Political Connections, Entrepreneurship, and Social Network Investment*

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Abstract

The recent literature on politically connected firms documents that connections between firms and politicians or politically parties is both globally widespread and contributes value to such firms. However, there is little research on how entrepreneurs without direct political access cope with the grabbing hand of government. For entrepreneurs, the source of political connections is usually their social network. We develop a general model linking entrepreneurship, social networks, and political influence. The purpose of the model is to unravel the economic forces behind the trade-offs entrepreneurs face in such an environment and how entrepreneurial choices are altered by changes in the environment on the path to economic development, such as deregulation, market development, and economic growth.

1 Introduction

The negative externalities associated with government intervention in the economy are well known. In many countries public sector institutions impose heavy burdens on entrepreneurship. Government regulation is associated with barriers to entry, bureaucracy, red tape, corruption and bribery (Djankov et. al, 2002). Often referred to as the "grabbing hand"

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or the "tollbooth" view of government, there is much evidence of the frictions imposed on entrepreneurs by predatory government activity (Shleifer and Vishny, 2004).

Less attention has focused on how entrepreneurs cope with the reality of the grabbing hand of the government. Entrepreneurship is all but impossible in such environments without the aid of political connections. Political connections in turn usually originate from an entrepreneur's social network. Our objective is to focus on the political economy of entrepreneurship in the presence of the grabbing hand of government. With this as the leitmotiv, we aim to develop a general model linking entrepreneurship, social networks, and political influence. The purpose of the model is to unravel the economic forces behind the trade-offs entrepreneurs face in such an environment and how entrepreneurial choices are altered by changes in the environment on the path to economic development, such as deregulation, market development, and economic growth.

In environments characterized by predatory government intervention in the economy, political connections are often the key to business activity. The source of political connections is usually an individual's social network. However, the responsiveness of one's social network is in turn a function of the time or resources invested in the network. But more time or resources invested in the social network means less time invested in product development, design, and differentiation, factors that enhance success in direct market competition. This creates a trade-off for an entrepreneur operating in such an environment: either invest in individual product success and forego social network investment which reduces friction from the government via political connections, or forego investment in individual product success and invest in the social network, which reduces government friction. Such a choice is generally not all-or-nothing, and a rational entrepreneur will choose to balance the marginal benefits from each of these two types of investment. This balance will depend on factors such as the extent of government interference in the economy, the political influence of the social network to which an entrepreneur belongs, competition between rival social networks for political influence, and the extent of market opportunities. The first part of our research develops a theoretical framework to make such trade-offs precise and understand how they are affected by these elements of the environment. The second part of our research (as yet incomplete) will aim to use real-world data to examine the robustness of our analysis and identify questions requiring further study. The diagram below is a representation of the framework we have in mind.

In developing countries in particular, social networks are grounded in a combination of geographic and ethno-linguistic characteristics. While affiliation or eligibility in these networks is usually a result of the accidents of birth, the investment in and nurturing of network affiliation is a matter of choice. Historically, as anthropologists and sociologists have noted,

