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Corruption and competition for resources

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Corruption and competition for resources

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Abstract

An increasing share of world FDI is carried out by multinationals from developing countries. These investors may have objectives and constraints that differ from their developed country counterparts. In this paper we focus on differences in attitudes to corruption, and how these may shape the competition for the right to extract resources in a developing country context. We show how differences in the investors' level of technology and differences in the host country government's trade-off between bribes and taxes determine who wins the competition for the resource and the winning price. We find that the entry of a corrupt investor may induce the honest investor to offer bribes instead of taxes. Surprisingly, however, our analysis also demonstrates that under some conditions, the entry of a corrupt investor may in fact induce the honest investor to *increase* its tax payments.
Key words: Corruption, FDI, auction, natural resources
JEL classification: K2, K4, O1

1 Introduction

Foreign direct investment flows (FDI) are in flux. An increasing share of world outward FDI flows originates from developing countries and is hosted by oil and gas rich developing countries. These developments are illustrated in Figure 1, tracking the development in the share of world FDI flows from 2000 to 2010, using data from UNCTAD.

Multinationals from developing countries bring not only different technologies but potentially also different attitudes to corruption. Table 1 reports inclination to bribe abroad, measured by the Bribe Payers' Index (BPI) and

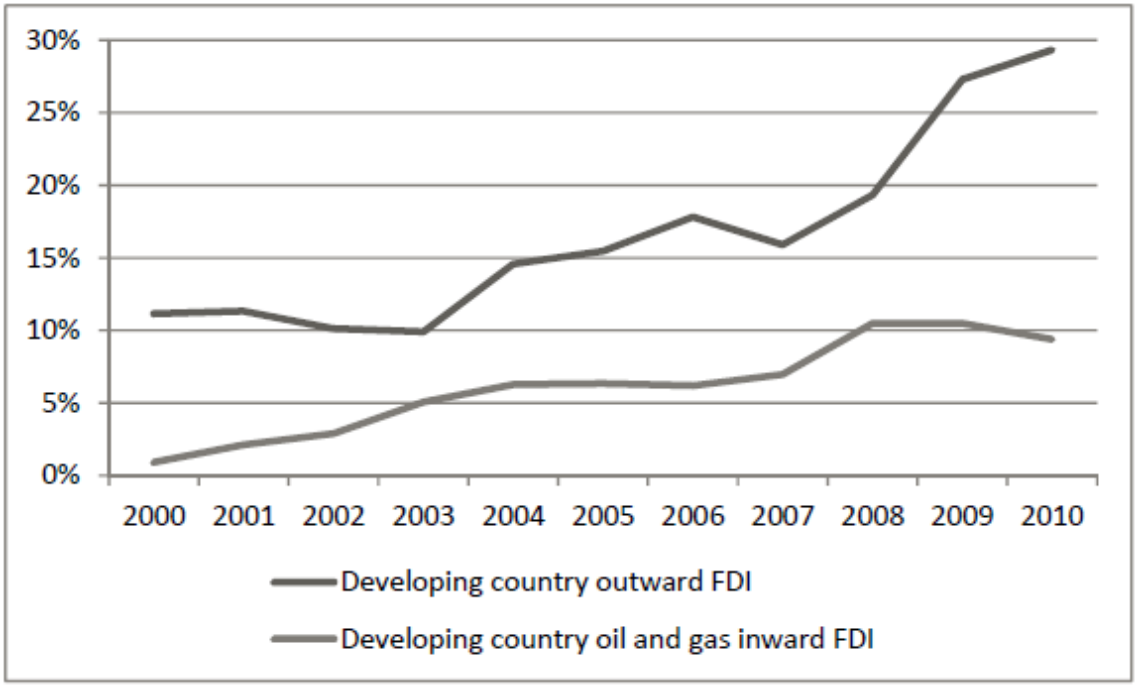

Figure 1: Yearly FDI flows, as a share of world flows, 2000-2010

the corresponding domestic corruption, measured as the Corruption Perception Index (CPI), for the top five and bottom five BPI countries, with data from Transparency International (TI). For both measures, a lower number means *more* corrupt. The table shows that multinationals from countries where corruption is pervasive, typically developing and transition economies, are more likely to bribe abroad.

