as an institution in itself stresses horizontal conflicts between different sectors of society which may benefit or lose from corruption.

However, even when corruption, as an institution, may benefit some social groups, it is politically correct to fight against corruption. According to Luca J. Uberti (2016), there is an anti-corruption consensus in which the dominant development paradigm considers corruption a governance failure that needs to be eradicated through appropriate institutional reforms, such as strengthening the judiciary, designing legal structures in regulatory regimes, and the creation of anti-

corruption agencies. In particular, the anti-corruption consensus assumes that corruption has negative social impacts and a negative economic impact.

One of the most relevant issues in which corruption affects economic and business interests is the relationship between corruption and FDI. According to Abdul Jalil, Amina Qureshi, and Mete Feridun (2016), the role of corruption in determining FDI inflows is ambiguous and there seems to be no consensus in the economic literature. On the one hand, there is literature that indicates that corruption inhibits the entry of FDI since investors consider it a problem that affects their competitiveness. On the other hand, there is literature that indicates that corruption encourages FDI as it reduces the transaction costs of foreign companies. However, we are not going to delve deep into this literature since we consider, in this paper, that corruption negatively affects the inflow of FDI. Even more, we consider that corruption is the result of poor and inefficient government institutions; therefore, there is a link between institutional environment and FDI inflow/outflow.

The FDI literature has paid special attention to the importance of institutions for attracting foreign investment, and suggest several reasons why their quality may be important (Rodrik, Subramanian, and Trebbi 2004; Daron Acemoglu, Simon Johnson and James A. Robinson 2005). Many authors like Iris Kesternich and Monika Schnitzer (2010); Vittorio Daniele and Ugo Marani (2011); Mariya Aleksynska and Olena Havrylchyk (2013); Kazunobu Hayakawa, Fukunari Kimura and Hyun-Hoon Lee (2013); Syed Hasanat Shah, Mohsin Hasnain Ahmad and Qazi Masood Ahmed (2014); and Omar G. Aziz and Anil V.Mishra (2016) argue that an appropriate institutional environment may reduce corruption, and this reduction in corruption attracts foreign investment. Yin-Li Tun, W.N.W. Azman-Saini and Sion Hook Law (2012) and Aziz (2018) argue that countries with better institutional quality should be able to attract more investment due to reductions in both the uncertainty and the cost of doing business. However, to get higher institutional quality, proper reform-oriented institutions are needed in the fight against corruption.

The emergence of several social issues, like corruption, that affect the economy and businesses has produced many opinions from scholars and policymakers on the need to establish and implement institutional reforms as a way to achieve more substantial and solid economic growth and development. Several papers have been written on this topic, including Dani Rodrik (2000), Williamson (1996), and Pranab Bardhan (1989). However, as we mentioned before, corruption is also an institution, and institutional policies to fight corruption must be multi-directional. These institutional reforms should include formal law changes, the creation of special agencies, and community organizations, among others (Dixit, 2018).

The literature on institutional reforms and FDI is rather limited; nonetheless, the following are some exceptions. Marian Gorynia, Jan Nowak, Piotr Trąpczyński and Radosław Wolniak (2019) and Liugang Sheng and Dennis TaoYang (2016) analyze the effects of institutional reforms and quality of the institutional infrastructure for attracting inward FDI and fostering outward FDI. On the other hand, institutional policy reforms can affect the competitive conditions of firms, and

therefore foreign investment flows. Although some papers focus on the effect of corruption on FDI as in Albert Wijeweera and Brian Dollery (2009), or the effect of corruption on environmental issues as in Richard Damania, Per G. Fredriksson and John A. List (2003), the literature focused on how institutional reforms affect corruption, firm competition, and FDI is rather limited. Moreover, the literature explaining the failure of these institutional policy reforms in attracting FDI in developing countries, to the best of our knowledge, has not been thoroughly investigated. Therefore, we address this problem through our research question: What is the reason for the failure of institutional reforms?

