The Invisible Hand, the Helping Hand, and the Grabbing Hand: A Welfare Analysis

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This note examines the welfare impacts of interactions between policymakers and firms under three models of governments, namely, the invisible hand, the helping hand, and the grabbing hand. We show that under a benevolent grabbing hand government, social welfare can be higher than that of an invisible hand government, whereas when the policymakers are sufficiently avaricious, social welfare under a grabbing hand government can be lower than that of an invisible hand government. We also predict that the economies that are more vulnerable to a welfare-worsening political economy trap are those where the policymakers are less driven by welfare concerns.

Keywords: Helping hand, Grabbing hand, Invisible hand, Welfare

I. Introduction

It is increasingly common to portray governments as "grabbing hands,"[1] which are controlled by policymakers who "do not maximize social welfare and instead pursue their own selfish objectives" (Shleifer and Vishny, 1998, p. 4), rather than as "helping hands,"[2] or "invisible hands."[3] Suppose the government of a country has been transformed from an "invisible hand" government to a "grabbing hand" government, how will social welfare be affected? In the discussion concerning how to reform the relationship between governments and firms, this question has been constantly debated in the academia as well as in the popular media. In this note, we aim to re-examine this important question within a simple yet standard partial equilibrium model.[4]

Government intervention under a "grabbing hand" government has been pervasive and large-scale. Following Stiglitz (1989)'s classification, government intervention on the production side include indirect ones such as subsidy, regulations, fiscal policy, and public services, as well as direct ones such as producing some goods itself. In this note, we focus on a particular form of government intervention: a

uniform subsidy to a particular industry that is based on firms' output level. Further, following the findings of recent empirical studies, that in corrupt regimes, the degree of corruption is closely related to private business activities, as well as the stringency of regulations imposed on those activities (see, for example, Hopkin and Rodrigues-Pose, 2007), we also assume that the policymakers' illegal gains rise commensurately with the firms' profits.

As for results, we find that when firms compete á la Cournot, the subsidy chosen by a grabbing hand government unambiguously exceeds that chosen by a helping hand government. Compared with the social optimum (which, in our model, is achieved under the helping hand government), the level of welfare are lower under both the invisible hand and the grabbing hand governments, the former because of the market failure, whereas the latter largely because of the government failure. Moreover, we show that when the behaviors of the policymakers are not effectively disciplined by the political institutions, the level of welfare under the grabbing hand government can be lower than that of the invisible hand government. Conversely, under benevolent policymakers, the level of welfare under the

grabbing hand government can be higher than that of the invisible hand government. Finally, we predict that the economies that are more vulnerable to a welfare-worsening political economy trap are those where the policymakers are less driven by welfare concerns.

The predictions of our model are broadly in accordance with evidence from the real world. For example, Frye and Sheleifer (1997) report that despite Russia and Poland both started similar packages of reform, the Polish economy responded much better, partly because the Russian government should be described as a "grabbing hand," whereas the legal environment is less hostile in Poland than in Russia. We believe that our findings are relevant to the recent public debate on the renewed trend of industrial intervention by governments. They are also closely related to the discussions on the influence of corporate lobbying in the political process that has recently arisen in the context of the discussion on campaign finance reform.

This rest of the note is organized as follows. In Section 2, we set up the model. In Section 3, we compare the levels of subsidy and social welfare under different models of governments. Section 4 then concludes.

Ⅱ. The Setting

Consider an industry consisting of two firms producing differentiated products: firm 1 and firm 2. Following Singh and Vives (1984), we assume that the representative consumer's utility function is given by

$$U(Q_1, Q_2) = a(Q_1 + Q_2) - \frac{1}{2}(Q_1^2 + Q_2^2) - bQ_1Q_2,$$

$$(1)$$

where Q_i is the amount of goods produced by firm $i (= 1, 2)$, $a > 0$, and $b\epsilon(0,1]$. The degree of product differentiation increases with a decrease in b. The two firms produce at the same constant marginal cost, which is normalized to

zero for simplicity.

We consider the three basic views of how policymakers and firms (entrepreneurs) interact, which have been famously discussed in Shleifer and Vishny (1998): (i) the invisible hand model of government (denoted by superscript i), (ii) the helping hand model of government (denoted by superscript h), and (iii) the grabbing hand model of government (denoted by superscript g). The governments in these three models differ from each other's objective functions: the government in the invisible hand model cares about social welfare, but chooses not to intervene; the government in the helping hand model maximizes social welfare,[5] whereas in the grabbing hand model, the government (policymakers) values both social welfare and the personal gains of the policymakers (possibly in the form of illegal bribes, which are assumed to be increasing in firms' profits, for it is from which the policymakers "grab"). Clearly, the difference in interests translates into different industrial policies (Shleifer and Vishny, 1998): an invisible hand government refrains from market intervention, whereas a helping hand government and a grabbing hand government would actively intervene in the markets through industrial policies.