Table 1. Corruption at home and bribes abroad

	BPI	CPI
Less inclined to bribe abroad		
Netherlands	8.8	8.9
Switzerland	8.8	8.8
Belgium	8.7	7.5
Germany	8.6	8.0
Japan	8.6	8.0
Average	**8.7**	**8.2**
More inclined to bribe abroad		
Russia	6.1	2.4
China	6.5	3.6
Mexico	7.0	3.0
Indonesia	7.1	3.0
United Arab Emirates	7.3	6.8
Average	**6.8**	**3.8**

Source: Transparency International

A reasonable interpretation of the positive correlation between BPI and CPI that we observe in Table 1 is that firms located in countries where corruption is (perceived to be) pervasive face lower risks, both legal and market based, of bribing abroad. Developed countries have implemented legislation that forbids foreign bribery.[1] In addition, the market response to corruption, in the form of damaged reputation, drop in share prices, the risk of class action or debarment from procurement, is likely to vary according to the multinationals' home countries. This interpretation is consistent with a recent study of 166 corruption cases by Cheung et al. (2012), which concludes that firms from countries where managers and/or firms are likely to face negative reactions to involvement in corruption are less likely to offer bribes abroad.

Hence, the increased share of world FDI originating from developing and transition countries suggests increased prevalence of corrupt practices in international investments. This increase in the "supply" of corruption is

[1] Such legislation includes the United States Foreign Corrupt Practices Act (FCPA), the OECD Convention on Combatting Bribery of Foreign Public Officials, and parts of the UN Convention against Corruption (UNCAC). See Transparency International (2012) for facts about how the legislation is being enforced.

matched by an increase in the "demand" for corruption, as an increasing share of world FDI is hosted by resource rich developing countries, where corruption is typically prevalent.[2]

The present paper analyses how the growing importance of developing country multinationals may affect the competition for natural resources in a developing country context. The envision a situation with two firms, a developed country multinational and a developing country multinational, bidding for an asset sold by a government which places weight on both bribes and tax income. The developed county multinational is technologically more advanced than its developing country counterpart, and faces a moral or pecuniary cost of being involved in a corrupt transaction. For short, we shall sometimes refer to the developed country firm as "honest". Regarding the developing country multinational, we analyse both the case where it, like the developed firm, faces a cost of corruption, and when it faces no such cost, in which case we may refer to it as "corrupt".

One finding from our analysis is that competition with a corrupt investor may induce the honest investor to also start paying bribes. More surprisingly, however, we also demonstrate that competition with the corrupt firm under certain circumstances may lead the honest investor to pay a higher *tax* to the host country to acquire the resource. Intuitively, in corrupt host countries, the corrupt investor may be a tougher competitor to the honest investor, forcing the latter to raise its tax bid for the resource to compensate for the 'disadvantage' of not offering a bribe. As long as this is the winning bid, it is good for the host country, which receives higher tax revenues from a high-tech investor. But clearly, if the contract is signed with the corrupt firm, the host country loses, since the investor is low-tech and on top of that pays lower taxes. We explore which investor wins the contract as well as the terms of this contract, highlighting the importance of host government emphasis on bribes, the technology gap between investors, and the competing firm's bribe-aversion as critical factors.

Anecdotal evidence on corruption in natural resources abounds. Consider for example the tender for a 30-year lease for operating the Aynak mine in Afghanistan, one of the world's biggest depositories of copper. A Chinese firm, MCC, won the contract in competition with 14 international mining

[2]On the link between resource wealth and institutional quality, see for example Brunnschweiler (2008), Leite and Weidemann (1999), Gelb (1988), Karl (1997), Ross (1999), Robinson et al. (2006), McGuirk (2012), Busse and Gröning (2012), Frankel (2010) and Kolstad and Søreide (2009) provide recent reviews.