Matt Andrews (2013) argues that reforms often fail to make governments better because they are introduced as signals to gain short-term support. These signals introduce unrealistic best practices that do not fit the context of developing countries and are not considered relevant by implementing agents. On the other hand, unclear legal frameworks to implement reforms, corruption, structural inefficiencies, and previous reforms with poor results are some of the reasons why developing countries neglect institutional reforms (Rafael S. Espinosa-Ramirez, 2001).

2 The Model

In this model, we are motivated to offer an explanation on this fact to understand the flow of FDI in developing economies. We search for an institutional explanation on how corruption and foreign investment coexist to determine a stylized institutional policy. Our contribution is to construct a model in which the reasons for establishing an institutional policy are grounded on both moral considerations and the way domestic political equilibrium is determined in order to take into account the benefit and loss of eliminating (or not) corruption. We shall focus on determining the optimal institutional policy.

The impact of institutional reforms on emerging economies is rather limited because “something” is not working properly in these countries: corruption. It is sometimes argued that bribery enables firms to get around bad rules and regulations and, thereby, reduces the distortionary costs of these (Dixit, 2018). This is true for some firms, but it is a nightmare for other firms.

In this paper, we assume that the presence of corruption in a country is the main reason for carrying out institutional reforms to avoid some economic inefficiency. Corruption may work as a barrier for foreign investors since it disturbs healthy competition among domestic and foreign firms due to a poor local institutional environment. Thus, institutional reforms may eliminate these disturbances in the competition among domestic and foreign firms.

We consider institutional reform in a very simple way. As mentioned by Dixit (2018), institutional reforms include changes in formal laws to establish a clear, legal, and functional legal system; the creation of entities and agencies to regulate legal spaces and institutions; and community organizations, among others. In this paper, we consider institutional reform a legal change that reduces the incentives to bribe corrupt government officials working within the illegal structure of the fiscal system.

However, is it true that institutional reforms are the best option in a developing context? Perhaps not in the short run. The "politically correct" economic literature does not consider this option and studies on this issue are non-existent. Nonetheless, evidence of persistently high levels of corruption in low developed countries is a fact to consider.

We focus on a country that hosts a single domestic firm and multiple foreign firms. We assume there are m foreign firms, where m is an entire and positive number such that $m \geq 1$. Foreign firms are homogeneous in their type due to their same cost structure, as we explain later on. The assumption that there is only one domestic firm and m multinationals better models the features of corruption and competition. This is the easiest way to analyze the flow of the foreign firm.

The domestic firm and multinational firms are competing among each other in an oligopolistic industry. These firms, domestic and foreign, produce a homogeneous good which is consumed entirely in the host country, where x is the output of the domestic firm, and y is the output of each multinational, consequently, my is the output produced by all the foreign firms.

The marginal costs are c_d for the domestic firm and c_f for each foreign firm, these costs are due to technological and factor market conditions. Both are constant, and therefore, equal to the average variable cost. There is a numeraire good in the background which is produced under competitive conditions and a factor of production whose price is determined in the competitive sector. The multinationals are homogeneous firms because they have the same cost structures among each other, but they are heterogeneous with respect to the domestic firm because they have different cost structures.

To carry out the analysis at a tractable level, we assume a linear demand function. The utility can be approximated from $U = u(x, y) + z$, where (x, y) are the goods under consideration, and z is the numeraire good. The use of this approximation removes some theoretical difficulties, including income effects. The demand is

$$p = a - bQ$$

where a and b are positive parameters, $Q = x + my$ is the total demand and p is the price of the homogeneous good. The profit functions of each domestic and foreign firm are respectively

$$\pi^d = (p - c_d)x \tag{1}$$

$$\pi^f = (p - c_f)y \tag{2}$$

Each firm has a Cournot perception: it takes the output of the other firm as given while maximizing its profits. Under Cournot-Nash assumptions, the (1) and (2) profit maximizations yield the following results

$$x = \frac{a + mc_f - (m+1)c_d}{(m+2)b} \tag{3}$$

$$y = \frac{a + c_d - 2c_f}{(m+2)b} \tag{4}$$

where the benefit of each oligopolistic firm is given by (3) and (4) in (1) and (2) respectively as

$$\pi^d = bx^2 \quad (5)$$
$$\pi^f = by^2 \quad (6)$$

Following Rafael S. Espinosa-Ramirez and Raul F. Montalvo-Corzo (2010) and Rafael S. Espinosa-Ramirez (2015), the domestic firm incurs two kinds of costs: the usual technological and market conditions cost and a fiscal cost (FC) paid by this firm. That is,

$$c_d = c_x + \Delta \quad (7)$$

where c_x is the technological and market conditions constant cost, and Δ is the FC which is a per-output payment that the domestic firm should pay to the government for fiscal reasons to continue operating regularly.

