Economic Modelling 36 (2014) 23–29

Contents lists available at ScienceDirect

Economic Modelling

journal homepage: www.elsevier.com/locate/ecmod

Corruption and decisions on opening up markets

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ARTICLE INFO

Article history:
Accepted 10 September 2013

JEL classification:
L13
L32
L38

Keywords:
Mixed duopoly
Opening
Entry
Corruption

ABSTRACT

We consider a mixed duopoly with a private firm, domestic or foreign-owned, competing with a public firm. We analyze the extent to which opening policy is affected by lobbying efforts and rent-seeking behaviors. We obtain the counterintuitive result that corruption may improve social welfare when the government neglects corruption and does not prevent it, as the scope for the entry of a foreign private firm is greater. Moreover, the government may prevent corrupt activities by policy-makers by requiring the entrant firm to buy a license to operate in the market. In this case, the scope for external opening up is greater than in the other cases and social welfare is further improved when the entrant firm is foreign-owned.

1. Introduction

Competition between public and private firms is common in industries such as electric power, steel, medical care, banking, automobile manufacturing, and many services formerly provided by the public sector in both developed and developing countries. Recently the study of mixed oligopolies in which a public firm competes with private firms has become increasingly popular. The subjects analyzed by the literature on mixed oligopoly include competition between a public firm and domestic private firms (De Fraja and Delbono, 1989; Han and Ogawa, 2012; White, 2002), between a public firm and foreign-owned private firms (Chang, 2005; Matsumura, 2003; Mukherjee and Suetrong, 2009), and between a public firm and both domestic and foreign-owned private firms (Fjell and Pal, 1996; Lu, 2006; Pal and White, 1998).[1] It is well known in mixed oligopoly literature that the nationality of private firms is important to the open-door policy and thus to social welfare. However, in the papers cited above the nationality of the private entrant firm is exogenously given.

In spite of the crucial role of the nationality of private entrant firms, there are few studies of whether governments prefer entry by a domestic-owned private firm or by a foreign-owned private firm. For example, many studies focus on the relationship between open-door policies and privatization, with the assumption that the degree of foreign penetration is exogenously given with the exogenous presence of domestic private firms as well, under both quantity competition (Chao and Yu, 2006; Lin and Matsumura, 2012; Mukherjee and Suetrong, 2009) and price competition (Bárcena-Ruiz and Sedano, 2011; Matsumura et al., 2009). Moreover, these papers ignore how the nationality of entrant firms is decided.[2] Seeking to fill this gap in the literature, in this paper we introduce the issue of policies on opening up in regard to the nationality of private entrant firms. Thus, we determine endogenously the nationality of the private entrant firm. In this case the policy-maker has to decide whether the firm entering the market is domestic-owned or foreign-owned.

It is important to note that, considering the mixed oligopoly that emerges after the market is deregulated, policies on opening up should involve the entry of not only foreign firms but also domestic private firms. For example, since joining the WTO China has experienced fast growth in FDI from foreign banks. On the other hand, after the onset of the global financial crises in 2007, with China's expanding fiscal policy and the consequent "state-owned firms advance, private firms back-off" effect, state-owned banks also maintained great market power. Meanwhile, domestic private banks are rarely allowed to enter this market.

In this paper the term "opening up" refers to policy decisions that allow private firms to enter and compete in the previously regulated

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[1] See also Bárcena-Ruiz and Garzon (2005) for the model with two countries each of which has a public firm and a private firm competing in the international market.

[2] Regarding the endogenous nationality of an entrant firm, Cato and Matsumura (2012) analyze the impact of foreign penetration in a mixed oligopoly market.

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http://dx.doi.org/10.1016/j.econmod.2013.09.015

market: those private firms may be domestic (internal opening up), or foreign (external opening up) based.

Numerous research projects on international trade policy have shown that government policy-making decisions are affected by special interest groups (Grossman and Helpman, 1994, 1995; Hillman and Ursprung, 1988).[3] This also applies to the issue of policies on opening up in a mixed oligopoly market, such as the case studied in this paper. When drawing up its policy concerning opening up, a domestic government may have discretion in choosing the nationality of the private entrant firm when there are lobbying efforts by entrant firms and rent-seeking by public officials.[4] This applies to many sectors with mixed market structures.

To examine the extent to which polices on opening up are affected by lobbying efforts and rent-seeking behavior we consider a price-setting mixed oligopoly with a private firm which may be domestic or foreign-owned,[5] competing with a public firm which seeks to maximize social welfare.[6] We assume that the foreign firm is more efficient than both domestic firms, i.e. the domestic private firm and the public firm.[7] In this model we compare the equilibrium outcomes of internal and external opening up policies. We also examine the influence of different bureaucratic institutions on the comparisons, as represented by three cases.[8] The first case is a benchmark case in which the entrant firm makes no payment to the government, but merely needs the latter's authorization. The second case is an extreme situation in which the policy-maker values only payments. We assume that the policy-maker collects payments from producers but does not spend them abroad. The social surplus thus comprises the payments made by the foreign or domestic private entrant firm. Finally, in the third case we assume that the government decides both the policy on opening up and the amount that the entrant firm has to pay, so firms have to buy a license to enter the market.

We show that in the benchmark case the government opens up internally if the domestic private firm generates greater welfare, when its inefficiency is low enough. In this case, however, if the policy-maker accepts bribes from potential entrant firms that seek to influence the decision on entry (i.e. the firms lobby), the scope for opening up externally is larger than in the benchmark case. Therefore, in a country with corruption problems international firms and policy-makers can gain at the expense of domestic production surplus by opening up externally. In this case the corrupt policy-maker's decision to open up externally results in greater social welfare than in the benchmark case, which is a counterintuitive result. With the cost advantage the foreign firm is able to pay more to the policy-maker, hence there is more scope for opening up externally. Consequently there is more severe price competition which results in increases in consumer surplus and decreases in domestic producer surplus, while the sum of increases in consumer surplus and the payments to the policy-maker outweighs the decrease in domestic producer surplus.