companies, including bids from the United States and Canada. According to facts about the process and the other bids made public by the Afghan government, the Chinese clearly outbid the other firms, partly with a high signature bonus and partly with promises of investments in infrastructure and a new power plant. However, according to leakages from US intelligence reports, the Chinese paid a $30 million bribe to the Afghan Minister of Mines. The Minister had to leave his post shortly after the event, allegedly because of this corruption. The Chinese now operate the Aynak mine, but have failed to meet their commitments regarding production, infrastructure developments and the promised power plant. Tax revenues from the copper production are far lower than forecasted when the tender took place in 2007. This story shows how a new investor, in this case from China, uses bribes to outperform investors from more developed countries, thereby enriching centrally placed politicians but with a sub-optimal result for the country as a whole.[3]

Our paper is most closely related to Burguet and Perry (2007), who analyse a situation where an auctioneer allows a supplier to revise its bid upon information about other bids and in exchange for a bribe. This, they find, has highly distortive consequences in cases when this supplier is weaker in terms of what quality it can offer. When the briber is also the ex ante strongest firm with regard to technology, the distortion is primarily on the price offered to the buyer, which they find can be lower in the case of corruption compared to the case of no corruption. Also Burguet and Che (2004), analyzing the impact of corruption on contract allocation, find that efficient firms pay an overly high burden in competition with less honest firms. They find corruption to distort the allocative outcome of procurement, meaning that a bribe may compensate for significant technological inferiority, i.e. corruption makes it possible for less efficient firms to win contracts. Other related literature includes Søreide (2009), which analyses how attitudes to risk may affect corrupt behavior, and Engel et al. (2012) who consider asymmetric punishment and corruption.

[3]The story was reported by for instance Afghanistan News Center and Washington Post, both on November 18, 2009. For more case studies, see Yates (1996) on Gabon, Soares de Oliveira (2007) on Angola or Gboyega et al. (2010) on Nigeria. For details of how corruption in petroleum is carried out, see McPherson and Searraigh (2007), Al Kasim et al. (2008) and Rose-Ackerman (1997, 1999). For journalistic investigations of how allocation of oil and gas concessions to firms have been influenced by diplomatic pressures, see Shaxson (2007). For an overview of US investigated corruption cases by sector and country, see www.fcpamap.com.

Our contribution adds to this literature by focusing on how the host country decision-maker's trade-off between personal and social benefits influences contract allocation and prices. The effect of bribe-biased preferences on the auction outcome is far from trivial. For instance, we demonstrate that equilibrium bribes may be lower in a setting where the politician focuses narrowly on bribes compared to a situation where the politician places a larger weight on social outcomes.

The remainder of this paper is organized as follows. Section 2 presents the model with the case of (a) symmetric and (b) asymmetric propensity to offer bribes, Section 3 analyzes the equilibrium outcome, while Section 4 concludes.

2 Model

A developing country is auctioning out a license to explore a natural resource, such as an oil field. The government of this country values bribes (B) and taxes (t) that are derived from the auction, according to the following utility function:

$$U = \omega B + (1 - \omega)\, t, \tag{1}$$

where ω is the weight placed on bribes relative to tax income. Taxes should be interpreted broadly to include any benefits that accrue to society from the sale of the resource. We envision a setting where the decision maker can freely determine the allocation of the resource and the terms of the contract, without risking any repercussions. The decision maker may, however, place a positive weight on the welfare of the population, for instance to boost his popularity and reduce the risk of rebellion. In other words, even a highly corrupt dictator is likely to have a ω lower than one.

Two firms are interested in making a bid for the license. Firm i's objective function is given by:

$$\Pi_i = \beta_i - (B_i + t_i) - f_i, \tag{2}$$

where the first term is the gross revenues from the resource (β_i), as determined by the investor's technology, the second term is acquisition costs, consisting of bribes (B_i) and taxes (t_i), and the third term is the burden f_i, moral or pecuniary (in expected terms), of paying a bribe.

Competition for the resource is structured as a second price auction, with the winner being the player with the higher bid, and with the acquisition price given by the bid of the losing party. Note that the price may consist of both a bribe and a tax, and is defined in terms of government utility, see Bjorvatn and Søreide (2005).