This FC is an excise tax per-unit on the domestic firm, but a corrupted environment makes some distortions on this FC. The domestic firm FC has two components: a legal one and an illegal one. In the legal component, the payment is made through the government's legal structure (legal option) in the form of an excise tax per-unit. In the illegal component, the payment is made through an alternative illegal structure (illegal option) in the form of a bribe. We assume that bribery is a common practice that the domestic firm should consider in its production decisions. Wayne Sandholtz and William Koetzle (2000) account for the importance of corruption on economic structure, democracy, and trade. This bribe is combined with the legal payment of taxes and is a compensatory option. In summary, the domestic firm has to pay its FC through two structures: an illegal one and a legal one[7]. It is well known that bribery is widely used in developing countries to simplify or avoid any legal and administrative procedures that can be significantly costly.

The payment amount made through the legal and illegal options would depend on the efficiency of the government's institutional framework. The institution is understood as the rules of the game which all economic agents agree to play. Thus, the institutional framework is the legal environment rules set by the government to regulate political and economic activities properly. In this sense, an efficient institutional framework strengthens the control over illegal activities. An inefficient institutional framework means there is weak control over illegal activities.

The institutional framework is established by the government through a credible and costless political reform of the legal system. This political reform will determine the level of efficiency in the institutional framework which will be measured by parameter α. This parameter will be called the institutional level.

Therefore α is determined by the government and is set between 0 and 1, where 0 is the lowest institutional level (corresponding to the most inefficient institutional framework), and 1 is the highest institutional level (corresponding to the most efficient institutional framework). The government determines the optimal institutional level.

Therefore, the two parts of the domestic firm FC can be written as

$$\Delta = \gamma(1-\alpha) + \beta\alpha \quad (8)$$

where $\gamma(1-\alpha)$ is the illegal option and $\beta\alpha$ is the legal one. Where γ and β are the per-unit structural illegal and legal costs respectively. These two per-unit

costs can be defined as the degree of efficiency in both structures. It is assumed, that $\beta > \gamma$ since it is the main reason for the existence of corruption in our context. It is assumed that corruption reduces transaction costs at least in the short term. The institutional framework becomes more efficient with an increase in the institutional level, $\gamma(1-\alpha)$ becomes smaller and $\beta\alpha$ becomes larger. The institutional framework becomes more inefficient with a reduction in the institutional level, $\gamma(1-\alpha)$ becomes larger and $\beta\alpha$ becomes smaller.

On the other hand, the multinationals have the usual technological and market condition constant cost (c_y) plus the legal fiscal cost (β) per unit of output which is identical to the domestic firm FC in the case of the highest institutional level such that

$$c_f = c_y + \beta \tag{9}$$

Moreover, we assume that multinationals are technically more efficient than the domestic firm such that $c_y < c_x$. This assumption is quite real as foreign firms do not enter a market if they have a competitive disadvantage, only a competitive one. Here, we assume bribing is an action allowed only for the domestic firm. We consider that multinationals are honest in terms of corruption, and the domestic firm has learned to use corrupted fiscal structures to obtain some competitive advantage in terms of cost reduction. Of course, in everyday life multinationals can learn to work with corrupted fiscal structures; however, in this paper, we assume that multinationals follow strong honesty codes.

Since multinationals are technically more efficient than the domestic firm such that $c_y < c_x$, the domestic firm may compensate for this competitive disadvantage using the illegal structure to get a lower fiscal cost. The corrupted fiscal structure allows the domestic firm to compete against multinationals. The domestic firm likely pays the FC to a civil service body in charge of collecting taxes. We assume that this civil service is corrupt and benefits from the illegal structure through which the domestic firm pays its FC.