We first consider the case of an invisible hand government. There would be no state intervention, and both firms maximize their profits, Π_1^i and Π_2^i, which are given by

$$\Pi_1^i = P_1^i Q_1^i, \ \ \Pi_2^i = P_2^i Q_2^i, \tag{2}$$

respectively, where P_i^i denotes the corresponding prices. The social welfare function is given as the sum of the two firms' profits and consumer surplus $(CS \equiv U(Q_1, Q_2) - P_1Q_1 - P_2Q_2):$)

$$W^i = \Pi_1^i + \Pi_2^i + CS^i = U(Q_1^i, Q_2^i). \tag{3}$$

We proceed to consider a helping hand government. As argued in Frye and Shleifer (1997), under both the helping hand and the grabbing hand governments, policymakers have strong incentives to intervene, so as to promote their objectives. For tractability and without loss of generality, here we assume that the

governmental intervention takes the form of a cash payment to be received by the firms, γ, per unit of their output. This subsidy is assumed to be a transfer of income from consumers to firms, implemented at a cost of zero. Clearly, firms still maximizes their profits, but having their objective functions modified to:

$$\Pi_i^h = P_i^h Q_i^h + \gamma Q_i^h. \tag{4}$$

In the case of a helping hand government, social welfare is the sum of the two firms' profits and consumer surplus, net of the subsidy to firms:

$$W^h = \Pi_1^h + \Pi_2^h + CS^h - \gamma(Q_1^h + Q_2^h) = U(Q_1^h, Q_2^h). \tag{5}$$

Finally, we consider a grabbing-hand model of government, which does not merely maximizes social welfare, but instead also pursue the payoffs of the policymakers. Following the literature, we assume such governments also allow lobbies to influence political decisions because the policymakers need votes and contributions from their members (see, for example, Olson 1965; Becker 1983; Shleifer and Vishny 1998).[6] We consider a simple political economy model in which special interest groups can 'capture' policymakers. It is well-known that the amount of illegal gains generally depend on the producer surplus and the degree to which the policymakers are driven by social welfare concerns. We also assume that such illegal gains are increasing in producer surplus. Accordingly, we let $\lambda(\Pi_1^g + \Pi_2^g)$ denote the amount of illegal gains that policymakers grab from the firms, where $\lambda(\geq 0)$ is an index of the degree to which the policymakers are driven by social welfare concerns (which depends on the effectiveness of the underlying checks and balances in the political system).[7] Clearly, a larger λ indicates that the policymakers are less driven by welfare concerns because, for example, their behaviors are not effectively disciplined by the political institutions. This formulation is a simplified version of the model developed by Acemoglu et al. (2002). Consequently, the policymaker chooses γ

to maximize their objective function, which has social welfare and firms' profits as arguments:

$$G^g = W^g + \lambda(\Pi_1^g + \Pi_2^g), \tag{6}$$

where $W^g \equiv \Pi_1^g + \Pi_2^g + CS^g - \gamma(Q_1^g + Q_2^g) = U(Q_1^g, Q_2^g)$.[8] Obviously, when $\lambda > 1$, the policymakers place a higher weight on their illegal gains compared with social welfare; i.e., they value a dollar in their hands more highly than one in the hands of firms, which is similar to the case examined in Grossman and Helpman (1994). On the other hand, when $\lambda \leq 1$, the illegal gains are not valued higher than social welfare by the policymakers. Finally, when $\lambda = 0$, the policymakers behave exactly like a social planner and do not value illegal gains. Nevertheless, because we have used producer surplus as a proxy for the illegal gains, we see that producer surplus is receiving a heavier de facto weight, compared to the weight received by consumer surplus, as long as $\lambda > 0$. The firms, on the other hand, still maximize their respective profits, with their objective functions given by (4). To ensure the existence of unique interior solutions, we assume that W^1, W^h and G^g are all strictly concave in γ.

We consider the following games under the following three different models of governments: (i) an invisible hand government, (ii) a helping hand government, and (iii) a grabbing hand government. The game under an invisible hand government is a simple one-stage game, in which the two firms engage in Cournot competition with each other. The two firms maximize (2), respectively, and the policymakers choose not to intervene, i.e. $\gamma^i = 0$. On the other hand, the games under a helping hand government and a grabbing hand government are simple two-stage games. It adds to the one-stage invisible-hand-government game a new stage before the Cournot competition stage, in which the policymakers choose the level of the subsidy to be granted to both firms. The two firms maximize (4), respectively, and the policymakers maximize (5) under the helping hand government and (6) under the

grabbing hand government, respectively. We use backward induction to solve these games.