We focus on two potential asymmetries between the firms; technology and aversion to corruption. For concreteness, let firm a be the technologically more advanced firm, and let $\beta_a = 1, \beta_b = \beta < 1$. We can think of firm a as a developed country multinational and firm b as a developing country multinational. As discussed above, the developed country multinational is likely to face stronger pressure not to be involved in corruption. We model this as $f_a > 0$, and sometimes refer to this as the honest firm. Note, however, that even the honest firm in our setting may be involved in corruption, if the gains of a corrupt deal outweigh the (expected) costs. We discuss both the case where the developing country multinational is honest, that is, $f_b = f_a > 0$, and when it is corrupt, that is, when $f_b = 0$.

2.1 Competition between two honest firms

We start out by analyzing the case where the two firms are equally bribe sensitive, $f_a = f_b = f$. In this case, it is clear that the more efficient firm a necessarily wins the auction, so the question is; *how* does it win the auction?

To answer this question, we first consider what firm b's maximum bid is. Clearly, if firm b makes a tax bid, the maximum government utility that it can generate is $U_b^{\max}(t_b^{\max}) = (1-\omega)\beta$, where $t_b^{\max} = \beta$. Alternatively, the maximum bribe bid that firm b can offer would generate government utility $U_b^{\max}(B_b^{\max}) = \omega(\beta - f)$, where $B_b^{\max} = \beta - f$. Hence, we know that firm b *when offering its maximal bid* is indifferent between paying bribes and taxes when:

$$\beta = \frac{f\omega}{2\omega - 1} \equiv \beta_1. \tag{3}$$

For $\beta > \beta_1$, it makes a bribe bid, while for $\beta \leq \beta_1$, it makes a tax bid. Note that β_1 is a decreasing function of ω; the more weight the host government places on bribes, the more likely it is that firm b offers a bribe. Also note that a higher β pulls in the direction of offering a bribe; the bribe aversion becomes relatively less important when the economic stakes involved in the auction increase, reflected by a higher β.

In the second price auction, firm a wins the contract by matching the government utility of firm b's maximal bid. As we have seen above, the maximal bid of firm b is the tax bid $t_b^{\max} = \beta$ for $\beta \leq \beta_1$, and the bribe bid $B_b^{\max} = \beta - f$ for $\beta > \beta_1$. Starting with the former case, that is, $\beta \leq \beta_1$, the winning tax bid by firm a would be such that $U_a(t_a) = U_b^{\max}(t_b^{\max})$, which can be expressed as $(1-\omega)\, t_a = (1-\omega)\,\beta$, which solving for t_a gives the equilibrium tax bid:

$$t_a^*(t_b^{\max}) = \beta. \tag{4}$$

Alternatively, it could win by offering a bribe bid determined by $U_a(B_a) = U_b^{\max}(t_b^{\max})$, which can be expressed as $\omega B_a = (1-\omega)\,\beta$, which gives the equilibrium bribe bid:

$$B_a^*(t_b^{\max}) = \frac{\beta(1-\omega)}{\omega}. \tag{5}$$

Plugging these values, t_a^* and B_a^*, into firm a's profit function, we find that it is indifferent between the two when $\beta = \beta_1$, and strictly prefers to make the tax bid t_a^* when $\beta < \beta_1$. This implies that whenever firm b chooses to make a bribe bid, so does firm a. Turning to the case of $\beta > \beta_1$ we can derive firm a's winning bid from the condition $U_a(B_a) = U_b^{\max}(B_b^{\max})$, which equals $\omega B_a = \omega(\beta - f)$, which solving for B_a can be expressed as:

$$B_a^*(B_b^{\max}) = \beta - f. \tag{6}$$

Hence, in the symmetric bribe aversion case we can conclude that:

Observation 1. *For $\beta \leq \beta_1$, firm a wins the contract by offering a tax $t_a^*(t_b^{\max}) = \beta$ while for $\beta > \beta_1$ firm a wins the contract by offering a bribe $B_a^*(B_b^{\max}) = \beta - f$.*

Evidently, even an honest, technologically superior firm may not necessarily win the contract by taxes alone. If the decision maker in the host country is sufficiently corrupt, the investor may be tempted to win the deal by offering a bribe instead of the tax, with the price discount associated with the corrupt transaction more than outweighing the investor's moral or expected pecuniary costs.