The domestic firm knows two things: first, offering a bribe is cheaper than paying a tax; and second, the civil service body may be willing to accept a bribe that benefits the firm and itself. Intially, the domestic firm offers the civil service body a bribe; the firm is taking the initiative and is inducing a corrupt action. After this, the civil service may accept the bribe. We assume that the civil service body always accepts the bribe and that it is comprised of dishonest individuals (labeled δ). If the civil service body does not accept the bribe, then there is no corrupt action despite the corrupt initiative of the domestic firm. Corruption is a common assumption in emerging economies; there is a general social perception that the civil service is corrupt. Therefore, dishonest people obtain their income from the bribe paid by the firm.

On the other hand, there are people (labeled σ) working for the private sector[10] and they are homogeneous within their type. These people receive an income through the tax paid by the producer in the legal structure. It can be seen as a transfer from the government to them. We assume that for the honest income received for working

in the private sector, there is a second commodity, in the background of a competitive market, produced under constant returns. This is taken as the numeraire.

Honest people receive a constant salary which is omitted by simplicity. Both goods require only a single factor of production, e.g., labor, which is fixed supply under a perfectly competitive market and full employment. In general, we can say that the degree of dishonesty among government agents is assumed to be higher than those of private agents. Furthermore, even when there may exist honest people working for the civil service; the general perception in emerging countries is that the civil service is corrupt.

Now, we shall specify the utility function of honest people, dishonest people, and the government. We will use these functions to determine the optimal institutional level. Assuming quasi-linear preferences, the utility of honest people can be defined as

$$I^{\sigma} = \alpha\beta x + \beta m y + CS \tag{10}$$

In (10), the first term is the legal payment of the tax obligations made by the firm using the legal structure. This payment is transferred from the government to honest people as a lump sum. The second term is the legal payment of the tax obligations made by multinationals, and is also transferred as a lump sum by the host government. The third term is the consumer's surplus which satisfies:

$$dCS = -Qdp$$

Where, as seen before, Q is the total consumption of x and y, and p is its price.

The income of dishonest people is given by

$$I^{\delta} = \gamma(1-\alpha)x. \tag{11}$$

Although the bribe received from the firm is the income source, it is not the only income the dishonest could have received. We can consider that dishonest people receive a fixed wage w as a lump-sum transfer from a lump-sum tax levied on the monopolist. In this case, given the lump-sum characteristic of this income, it does not affect the results of our model and, for simplicity, we can ignore it. The smaller the institutional level, the larger the income received by dishonest people.

Institutional parameter α is a policy instrument for the government and is determined by a political equilibrium. Honest people do not lobby the government, but dishonest people make political contributions to influence government decisions.

This lobbying would depend on corruption in the political process (the government's willingness to accept contributions). Lobbying takes place in the domestic country which determines the institutional level. We model lobbying by following the political contributions approach. That is, lobbyists make political contributions to the political party in power, and the amount they contribute is contingent upon the policies adopted by the government. The political contributions approach, derived from the common agency problem analyzed by Douglas Bernheim and Michael D. Whinston (1986), was first introduced by Gene M. Grossman and Elhanan Helpman (1994) in modeling the political economy of trade protection with quasi-linear preferences.

The importance of the political process in economic decision-making, in general, and international policy issues, in particular, is well recognized (see Avinash K. Dixit, 1996). Lobbying by interest groups has received a lot of attention from international economists. Alternative approaches in modeling political equilibrium include the tariff formation approach (Ronald Findlay, and Stanislaw Wellisz, 1982), the political support function approach (Ayre L. Hillman, 1989), the median voter approach (Wolfgang Mayer, 1984), the campaign contribution approach (Stephen P. Magee, William A. Brock, and Leslie Young, 1989), and the political contribution approach (Grossman and Helpman, 1994).