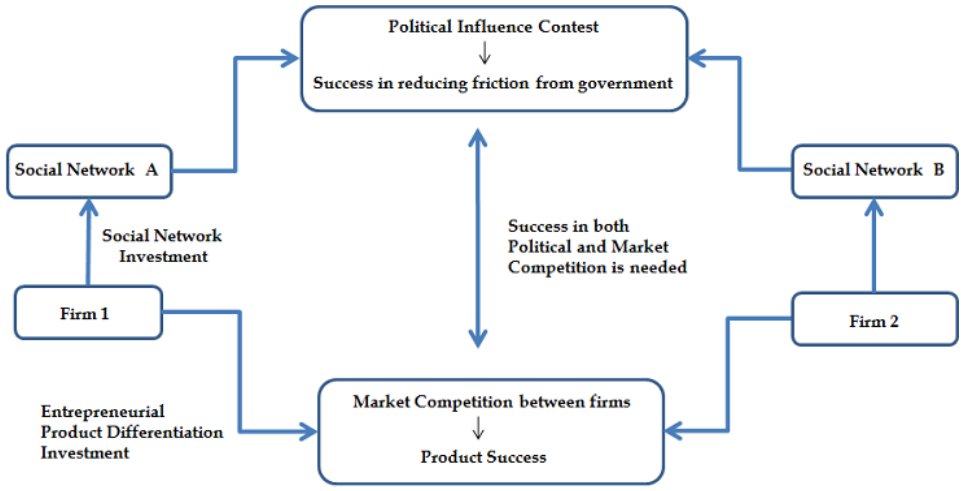

Figure 1: Model Framework

in less-developed countries identification with one's social network has been strong, with much time and energy devoted to nurturing network connections (Ensminger, 1992). However, modernization and economic growth have been accompanied by an inexorable fraying of such social ties and an increasing emphasis on entrepreneurial investment that makes an individual or firm distinct and differentiated from others. By focusing on the tradeoff outlined above, we expect that our analysis will illuminate the economic forces underlying the transition between social network based identity and individual entrepreneurial identity.

The starting point for our analysis is the idea that a key economic role of the social network in less developed countries is in facilitating political connections. We believe that when government intervention in the economy is relatively high, with negative effects of the kind outlined earlier, the demand for political connections is high, and therefore ties to the social network are strong. As the economy grows or is liberalized, the relative importance of government in the economy shrinks, and so does the demand for political connections, leading to a reduction in social network investment. Our core insight is thus that social networks serve an important economic purpose in the presence of government intervention in the economy: they are a conduit for political influence. Entrepreneurship without political connections is all but impossible in such environments, but cultivating social networks for their political influence absorbs entrepreneurial energy and thereby retards product success.

To the best of our knowledge, such a focus is novel in economics. The focus on political connections and their role in economic activity is itself quite recent. The remarkable study of Faccio (2006) documents the prevalence of politically connected firms all over the

world. Using a fairly stringent definition of whether a firm is politically connected[1], she finds corporate political connections in 35 out of 47 countries in her sample. A number of other empirical investigations have highlighted the role that political connections play in obtaining preferential access to finance (Charumilind et. al, 2006; Khwaja and Mian, 2006; Claessens et al., 2008), corporate bailouts (Faccio et. al. 2006), and stock-market performance (Fisman, 2001). However, in almost all of these studies, the focus is on relatively large firms with significant sales and assets that are often listed on a country's stock-market. The literature has by and large not focused on how small firms or entrepreneurs who lack direct political connections cope with friction from predatory government. Our analysis aims to fill this gap in the literature.

We expect this research to illuminate the difficulties of entrepreneurship in situations where the grabbing hand of government is at work in the economy. To varying degrees this is the case in many of the world's economies. Our analysis and its policy implications are therefore likely to be of broad interest.

2 Theoretical Framework

We aim to develop a theoretical framework along the following lines. Individuals, whom we consider to be entrepreneurs, compete in duopoly markets against other entrepreneurs. Entrepreneurial effort affects the probability of success in market competition. In addition, government approval or interference affects the success of the entrepreneur (or his product) in market competition. This friction from the government can be reduced if the entrepreneur exerts political influence. The source of political influence is an entrepreneur's social network. Each entrepreneur belongs to a social network, which may be based on ethnicity or regional origin. There are two possible social networks, which we refer to as A and B, and an entrepreneur is born into one of them. An entrepreneur cannot belong to both social networks. Furthermore, the competing entrepreneurs in a duopoly market each belong to a different social network. Furthermore, each of the competing entrepreneurs in a duopoly market belongs to a different social network. There are M duopoly markets. Therefore $2M$ entrepreneurs, one from each from each social network, are selected uniformly at random to compete in these market contests.

We model both market competition between the two entrepreneurs and political competition between the two social networks as a contest. There are thus two contests in the economy. In order to be most successful, an entrepreneur prefers to win both contests. The

[1] A firm is considered to be politically connected if a large shareholder (10%) or top officer is a member of parliament, a minister or head of state, or closely related to a party official.

success of a social network in the political contest is a function of the total contribution (in effort or resources) of its members. An entrepreneur thus faces the choice of how much effort or resources to invest into market competition and how much to invest in the social network.