2.2 Competition between an honest and a corrupt firm

We now introduce asymmetric bribe aversion. In order for there to be an interesting trade-off between the two firms in the auction, we assume that

the advanced firm a has a higher aversion against paying bribes than its less advanced rival, for instance due to stricter anti-corruption legislation in the home country of the advanced firm. Let $f_b = 0$, while $f_a = f > 0$.

In this case, it is not obvious which firm wins the contract; firm a clearly has the higher *ability* to bribe, but firm b has the higher *willingness* to bribe. Note, however, that this trade-off only applies for $\omega > \frac{1}{2}$, since in this case the government actually values bribes more than taxes. For $\omega \leq \frac{1}{2}$, the auction is trivial; firm a wins by offering a tax that is equal to the maximal bid by firm b, that is, $t_a = \beta$. In the following, therefore, we limit ourselves to the situation of $\omega > \frac{1}{2}$.

2.2.1 The winner

We start by considering the maximal bid by firm b. Clearly, since firm b has no aversion to paying bribes, and since bribes, given our assumption of $\omega > \frac{1}{2}$, are more efficient in generating government utility than paying taxes, firm b always offers a bribe bid. The maximum utility it can generate is $U_b^{\max}(B_b^{\max}) = \omega\beta$.

Turning to firm a, by making a tax bid it can generate $U_a^{\max}(t_a^{\max}) = (1-\omega)$, while by making a bribe bid it can generate $U_a^{\max}(B_a^{\max}) = \omega(1-f)$. The tax bid of firm a matches the bid of firm b when $U_a^{\max}(t_a^{\max}) = U_b^{\max}(B_b^{\max})$, which can be expressed as:

$$\beta = \frac{1-\omega}{\omega} \equiv \beta_2. \tag{7}$$

The bribe bid by firm a matches the bid by firm b when $U_a^{\max}(B_a^{\max}) = U_b^{\max}(B_b^{\max})$, which can be expressed as:

$$\beta = 1 - f \equiv \beta_3. \tag{8}$$

Hence, when $\beta > \max(\beta_2, \beta_3)$ firm b wins the bid, while for $\beta \leq \max(\beta_2, \beta_3)$, firm a wins the bid. Not surprisingly, the larger is the weight on bribe income in the host government's objective function, and the larger are the honest firm's costs of paying bribes, the more likely it is that the corrupt firm wins the contract for any level of technology.

2.2.2 The price

Now that we have established the conditions for who wins the auction, we turn to the equilibrium price. Given that firm a wins, does it pay a tax or a bribe? Note that a winning *bribe* bid by firm a would be such that $U_a(B_a) = U_b^{\max}(B_b^{\max})$, which can be stated as $\omega B_a = \omega\beta$, or simply:

$$B_a^{**}(B_b^{\max}) = \omega. \tag{9}$$

Alternatively, the winning *tax* bid by firm a would be such that $U_a(t_a) = U_b^{\max}(B_b^{\max})$, which can be stated as $(1-\omega)t_a = \omega\beta$, implying that:

$$t_a^{**}(B_b^{\max}) = \frac{\beta\omega}{1-\omega}. \tag{10}$$

Plugging these into firm a's profit function, we find that a is indifferent between the two, i.e., $\Pi_a(B_a^{**}) = \Pi_a(t_a^{**})$, when:

$$\beta = \frac{f(1-\omega)}{2\omega - 1} \equiv \beta_4. \tag{11}$$

Hence, we can conclude that:

Observation 2. *Given that firm a wins the contract, for $\beta \leq \beta_4$ it does so by offering a tax $t_a^{**}(B_b^{\max}) = \frac{\beta\omega}{1-\omega}$, while for $\beta > \beta_4$ it does so by offering a bribe $B_a^{**}(B_b^{\max}) = \omega$.*

What about when firm b wins the contract, that is, for $\beta > \max(\beta_2, \beta_3)$? We know that firm a is indifferent between offering a bribe and a tax as its maximal bid when $U_a^{\max}(B_a^{\max}) = U_a^{\max}(t_a^{\max})$, which can be expressed as.