The political contribution schedule for the dishonest is denoted by $C(\alpha)$. The host government's objective function is given by

$$G = \rho C + (I^{\delta} + I^{\sigma} + \pi^{d} + m\pi^{f}) \tag{12}$$

where $\rho > 1$ is the corruption parameter that is constant considering that dishonest people lobby, the government's objective function can also be written as $G = \rho C + (I^{\delta} - C) + I^{\sigma} + \pi^{d} + m\pi^{f}$. Reorganizing the equation, we get $G = (\rho - 1)C + I^{\delta} + I^{\sigma} + \pi^{d} + \pi^{f}$. Hence, the government attaches positive weight to contributions provided that $\rho > 1$. In other words, there is no political relationship between the government and the domestic firm when $\rho = 1$. The weight that the government attaches to social welfare is normalized to 1. Equation (12) states that the government considers the total welfare of its citizens (the terms in parenthesis), as well as the total amount of political contributions it receives (the first term on the right-hand side of [12]).

Political equilibrium is the outcome of a two-stage game. In the first stage, dishonest people choose their contribution schedule. The government then established its institutional policy in the second stage. A political equilibrium is given by (i) political contribution function $C^{*}(\alpha)$, such that it maximizes the welfare of all dishonest people given the anticipated political optimization by the government, and (ii) a policy variable, α^{*}, that maximizes the government's objective function given by (12), the contribution schedule is taken as given.

Avinash K. Dixit, Gene M. Grossman, and Elhanan Helpman (1997) develop a refined equilibrium known as truthful equilibria that implements Pareto efficient outcomes, which we take into account in this analysis. However, our framework is a partial equilibrium model, and such, we will also closely follow the original Grossman and Helpman (1994) approach to solve the model. Stated formally, let $(C^{\circ}(\alpha^{\circ}, I^{\delta^{\circ}}), \alpha^{\circ})$ be an equilibrium in which $I^{\delta^{\circ}}$ is the equilibrium per-capita utility level of dishonest people. Then $(C^{\circ}(\alpha^{\circ}, I^{\delta^{\circ}}), \alpha^{\circ}, I^{\delta^{\circ}})$ is characterized by

$$C(\alpha, I^{\delta^{\circ}}) = Max(0, \varphi) \tag{13}$$

$$\alpha^{\circ} = Argmax_{\alpha}\left\{\rho C(\alpha, I^{\delta^{\circ}}) + \left(I^{\sigma}(\alpha) + I^{\delta^{\circ}} + \pi^{d}(\alpha)\right)\right\} \tag{14}$$

where φ is defined in

$$I^{\delta^{\circ}} = I^{\delta} - \varphi. \tag{15}$$

Equations (13) and (15) state the truthful contribution schedule, which is set to the level of compensating variation relative to the equilibrium utility level of the

dishonest. The definition of φ is the basic concept of the compensating variations. Under a truthful equilibrium, for any change in α, the change in the contribution received by the government will exactly equal the change in welfare of the dishonest, provided that the payment, both before and after the change, is strictly positive. Equation (14) is self-explanatory: the government takes the utility level of the dishonest as given and chooses the institutional level to maximize its objective function.

According to Grossman and Helpman (1994, pp. 845-846), in the case of one lobby group, there is no opposition from competing interests, and the lobby group captures all of the surpluses from its political relationship with the government. In this political equilibrium, the government derives the same utility as they would have obtained by allowing no contribution. An interesting example with another lobby group can be found in Martin Rama and Guido Tabellini (1998).

We have two highly related corrupted scenarios: corruption in the government's political process which is exogenous, and corruption in the civil service which can be affected by policy decisions. Both scenarios can exist at the same time perfectly well. We shall focus on the determination of the optimal institutional level.

Finally, the government can affect the number of foreign firms by changing the institutional level. It is assumed that the host country is small in the FDI market. Multinationals move into (out of) the host country if the profit it makes in the host country, π^f, is larger (smaller) than the reservation profit, $\bar{\pi}$, it can make in the rest of the world. Therefore, the FDI equilibrium provides

$$\pi^f = \bar{\pi}. \tag{16}$$

From (4), (6) and (16) we have the defined solutions

$$y = \sqrt{\bar{\pi}/b} \tag{17}$$

$$m = \frac{a+c_d-2c_f}{\sqrt{\bar{\pi}b}} - 2 \geq 1. \tag{18}$$

Now we have established the backbone of our analysis.