More specifically, let θ_i denote contribution to product success in market competition and γ_i denote contribution to the social network by entrepreneur i. The social networks are of size N_A and N_B. Then total contribution to social network A is $\sum_{i\in A}\gamma_i$ and symmetrically for social network B. The influence of a network I_A is a function of both size and per-capita contribution. That is $I_A = f(N_A, \frac{\sum_{i\in A}\gamma_i}{N_A})$. In each duopoly market, competition between the two firms (call them i and j) is modeled by a simple contest success function of the form $p_i(\theta_i, \theta_j) = \frac{\theta_i}{\theta_i+\theta_j}$ that is symmetric for the two firms. Success in market competition yields a prize/payoff of V. The political competition between the two social networks is also modeled as a contest with the probability of success for network A denoted by $P_A(I_A, I_B)$, with $\frac{\partial P_A}{\partial I_A} \geq 0$ and $\frac{\partial P_A}{\partial I_B} \leq 0$. We consider a specific form of the political contest success function below. It seems plausible that how responsive the network is to a member's need for political influence is proportional to the member's contribution to the network, $\phi(\gamma_i)$, with $\phi^{'} \geq 0$ and $0 \leq \phi(\gamma_i) \leq 1$. Then, if the social network works on behalf of firm i, it delivers the favorable outcome (government approval of permit, less friction) with probability $\lambda(\gamma_i, I_A, I_B) \equiv \phi(\gamma_i)P_A(I_A, I_B)$.

Let $0 \leq g \leq 1$ denote the relative "size" of government in the economy, or an index of government friction in economic transactions. The fraction of firm output that the government absorbs (i.e., the friction from the government), in the absence of political influence is proportional to g. For simplicity, we assume it to be g.

Then we can write the expected payoff for firm i as,

$$\pi = p_i(\theta_i, \theta_j)V(1 - g(1 - \lambda(\gamma_i, I_A, I_B))) \tag{1}$$

Note that if $g = 0$, then $\pi = p_i(\theta_i, \theta_j)V$. If $\lambda(\gamma_i, I_A, I_B) = 0$, then $\pi = p_i(\theta_i, \theta_j)V(1-g)$. If $\lambda(\theta_i, I_A, I_B) = 1$, then $\pi = p_i(\theta_i, \theta_j)V$.

Consider the following sequence of events.

In period 1, entrepreneurs decide how much to invest in their social network. Let γ_{iA} denote the network contribution by entrepreneur i who belongs to social network A. γ_{jB} denotes the network contribution by entrepreneur j who belongs to social network B.

In period 2, entrepreneurs find out if they have been selected to compete in a duopoly market. Those who are selected engage in the market contest by choosing investment levels θ_{iA} and θ_{jB}. We also assume $M < \min\{N_A, N_B\}$.

In period 3, payoffs are realized. For those entrepreneurs who participate in the market contest, expected payoff is as in equation (1). Others receive a reservation payoff $\overline{u} = 0$.

2.1 A Model

We present a version of the above framework here.

Suppose that entrepreneurs face an overall resource constraint for investment in market competition and the social network, say $\theta_{iA} + \gamma_{iA} = 1$. We could interpret this as a time constraint. Given the sequential timing of investments above, this implies that in period 1, once the choice of γ_{iA} is made, the period 2 investment is just the remainder $\theta_{iA} = 1 - \gamma_{iA}$.

Also, for the market selection probability $\frac{M}{N_A}$ to affect marginal decisions, we need to introduce a fall-back activity in the reservation sector that is affected by the amount of time devoted to it. Otherwise, $\frac{M}{N_A}$ only serves to scale the expected payoff if selected. Therefore, now assume that the reservation payoff for an individual who is not selected for entrepreneurial-market competition comes from a low-return "traditional" sector where the payoff from one unit of time is $\overline{y}$. Payoff/output is assumed to be CRS in the amount of time and convex, i.e., $1 - \gamma_{iA}$ time input yields $(1 - \gamma_{iA})\overline{y}$.

Consider the following form for the political competition between the two groups. Let the probability of success for social network A be $P_A(I_A, I_B) = \frac{1}{2} + (\frac{I_A}{N_A} - \frac{I_B}{N_B})$. Similarly, let $P_B(I_A, I_B) = \frac{1}{2} + (\frac{I_B}{N_B} - \frac{I_A}{N_A})$. Also, for now we assume individual contributions affect network influence, but not network responsiveness, i.e., $\phi(\gamma_i) = 1$. Thus, $I_A = \frac{\sum_{i \in A} \gamma_{iA}}{N_A}$. Similarly for I_B, and $\lambda_{iA} = P_A(I_A, I_B)$. Market competition is as above, $p_i(\theta_i, \theta_j) = \frac{\theta_i}{\theta_i + \theta_j}$. Then we can write the period 3 expected payoff for firm i as,

$$\Pi_{iA} = p_i(\theta_i, \theta_j) V (1 - g(1 - \lambda(\gamma_i, I_A, I_B))) \tag{2}$$