$$\omega = \frac{1}{2-f} \equiv \omega_1. \tag{12}$$

where we have used the fact that $B_a^{\max} = 1 - f$ and $t_a^{\max} = 1$. That is, for $\omega \leq \omega_1$ the maximal offer by firm a is defined by a tax bid, while for $\omega > \omega_1$ the maximal offer by firm a is defined by a bribe bid. Hence, for $\omega \leq \omega_1$, firm b wins by offering a bribe such $U_b(B_b) = U_a^{\max}(t_a^{\max})$, which simplifies to:

$$B_b^{**}(t_a^{\max}) = \frac{1-\omega}{\omega}. \tag{13}$$

Note that the equilibrium bribe is falling in ω, since a higher ω reduces the value of firm a's tax bid. For $\omega > \omega_1$, firm b wins by offering a bribe such that $U_b(B_b) = U_a^{\max}(B_a^{\max})$, which can be expressed as:

$$B_b^{**}(B_a^{\max}) = 1 - f. \tag{14}$$

In this case, therefore, the bribe is constant, independent of ω.

Observation 3. *Given that firm b wins the contract, for $\omega \leq \omega_1$ it does so by offering a bribe $B_b^{**}(t_a^{\max}) = \frac{1-\omega}{\omega}$, while for $\omega > \omega_1$ it does so by offering a bribe $B_b^{**}(B_a^{\max}) = 1 - f$.*

3 Analysis

The equilibrium outcome of the competition for resources in this corrupt environment is illustrated in Figure 2. The figure shows the critical levels of β defined in equations (3), (7), (8) and (11), and ω_1 from equation (12), for a given level of f. The different constellations of equilibrium buyer and price are marked with different capital letters (A-D) in the figure, with the properties of each area detailed in Table 2.

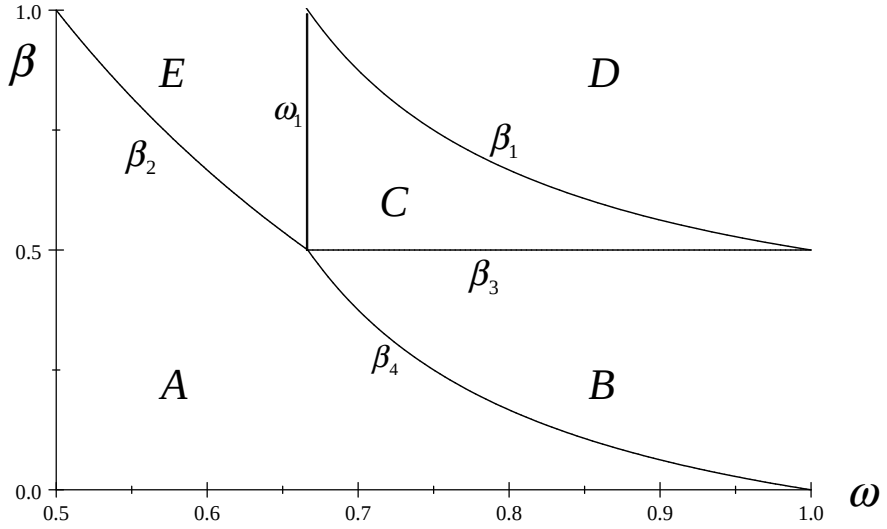

Figure 2: Equilibrium buyer and price

Table 2 summarizes the key information from the various areas marked in Figure 2.

Table 2. Winner, taxes, and bribes

Area in Figure 1	A	B	C	D	E
Two honest firms					
Winner	a	a	a	a	a
Bribe	0	0	0	$\beta - f$	0
Tax	β	β	β	0	β
Honest and corrupt firms					
Winner	a	a	b	b	b
Bribe	0	β	$1 - f$	$1 - f$	$\frac{1-\omega}{\omega}$
Tax	$\frac{\beta\omega}{1-\omega}$	0	0	0	0

In area A, firm a wins the auction. Interestingly, taxes are now increasing in ω, the government's emphasis on bribes. In fact, taxes are higher when competing against a corrupt firm ($t_a = \frac{\beta\omega}{1-\omega}$) than when competing against another honest firm ($t_a = \beta$). The reason is that competition for assets

sold by a corrupt government places the corrupt firm at an advantage. To compensate for the rival's advantage, the honest firm may have to pay a higher tax.