3 Optimal Institutional Level

Having described the properties of the political equilibrium, in this section we shall analyze the optimal institutional level and its effect on trade and welfare. First of all, we should set some comparative statics related to the institutional reforms. From (7), (8), (9) and (18) we get

$$\frac{dm}{d\alpha} = \frac{(\beta-\gamma)}{\sqrt{\bar{\pi}b}} > 0. \tag{19}$$

Since the illegal option is cheaper than the legal one, for paying fiscal commitments, an increase in the institutional level increases the number of incoming multinationals. The increase in the institutional level increases the domestic firm's costs and thus the competitiveness of multinationals over the domestic firm. More foreign firms get into the host country given the improvement in profits. On the other hand, from (3), (7), (8), (9), (17) and (19) we get,

$$\frac{dx}{d\alpha} = -\frac{(\beta-\gamma)}{b} < 0 \tag{20}$$

$$\frac{dy}{d\alpha} = 0. \tag{21}$$

As we considered before, the per-unit structural legal cost is larger than the per-unit structural illegal cost ($\beta > \gamma$). Under this assumption, (20) shows that an increase in the institutional level reduces the optimal output of the domestic firm since there is an increase in the cost by changing from the illegal (and cheaper) to the legal (and more expensive) structure to pay tax obligations. On the other hand, from (21), given the increase in the cost of the domestic firm, the multinationals obtain a competitive advantage over the domestic firm; however, this advantage attracts more multinationals, reducing the market share of each foreign firm. In the end, the optimal output produced by each multinational is constant.

The competitive disadvantage faced by the domestic firm reduces its profit such that from (5)

$$\frac{d\pi^d}{d\alpha} = -2x(\beta - \gamma) < 0. \tag{22}$$

An increase in the institutional level reduces the profits of the domestic firm because it increases its fiscal costs. Strong competition from multinationals reduces the market share of the domestic firm. According to (19) and (6), it is naïve to say that the profits of each multinational do not change with institutional policy. However, the income of all the multinationals increases with stronger institutional policies given the incoming number of firms, let's say

$$\frac{d(m\pi^f)}{d\alpha} = y(\beta - \gamma) > 0. \tag{23}$$

On the other hand, considering the linear demand function defined above, consumer surplus can be defined as

$$CS = bQ^2/2 \tag{24}$$

From (24), we get

$$\frac{dCS}{d\alpha} = 0 \tag{25}$$

An increase in the institutional level does not affect consumer surplus since the reduction in the output of the domestic firm is equivalent to the increase in the total output of multinationals given the entry of new foreign firms. The total amount of output in the market is the same and the price of the homogenous good does not change at all.

From (10), (20), and (25) we can get the effect of an increase in the institutional level on the utility of honest people as

$$\frac{dI^\sigma}{d\alpha} = \beta x + \beta(1-\alpha)\frac{(\beta-\gamma)}{b} > 0 \tag{26}$$

In (26), the impact is positive as the increase in the institutional level increases the income received, by lump-sum transfer, from the legal payment of the tax obligation made by multinationals and the domestic firm, despite the reduction of optimal output of the domestic firm. On the other hand, the effect of an increase in the institutional level on the utility of dishonest people is derived from (11) and (20) as

$$\frac{dI^\delta}{d\alpha} = -\frac{\gamma}{b}[bx + (1-\alpha)(\beta - \gamma)] < 0. \tag{27}$$

An increase in the institutional level reduces the utility of dishonest people as the bribe offered by the domestic firm is reduced by such a policy. With a more solid institutional framework, the domestic firm is not willing to use the illegal option as the cost for bribing increases. In the same sense, the political contribution made by dishonest people to the host government is reduced as well.