Period 1 expected payoff is,

$$\Gamma_{iA} = \frac{M}{N_A} \Pi_{iA} + (1 - \frac{M}{N_A})(1 - \gamma_{iA})\overline{y} \tag{3}$$

The first-order condition for γ_{iA} yields,

$$\frac{\partial \Gamma_{iA}}{\partial \gamma_{iA}} = \frac{MV}{N_A} \left[\begin{array}{c} \frac{-(1-\gamma_{jB})}{(2-\gamma_{iA}-\gamma_{jB})^2} (1 - g(\frac{1}{2} - \frac{\sum_{i \in A} \gamma_{iA}}{N_A} + \frac{\sum_{j \in B} \gamma_{jB}}{N_B})) \\ + \frac{(1-\gamma_{iA})g}{(2-\gamma_{iA}-\gamma_{jB})N_A} \end{array} \right] - (1 - \frac{M}{N_A})\overline{y}$$

or,

$$MV\left[\begin{array}{c}-(1-\gamma_{jB})(1-g(\frac{1}{2}-\frac{\sum_{i\in A}\gamma_{iA}}{N_A}+\frac{\sum_{j\in B}\gamma_{jB}}{N_B}))N_A\\+(1-\gamma_{iA})g(2-\gamma_{iA}-\gamma_{jB})\end{array}\right]-(2-\gamma_{iA}-\gamma_{jB})^2N_A(N_A-M)\overline{y}=0 \tag{4}$$

The first-order condition for γ_{jB} can be written similarly as,

$$MV\left[\begin{array}{c}-(1-\gamma_{iA})(1-g(\frac{1}{2}-\frac{\sum_{j\in B}\gamma_{jB}}{N_B}+\frac{\sum_{i\in A}\gamma_{iA}}{N_A}))N_B\\+(1-\gamma_{jB})g(2-\gamma_{iA}-\gamma_{jB})\end{array}\right]-(2-\gamma_{iA}-\gamma_{jB})^2N_B(N_B-M)\overline{y}=0 \tag{5}$$

Denote these first-order conditions as the implicit functions, $G_A(\gamma_{iA},\gamma_{jB},N_A,N_B,M,g,V,\overline{y})=0$ and $G_B(\gamma_{iA},\gamma_{jB},N_A,N_B,M,g,V,\overline{y})=0$ respectively.

Using the implicit function theorem, $\frac{d\gamma_{iA}}{d\gamma_{jB}}=-\frac{\frac{\partial G_A}{\partial\gamma_{jB}}}{\frac{\partial G_A}{\partial\gamma_{iA}}}$. The denominator is the second-order condition, which, for now, we assume holds. Then the slope of of the reaction function depends on the sign of $\frac{\partial G_A}{\partial\gamma_{jB}}$.

$$\begin{aligned}\frac{\partial G_A}{\partial\gamma_{jB}} &= MV\left[\begin{array}{c}(1-g(\frac{1}{2}-\frac{\sum_{i\in A}\gamma_{iA}}{N_A}+\frac{\sum_{j\in B}\gamma_{jB}}{N_B}))N_A\\+\frac{(1-\gamma_{jB})gN_A}{N_B}-(1-\gamma_{iA})g\end{array}\right]+2(2-\gamma_{iA}-\gamma_{jB})^2N_A(N_A-M)\overline{y}\\ &= MV\left[\begin{array}{c}(1-g(\frac{1}{2}-\frac{\sum_{i\in A}\gamma_{iA}}{N_A}+\frac{\sum_{j\in B}\gamma_{jB}}{N_B}))N_A\left(1-\frac{(1-\gamma_{jB})}{(2-\gamma_{iA}-\gamma_{jB})}\right)\\+\frac{(1-\gamma_{jB})gN_A}{N_B}\end{array}\right]\\ &\quad+(2-\gamma_{iA}-\gamma_{jB})^2N_A(N_A-M)\overline{y}\end{aligned}$$

which is positive by using the FOC. In other words the reaction function is positively sloped.

Now consider comparative statics with this model. A tractable way to do this seems to be to consider how the reaction functions shift with changes in the parameters. This will enable us to understand how the equilibrium values of γ_{iA} and γ_{iB} change.