In area B, too, firm a wins the auction. But, while it wins by offering a *tax* ($t_a = \beta$) when competing against another honest firm, it wins by offering a *bribe* ($B_a = \beta$) when competing against a corrupt firm. Note, therefore, that areas A and B are radically different when it comes to how the type of competition affects the equilibrium outcome: In area A, competing against a corrupt firm leads to increased taxes. In area B, however, it leads to the complete erosion of taxes.

In area C firm a wins the competition against an honest rival but not against a corrupt competitor. Again, competition with a corrupt firm completely erodes taxation, and in this case also leads to an inefficient outcome, in the sense that the low-tech firm wins the auction.

In area D, firm a wins the auction when competing against an honest rival (this time by offering a bribe), while it loses when competing against a corrupt rival. In the former case, firm a wins by offering a bribe $B_a = \beta - f$, while in the latter case, the corrupt rival wins by offering $B_b = 1 - f$. Clearly, the level of bribes is higher in the latter case.

In area E firm a wins over an honest rival, and does so by paying a tax ($t_a = \beta$). In contrast, a corrupt rival wins over a and does so by paying a bribe ($B_b = \frac{1-\omega}{\omega}$). Note that the bribe is falling in ω; in effect, a more bribe-focused host government increases the comparative advantage of the corrupt firm, allowing it to offer a lower bribe and still win the contract.

4 Conclusion

The rise of transition and developing country multinationals presents new challenges to multinationals headquartered in the developed world and new possibilities for (more or less) corrupt governments in resource rich countries. Developing country investors are likely to be disadvantaged in terms of technology, but may be more willing and able to offer bribes to access resources abroad. Our analysis shows how this asymmetric competition plays out in an auction for a resource in a corrupt host country. We analyze who wins the auction and whether the payment is in the form of taxes or bribes, focusing on how the technology gap between investors and the degree of government corruption affect the outcome.

Not surprisingly, the entry of a corrupt investor may make a corrupt deal more likely, especially if the technological gap is not too wide and if the host government places a large weight on bribes relative to taxes. By reducing tax income and lowering the quality of investments, corruption may thus erode the positive welfare effects that could have been derived from the natural resource. More surprisingly, however, our analysis shows that competition with a corrupt investor does not necessarily lead to higher bribes and lower taxes compared the situation with two honest investors. In fact, given that the government is not too corrupt, the developed country investor wins the contract by offering *higher* taxes than it would have done competing against another honest investor.

In a larger perspective, our paper can be seen as shedding light on the mechanisms underlying the so-called resource curse, that is, the negative link between natural resource and economic development, which is particularly evident for countries with weak institutions. We have shown why corruption may lead to a loss of tax revenues and the use of less efficient technology for a country auctioning out a license to explore its resources. Clearly, these distortions may have macroeconomic implications. Moreover, as shown by Asiedu and Lien (2011), Robinson et al. (2006) and others, corruption in resource related FDI may have a negative impact also on the institutional development of a country, with damaging impacts on its long-term growth potential.

5 References

Al Kasim, F., T. Søreide and A. Williams. 2008. Grand Corruption in the Regulation of Oil. U4 Issue 2008:2. U4 Anti Corruption Resource Centre. Bergen: Chr. Michelsen Institute.

Asiedu, E. and D. Lien. 2011. Democracy, foreign direct investment and natural resources. *Journal of International Economics.* 84(1): 99-111.

Bjorvatn, K. and T. Søreide. 2005. Corruption and privatization. *European Journal of Political Economy.* 21: 903-14.

Brunnschweiler, C.N., 2008. Cursing the blessings? Natural resource abundance, institutions, and economic growth. *World Development.* 36 (3): 399–419.

Burguet, R. and M.K. Perry. 2007. Bribery and favoritism by auctioneers in sealed-bid auctions. *The B.E. Journal of Theoretical Economics.* 7(1): Article 23.