The first step to determine the optimal α is to obtain the first-order condition for the optimization problem given in (13) through (15). Derivation of (12) with respect to the institutional level and taking (22), (23), (26) and (27), we obtain, implicitly, the following result:

$$\frac{dG}{d\alpha} = (\beta - \gamma)(y - 2x) + \frac{(\beta - \rho\gamma)}{b}[(1 - \alpha)(\beta - \gamma) + bx] \tag{28}$$

The first-order condition is ambiguous, and the optimal institutional policy depends on the corruption parameter and the relative efficiency of the firms. Provided the second-order condition holds, we consider two cases: in the first case there is no political corruption such that $\rho \to 1$; and in the second case political corruption is sufficiently large such that $\rho \gg 1$.

In the first case, the absence of political corruption makes the political contribution made by dishonest people useless. The government does not decide the optimal institutional policy by taking into account the benefit obtained from this contribution but takes into account the benefit gained from foreign investment and taxes through the legal structure. Taking into account that $\rho \to 1$, from (26) we have

$$\left.\frac{dG}{d\alpha}\right|_{\rho \to 1} = (\beta - \gamma)\left(c_x - c_y\right) > 0. \tag{29}$$

Since the first-order condition is unequivocally positive, the optimal institutional policy (α^*) is positive as well. It means $\alpha^* > 0$. With this strict institutional policy, the benefit obtained by the entry of multinationals (given better competitive conditions) plus the benefit in the income of honest people (given the income transfer made by the government) overcome the loss in efficiency of the domestic firm.

This result is supported in the assumption of the relative technical inefficiency of the domestic firm compared to multinationals $(c_x - c_y) > 0$. The use of bribes for government officials is due to the technological and market inefficiency of the domestic firm, compared to foreign multinationals, and compensate for the lack of competitiveness. The difference between the efficiency of domestic and foreign firms is a common feature in the literature on foreign investment. With the strictest institutional policy, bribes are useless given that the political sensibility of the government is null.

In the case where technological and market efficiency between domestic and multinationals are equal $(c_x = c_y)$, we can deduce, from (27), that the optimal institutional policy is neutral on the government objective function. With no political corruption, the government is neutral when setting any institutional policy. Intuitively speaking, the loss/benefit of a domestic firm is equivalent to the loss/benefit of multinationals at any institutional level. Of course, we are not interested in the case where the domestic firm is more efficient than multinationals

unless the bribe comes from multinationals rather than the domestic firm; nonetheless, it is a possible extension of this paper.

In the second case, the existence of a high level of political corruption makes the political contribution, made by dishonest people, relevant. The government chooses the optimal institutional policy by taking into account the benefit obtained from this contribution rather than the benefit gained from foreign investment and taxes through the legal structure.

Taking into account that $\rho \gg 1$, from (26), we have that the second term on the right-hand side of (26) may become negative and larger than the positive first term of the same equation. This is because an increasing political corruption parameter implies a reduction in the optimal institutional level. We can determine the negative relationship between the optimal institutional level and corruption parameter ρ from the first-order condition (26) as an implicit derivation such that $\frac{dG}{d\alpha} = F$ and

$$\frac{d\alpha^*}{d\rho} = -\frac{\partial F}{\partial \rho} \Big/ \frac{\partial F}{\partial \alpha} \tag{30}$$

Where

$$\frac{\partial F}{\partial \rho} = -[(1-\alpha)(\beta-\gamma) + bx]\frac{\gamma}{b} < 0$$

And given that $\partial F / \partial \alpha$ is the negative second-order condition, we conclude that (30) is negative. The second-order condition is $G_{\alpha\alpha} = \frac{(\beta-\gamma)}{3b}[\gamma(4\rho-3)-\beta]$. To hold the concavity condition, we should have $\beta > \gamma(4\rho-3)$, which is consistent with the result mentioned above. An increase in the corruption parameter increases the weight attached to the political contribution (bribe) the domestic firm is willing to pay in order to obtain a competitive advantage over multinationals. With a large corruption parameter, the government is willing to set no institutional policy at all; the benefit obtained from the political contribution (bribe) received from dishonest people is larger than the loss in the number of incoming multinationals and the loss of government transfers to honest people. Corruption may discourage foreign investment (e.g., multinationals) because it may induce a distortion regarding the competitiveness among multinationals and domestic firms.