The government may play an active role in preventing corrupt activities by policy-makers. This can be done by requiring the entrant firm to buy a license, payment for which goes to the government, in order to operate in the market. Results show that when the government can decide on payments by selling a license for entry to offset the effects of corruption, the scope for opening up externally is greater than in the other two cases and social welfare is further improved when the entrant firm is foreign-owned.[9] When the domestic firm enters the market, social welfare is the same in all three cases.

The rest of the paper is organized as follows. Section 2 formulates the model, Section 3 shows the results and Section 4 concludes.

2. The model

To study a government's decision on opening up the market, we assume that there are two firms: an incumbent public firm and an entrant private firm, denoted by subscripts 0 and e, respectively. The private firm can be domestic-owned ($e = D$) or foreign ($e = F$). To deregulate the market, the government decides whether to open it up to the domestic private firm (i.e. internal opening up) or to the foreign private firm (i.e. external opening up). To enter the market the entrant firm e can lobby by making a payment to the policy-maker.

On the consumption side, there is a continuum of consumers of the same type. The representative consumer maximizes $U(q_0, q_e) - p_0q_0 - p_eq_e$, where q_i is the amount of the good and p_i is its price ($i = 0, e$). The function $U(q_0, q_e)$ is assumed to be quadratic, strictly concave and symmetric in q_0 and q_e[10]:

$$U(q_0, q_e) = a(q_0 + q_e) - \frac{1}{2}\left(q_0^2 + 2bq_0q_e + q_e^2\right), e = F, D, 1>b>0, \quad (1)$$

where parameter b measures the degree to which goods are substitutes. We assume $b \in (0,1)$, i.e. the products of firm 0 and of firm e are imperfect substitutes. The larger b is, the more homogenous the products are. The demand function is obtained as:

$$q_i = \frac{a(1-b) - p_i + bp_j}{1-b^2}, i \neq j; i, j = 0, e. \quad (2)$$

Firm 0's profit is:

$$\pi_0 = (p_0 - c)q_0 \quad (3)$$

[3] Most of this line of literature neglects the role of public firms. Branstetter and Feenstra (2002) study the importance of profit-maximizing state-owned firms in the Chinese government's "open door" policy. If welfare maximizing state-owned firms are assumed to exist then the focus is on the policy concerning external opening up in our terminology.

[4] Bribes paid to foreign public officials used to be tax deductible in OECD countries. Moreover, many countries in the EU have immunity laws to protect politicians in corruption cases. In a study of procurement bribery, D'Souza and Kaufmann (2011) show that 11% of OECD firms report that firms of the same kind bribe in other OECD countries. Moreover, 26% firms report bribery in developing countries.

[5] Price competition has been analyzed in the literature on mixed oligopolies. In this regard, Ogawa and Kato (2006) consider that firms produce homogeneous goods and compete on prices. Bárcena-Ruiz (2007) analyzes the endogenous order of moves in a mixed duopoly for differentiated goods, where firms choose whether to set prices sequentially or simultaneously. Matsumura and Ogawa (2012) discuss the choice of price or quantity contracts by firms in a mixed duopoly for differentiated goods, and show that choosing a price contract is a dominant strategy.

[6] The assumption that the public firm maximizes social surplus is usual in the literature on mixed oligopoly. For example, see De Fraja and Delbono (1989), Pal and White (1998) and Matsushima and Matsumura (2006).

[7] The foreign firm may have lower costs because it can transfer firm-specific advantages internationally through FDI, or the MNE's agency costs may be lower than those of domestic private firms. MNE's agency costs are also lower than those of public firms if supervision costs are high in the host country. This applies especially to some developing countries and transitional countries. See Boardman et al. (1997) for evidence on lower agency costs of MNEs. Also see Okuda and Rungsomboon (2006), and Bhattacharyya et al. (1997) for empirical evidence concerning banking. Zhang et al. (2001) analyze the impact of ownership on the productivity of Chinese firms and find that foreign-owned firms exhibit the highest efficiency scores and the state-owned firms the lowest; the average efficiency score of other types of firms lies between the above ones.

[8] The different cases may also underline the importance of structural reform when privatization is politically difficult. For example, Martimort and Straub (2009) show that there is a considerable public dissatisfaction with privatization of public service providers in Latin America since privatization may invite more corruption. See also Bonnet et al. (2012) for the related empirical evidence. Moreover, in the current financial crisis many private firms are being nationalized due to financial problems.

[9] It can be shown that the main result of the paper holds if firms producing differentiated goods are considered to compete on quantities, and that only one of the private firms enters the market. Thus, with the above assumptions, the results obtained in the paper are robust to other types of market competition. Under price competition, if the two private firms compete in a homogeneous product market (and the product is differentiated from that of the public firm), it is natural for only one firm to enter the market because otherwise the domestic firm is never active when both firms enter the market. However, under quantity competition, if the two firms enter the market the domestic firm produces a positive output. Welfare may therefore be greater if the two firms enter the market.

[10] This demand model is from Singh and Vives (1984). Matsumura and Ogawa (2012) is a mixed duopoly version of Singh and Vives (1984). Obviously we have two independent monopoly cases if $b = 0$. On the other hand, if $b < 0$, goods are complementary. For this case see Ohnishi (2010).