Burguet, R. and Y. K. Che. 2004. Competitive procurement with corruption. *The RAND Journal of Economics.* 35 (1): 50-68.

Busse, M. and S. Gröning. 2012. The resource curse revisited: governance and natural resources. *Public Choice*, forthcoming.

Cheung, Y.L., P. Raghavendra Rau and A. Stouraitis. 2012. How much do firms pay as bribes and what benefits do they get: Evidence from corruption cases worldwide. NBER Working Paper 17981. Cambridge, MA: National Bureau of Economic Research.

Compte, O. A. Lambert-Mogliansky and T. Verdier. 2005. Corruption and competition in procurement auctions. *The RAND Journal of Economics.* 36 (1):1-15.

Engel, C., S.J. Goerg and G. Yu. 2012. Symmetric vs asymmetric punishment regimes for bribery. Preprint of the Max Planck Institute for Research on Collective Goods. Bonn 2012/1.

Frankel, J. A. 2010. The natural resource curse: a survey. NBER Working Paper 15836. Cambridge, MA.: National Bureau of Economic Research.

Gboyega, A., T. Søreide, T.Mihn-Le and G.P Shukla. 2011. Political Economy of the petroleum Sector in Nigeria. Policy Research Working Paper 5779. Africa Region. Washington DC.: The World Bank.

Gelb, A. 1988. *Oil windfalls: blessing or curse.* Oxford University Press.

Hunt, S. and S. Rose-Ackerman. 2012. Transparency and business advantage: the impact of international anti-corruption policies and the United States national interest. *New York University Annual Survey of American Law.* No. 433. New York: New York University.

Karl, T.L. 1997. *The Paradox of Plenty: Oil Booms and Petro-States.* University of California Press, Berkeley and Los Angeles.

Kolstad, I. and T. Søreide. 2009. Corruption in natural resource management: Implications for policy makers. *Resources Policy.* 34: 214–226 Laffont, J.J. and J. Tirole. 1993. A theory of incentives in procurement and regulation. MIT Press, Cambridge, MA.

Lambert-Mogliansky, A. 2011. Corruption and collusion: strategic complements in procurement. In S. Rose-Ackerman and T. Søreide (Eds.). *The International Handbook on the Economics of Corruption - Volume 2.* Edw. Elgar Publishing.

Leite, C., Weidemann, J., 1999. Does mother nature corrupt? Natural resources, corruption and economic growth. IMF Working Paper WP/99/85. Washington DC.: International Monetary Fund.

McGuirk, E. F. 2012. The illusory leader: natural resources, taxation and accountability. *Public Choice*, forthcoming.

McPherson, C. and M. Searraigh. 2007. Corruption in the petroleum sector. In: E.D Campos and S. Pradhan. *The Many Faces of Corruption: Tracking Vulnerabilities at the Sector Level.* The World Bank, Washington DC.

Robinson, J.A., R. Torvik, and T. Verdier. 2006. Political foundations of the resource curse. *Journal of Development Economics.* 79, 447-468.

Rose-Ackerman, 1997. The political economy of corruption. In K. A.Elliott (Ed.) *Corruption and the global economy.* Washington DC.: Institute for International Economics.

Rose-Ackerman, S. 1999. *Corruption and Government. Causes, Consequences and Reform.* Cambridge University Press, Cambridge.

Ross, M.L. 1999. The political economy of the resource curse. *World Politics.* 51, 297-322

Shaxson, N. 2007. *Poisoned Wells – The Dirty Politics of African Oil.* Palgrave MacMillan, New York.

Soares de Oliveira, R. 2007. Business success, Angola-Style: Postcolonial politics and the rise of Sonangol. *Journal of Modern African Studies*, 45 (4): 595–619

Søreide, T. 2009. Too risk-averse to stay honest: Business corruption, uncertainty and attitudes toward risk. *International Review of Law and Economics.* 29:388–395.

Transparency International. 2012. Exporting corruption? Country enforcement of the OECD anti-bribery convention. Progress report. Berlin: Transparency International.

Yates, D.A. 1996. *The Rentier State in Africa: Oil Rent Dependency & Neocolonialism in the Rentier State of Gabon.* Africa World Press.

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