4 Conclusions

Misunderstanding the impact of the corrupt civil service, political corruption, and the inefficiency of the legal structures on society may lead to distortions in institutional policy. Illegal structures seem to be more efficient in terms of avoiding fiscal costs, thus bribes may be an institutionally efficient instrument and producers can take advantage of that. In this sense, the impact of corruption on the competitive advantage and disadvantage of competing firms may change the flow of foreign firms.

Understanding corruption is more complicated than expected. In many developing countries corruption, seen as institutions that reduce transaction costs, is the institutional way in which society seeks compensation for the inefficiency of formal institutions. The more efficient institutions replace inefficient institutions

despite their legal or illegal feature. Additionally, corruption is part of a country's culture, its idiosyncrasies, and even its religious practices. Bribery is not just a source of income that compensates for low wages and augments political income, it's also a part of a country's social values and traditions, a part of the social *imaginarium*. Nowadays corruption is a survival strategy that represents a source of income for people and governments from many low developed countries.

In a political context, governments may have a political interest in supporting illegal structures since these structures provide monetary resources in the form of political contributions from lobbyists to guarantee political favors. Illegal resources given to political parties help them secure access or continuity in power to influence political decisions. These illegal resources come from dishonest lobbyists and corrupted public agents.

This paper attempts to explain why some institutional reforms may affect competition among multinationals and domestic firms, and consequently the location decision of multinationals. It is well understood that multinationals are technically more efficient than domestic firms, otherwise there are no incentives.

In this paper, there are two sources of corruption, fixed political corruption found in the government's superstructure, and corruption in the form of a bribe offered by the domestic firm to dishonest civil service officers for some cost advantage through the payment of taxes. These officers lobby the government to inhibit any action led by governors to create a clear and healthy institutional environment which affects the flow of incoming multinationals. The impact of this political contribution depends on the wiliness of governments to accept such contribution. This willingness is expressed as a corruption parameter that is given and fixed as we mentioned before.

Given that the domestic firm is technically inefficient compared to multinationals, and considering that the cost of using the legal structure is larger than the cost of using the illegal one for the payment of fiscal commitments, the domestic firm bribes public officials to reduce its fiscal cost.

In general, governments have to consider their own benefit and that of its citizens. Some benefits come from bribery in illegal structures; dishonest people lobby the government to consider their interests, but the government must take into account the interests of honest and dishonest citizens along with its own interests.

We found that the institutional level depends on the willingness of the government to accept political contributions. In this sense, the effectiveness of institutional reforms is based on corruption of the political superstructure rather than corruption of the social structure. Efficient institutional reform should be accompanied by a change in the political culture which isolates policymaking from the corrupt tendencies of the lower structures.

The political implications of this model are based on the infeasibility of establishing economic policies oriented towards long-term growth. FDI is highly desirable, but it does not work if it is not supported by two fundamental institutional arrangements: first, the need to create efficient government structures to avoid the transaction cost problem that increases social disincentives; second, having a basic

income, or a minimum level of well-being, to form a solid foundation of social sustainability that inhibits incentives for corruption.

To create long-term policies, there must be adequate social support. When the minimum conditions for social sustainability do not exist in a developing country, people focus their decisions on short-term priorities and not the social requirements of stability and growth. Inefficient government institutions generate high social costs and people do not recognize government channels as favorable, so they opt for illegal but perhaps more reliable options. People and entrepreneurs use corruption as a way to solve their own uncertainty. A policy of attracting FDI, and one that promotes growth and development, must first be based on a proper and efficient government structure that does not allow institutional gaps.

However, institutional restructuring is not enough. Without the minimum conditions for well-being, people opt for profitable options that, if repeated continuously, generate traditions and culture. If these options involve a degree of corruption, then corruption becomes a widespread institutional practice that inhibits any attempt to establish economic policy. An appropriate policy would be to start with establishing the minimum welfare standards necessary to break the cycle of corruption. Meeting short-term institutional needs is essential for successful FDI policies.

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