III. Analysis

1. *An Invisible Hand Government*

Under each of the three different governments, the consumer's maximization problem would generate the following demand functions:

$$P_1 = a - Q_1 - bQ_2, \quad P_2 = a - Q_2 - bQ_1 \tag{7}$$

We first consider an invisible hand government, under which policymakers do not intervene, i.e. $\gamma^i = 0$ Substituting (7) into the two firms' objective functions (2) gives:

$$\Pi_1^i = (a - Q_1^i - bQ_2^i)Q_1^i, \quad \Pi_2^i = (a - Q_2^i - bQ_1^i)Q_2^i \tag{8}$$

The equilibrium outputs can be obtained from the first-order conditions of the two firms' objective functions (8):

$$Q_1^i = \frac{a}{2+b}, \quad Q_2^i = \frac{a}{2+b}. \tag{9}$$

Substituting (9) into (8), we then derive the corresponding profits for the two firms:

$$\Pi_1^i = \frac{a^2}{(2+b)^2}, \quad \Pi_2^i = \frac{a^2}{(2+b)^2}, \tag{10}$$

with social welfare given by

$$W^i = \frac{a^2(3+b)}{(2+b)^2}. \tag{11}$$

2. *A Helping Hand Government*

Under a helping hand government, the optimum subsidy is chosen by the policymakers to maximize social welfare. Again, the equilibrium outputs can be obtained from the first-order conditions of the two firms' objective functions:

$$Q_1^h = \frac{a+\gamma^h}{2+b}, \quad Q_2^h = \frac{a+\gamma^h}{2+b}. \tag{12}$$

Substituting (12) into (4), we derive the two firms' profits:

$$\Pi_1^h = \left(\frac{a+\gamma^h}{2+b}\right)^2, \quad \Pi_2^h = \left(\frac{a+\gamma^h}{2+b}\right)^2. \tag{13}$$

Substituting (12) and (13) into (5), differentiating it with respect to γ^h, and equating it to zero, we obtain the socially optimal level of the subsidy γ^{h*}:[9]

$$\gamma^{h*} = \frac{a}{1+b}. \tag{14}$$

The corresponding level of social welfare under the helping hand government is then

$$W^h = \frac{a^2}{(1+b)^2}. \tag{15}$$

3. *A Grabbing Hand Government*

We proceed to consider the case of a grabbing hand government. Under a grabbing hand government, the optimum subsidy is chosen by the policymakers to maximize (6). The equilibrium outputs can be obtained from the first-order conditions of the two firms' objective functions:

$$Q_1^g = \frac{a+\gamma^g}{2+b}, \quad Q_2^g = \frac{a+\gamma^g}{2+b}, \tag{16}$$

and the equilibrium profits are then given by:

$$\Pi_1^g = \left(\frac{a+\gamma^g}{2+b}\right)^2, \quad \Pi_2^g = \left(\frac{a+\gamma^g}{2+b}\right)^2. \tag{17}$$

Substituting (16) and (17) into (6), differentiating it with respect to γ^g, and equating it to zero, we obtain the optimal level of the subsidy γ^{g*} chosen by the policymakers:[10]

$$\gamma^g = \frac{a+2a\gamma}{1+b-2\gamma}. \tag{18}$$

Plugging (18) into (16) and (17) and then substituting them into (6), we see that the corresponding social welfare under the grabbing hand government is given by:

$$W^g = \frac{a^2(1+b-4\lambda)}{(1+b-2\lambda)^2}. \tag{19}$$

4. *A Comparison*

A comparison of γ^{h*} and γ^{g*} immediately reveals the following:

Proposition 1. $\gamma^{g*} > \gamma^{h*}$.

Proof. Evident from (14) and (18), also by the assumption $\lambda < (1+b)/2$. *Q.E.D.*

Proposition 1 shows that the subsidy chosen by a grabbing hand government unambiguously exceeds that chosen by a helping hand government. The intuition behind Proposition 1 is straightforward. As shown by (6), a grabbing hand government values producer surplus (at a weight of $(1+\lambda)$) more heavily than

consumer surplus (at a weight of 1). This differs from a helping hand government, under which producer surplus and consumer surplus are valued equally. Under a grabbing hand government, because the policymakers' payoff is increasing in producer surplus, in an effort to raise producer surplus, they increase the profitability of both firms by offering then with excessive help. Nevertheless, this distortion aggravates the overall welfare.

Let $\bar{\lambda} = \dfrac{1+b}{6+2b}$. A comparison among W^{i*}, W^{h*}, and W^{g*} reveals the following:

Proposition 2. $W^{h*} > W^{g*} > W^{i*}$ when $\lambda < \bar{\lambda}$; $W^{h*} > W^{i*} > W^{g*}$ when $\lambda > \bar{\lambda}$.

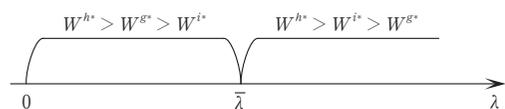Proof. Evident from (11), (15), and (18). Q.E.D.

Figure 1. Welfare levels under different governments

As depicted in Figure 1, Proposition 2 reveals that although the welfare level under a helping hand government is always the highest, when the degree to which illegal gains drive the decisions of the policy makers is sufficient low, a grabbing hand government can generate a higher level of social welfare than that of an invisible hand government. Put otherwise, compared with an invisible hand government, a grabbing hand government might be socially good when policymakers are relatively benevolent, although a grabbing hand government under sufficiently avaricious policymakers would be unambiguously detrimental to social welfare.

The underlying intuition is straightforward. Clearly, the help offered partly corrects the market failure associated with the duopolistic market structure. Nevertheless, the higher level of help offered by a grabbing hand government (Proposition 1) cannot improve social welfare any further, since it is greater than the social optimum (the level offered by the helping hand government). Clearly, as shown in Figure 2, when λ is sufficiently low (hence, the policymakers behave more like a helping hand government), it is possible for the policymakers to correct the market failures associated with the oligopoly distortion. However, as depicted in Figure 3, when the policymakers are sufficiently avaricious, the gain in social welfare would be dominated by the distortions caused by the government intervention (the government failure). Consequently, social welfare will be reduced and can be even lower than that under an invisible hand government.
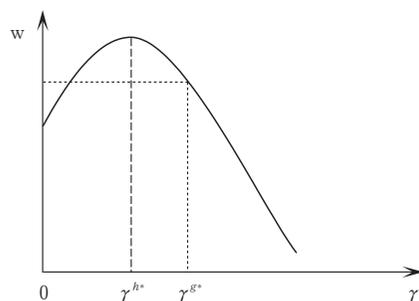

Figure 2. Social welfare under a grabbing hand government (when λ is sufficiently small)
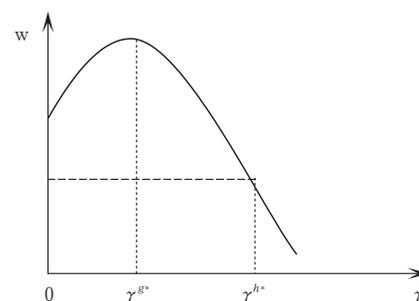

Figure 3. Social welfare under a grabbing hand government (when λ is sufficiently large)

Rose-Ackerman (1978) points out that some level of corruption is inevitable in every mix of market and government. We see that in our model, there exists a trade-off between moderate corruption by a grabbing hand government and market failures associated with oligopoly distortion. This trade-off differs substantially from the one pointed out in the literature, in

which corruption emerges as a side effect of necessary government intervention (see, for example, Acemoglu and Verdier 1998, 2000, or, Coppier and Michetti, 2006). It has long been argued in the literature that corruption can be socially good (famously by Leff, 1964; Huntington, 1968)[11]. Our analysis also suggests that social welfare can be improved when the government is moderately corrupt, compared with an invisible government, through a rise in output.[12]

We also note that $\frac{d\bar{\lambda}}{db} > 0$, i.e. a fall in the degree of product differentiation increases the critical value $\bar{\lambda}$. This suggests that when the market is becoming more competitive, it is easier for a relatively benevolent grabbing hand government to improve social welfare above the level achieved under the invisible hand government.

Finally, let $\Omega \equiv W^{g*} - W^{i*} = a^2 \frac{1+b-4\lambda}{(1+b-2\lambda)^2} - \frac{3+b}{(2+b)^2}$. We then propose the following.

Proposition 3. $\frac{\partial\Omega}{\partial\lambda} = -\frac{8a^2\lambda}{(1+b-2\lambda)^3} < 0$, hence Ω decreases when λ increases.

Proposition 3 suggests that the welfare under a grabbing hand government is more likely to be worsened, as compared with that under an invisible hand government, when policymakers are less constrained when acquiring illegal gains. Put otherwise, the economies that are more vulnerable to a welfare-worsening political economy trap are those where the policymakers are less driven by social welfare concerns (because, for example, their behaviors are not effectively disciplined by the political institutions).

Ⅳ. Concluding Remarks

Missing form previous attempts to flesh out the economic theory of interaction between policymakers and firms has been a prediction of how welfare may be affected if a country is moving from one model of government to another. We have explored this question by examining a common form of such regulations: a subsidy to firms in a duopolistic market. Under our model setting, we find that the subsidy chosen by a grabbing hand government unambiguously exceeds that chosen by a helping hand government. We also show that when the behaviors of the policymakers are more disciplined by the political institutions, the level of social welfare can be improved. Indeed, we demonstrate that under a benevolent grabbing hand government, social welfare can be even higher than that of an invisible hand government. Our results thus suggest the welfare-improving potential of increasing the effectiveness of the underlying checks and balances in the political system. In this sense, our results lend formal support to the anti-corruption programs undertaken in countries like, for example, China.

We conclude by noting the limitations of our analysis. First, the political process behind the formation of the subsidy has not been explicitly considered. It would be interesting to explicitly model firms' political participation as a common agency problem, in which firms are the principals, and the policymakers are the common agent.[13] Second, our assumption of homogeneous firms may generate oversimplified predictions. Third, it would be interesting to analyze the case in which $n(n \geq 3)$ firms compete with each other.

Notes

1) Under the grabbing hand model of government, policymakers are not presumed to maximize social welfare, but instead, to pursue their own selfish objectives that serve their political goals, which only occasionally coincide with social welfare (Shleifer and Vishny, 1998).

2) Under the invisible hand model of government, other than perform basic functions needed to support a market economy, such as providing basic public goods, e.g. the provision of law and order, the less the policymakers get involved, the

better.

3 ） Because unbridled free markets can possibly render market failures such as monopoly pricing, pollution, unemployment, etc., governmental interventions ("help") such as corrective taxes, regulations, price control, and government ownership are then justified (Shleifer and Vishny, 1998).

4 ） Nevertheless, we do not take a position on what the government's role should be.

5 ） The helping hand model of government has long been regarded as a prescriptive model that describes what a welfare-maximizing government should do (Shleifer and Vishny, 1998).

6 ） For real-world examples, see Reich (2007).

7 ） Our formulation of the illegal gains that policymakers grab from the firms clearly is not unique. Nevertheless, alternative formulations should also contain intervals in which when the policymakers are less driven by social welfare concerns, social welfare under the grabbing hand government can be lower than of the invisible hand government, which we emphasize. Hence, our specific formulation should suffice.

8 ） In US, the Congress has ruled that lawful as well as unlawful gains should all be included in gross income. Social welfare under the grabbing hand is defined accordingly here.

9 ） Note that $\partial^2 W^h/\partial\gamma = -2(1+b)/(2+b)^2 < 0$, i.e. the second order condition holds.

10） Note that $\partial^2 W^g/\partial\gamma = -2(1+b-2\lambda)/(2+b)^2$, i.e. the second order condition holds when $\lambda < (1+b)/2$. In what follows, we assume that $\lambda < (1+b)/2$.

11） Leff (1964) argues that corruption can "provide the direct incentive necessary to mobilize the bureaucracy for more energetic action on behalf of the entrepreneurs" (p. 10). Hunington (1968) suggests that "corruption may be one way of surmounting traditional laws or bureaucratic regulations" (p. 68). By using an equilibrium queuing model of bribery, Lui (1985) shows that the equilibrium outcome minimizes the average value of time costs of the queue. However, the Leff-Huntington hypothesis has not been widely supported in the empirical studies (Mishra, 2005).

12） Cai and Li (2011) consider the case in which a corruptible manager contemplates to embezzle his/her firm's revenues by overstating the production costs. In order to embezzle more, the manager chooses to increase the firm's output. This move, however, partly corrects the market failures associated with the oligopoly distortion. Their analysis goes on to suggest that moderate embezzlement might be socially good, although

pervasive and large-scale embezzlement is detrimental and should be addressed. They argue that this is because with moderate embezzlement, social welfare may be improved through a rise in output.

13） Bernheim and Whinston (1986) and Dixit et al. (1997) characterize the equilibrium for a class of such problems. This approach has been applied to examine the lobbying behavior behind the formation of trade policy. For example, Grossman and Helpman (1994) consider the determination of tariffs across sectors, Konishi et al. (1999) analyze endogenous trade policy under foreign direct investment, and Chang (2005) examines trade policy under monopolistic competition. Recently, Cai and Li (2014) consider the case in which domestic as well as foreign firms lobby to influence the determination of tariff.

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