Change in g: From the implicit function theorem, $\frac{d\gamma_{iA}}{dg}=-\frac{\frac{\partial G_A}{\partial g}}{\frac{\partial G_A}{\partial\gamma_{iA}}}=-\frac{+}{-}>0$, since $\frac{\partial G_A}{\partial g}>0$, and $\frac{\partial G_A}{\partial\gamma_{iA}}<0$ by the SOC. Similarly for $\frac{d\gamma_{jB}}{dg}$. This implies that both reaction functions shift up. The equilibrium shifts from E_1 to E_2 as in the figure (2), with higher levels of γ_{iA} and γ_{jB}. Intuition seems straightforward here.

[Figure 2 here]

Change in M: $\frac{d\gamma_{iA}}{dM}=-\frac{\frac{\partial G_A}{\partial M}}{\frac{\partial G_A}{\partial\gamma_{iA}}}=-\frac{+}{-}>0$, since $\frac{\partial G_A}{\partial M}>0$ from the FOC. The diagram for an increase in M is similar to that for g. The new equilibrium involves higher values of γ_{iA} and γ_{iB}. The intuition here is that if market opportunities increase holding constant the

size of the government, then the probability of needing help interacting with the government goes up due to the "market selection" effect. As a result firms invest more in their social network.

Change in size of rival social network, N_B: $\frac{d\gamma_{iA}}{dN_B} = -\frac{\frac{\partial G_A}{\partial N_B}}{\frac{\partial G_A}{\partial \gamma_{iA}}} = -\frac{-}{-} < 0$, since $\frac{\partial G_A}{\partial N_B} < 0$ from the FOC. So the reaction function for γ_{iA} shifts down. We need to know the sign of $\frac{d\gamma_{iB}}{dN_B}$ for the change in equilibrium. $\frac{d\gamma_{iB}}{dN_B} = -\frac{\frac{\partial G_B}{\partial N_B}}{\frac{\partial G_B}{\partial \gamma_{jB}}}$. The denominator is the SOC and so negative. The sign depends upon $\frac{\partial G_B}{\partial N_B}$.

Consider $\frac{\partial G_A}{\partial N_A}$, the sign of $\frac{\partial G_B}{\partial N_B}$ will be the same.

$$\begin{aligned}
\frac{\partial G_A}{\partial N_A} &= MV \begin{bmatrix} -(1-\gamma_{jB})(-g\frac{\sum_{i\in A}\gamma_{iA}}{N_A^2})N_A \\ -(1-\gamma_{jB})(1-g(\frac{1}{2}-\frac{\sum_{i\in A}\gamma_{iA}}{N_A}+\frac{\sum_{j\in B}\gamma_{jB}}{N_B})) \end{bmatrix} \\
&\quad -(2-\gamma_{iA}-\gamma_{jB})^2 N_A\overline{y} - (2-\gamma_{iA}-\gamma_{jB})^2(N_A-M)\overline{y} \\
&= MV[-(1-\gamma_{jB})(1-g(\frac{1}{2}+\frac{\sum_{j\in B}\gamma_{jB}}{N_B}))] - (2-\gamma_{iA}-\gamma_{jB})^2(2N_A-M)\overline{y}
\end{aligned}$$

The first term is negative if $(1-g(\frac{1}{2}+\frac{\sum_{j\in B}\gamma_{jB}}{N_B})) > 0$. A sufficient condition for this us $\frac{2}{3} > g$. Call this condition **(A2.M6)**. Under this condition (and the SOC for this model) $\frac{\partial G_A}{\partial N_A} < 0$.

Then, under **(A2.M6),** reaction functions for both γ_{iA} and γ_{iB} shift down with a change in N_B. That is, the new equilibrium (E_2) involves lower levels of social network investment for both groups. The mechanism behind the shift of the reaction function is however different for each group.

For γ_{iA} : Increase in size of rival group N_B reduces probability of group B winning the political contest, ceteris paribus. The marginal benefit of investing in market competition ($\theta_{iA} = 1-\gamma_{iA}$) goes up.

For γ_{jB} : Increase in size of own group (N_B) reduces probability of winning the political contest. The probability of being selected for market competition from within the group also goes down. It is better to wait and invest in market competition if selected. This is better also because if not selected, there is more time left for productivity in the reservation/fall back sector.

These comparative statics are depicted in figure (3).

[Figure 3 here]

To summarize, we find that as government friction in the economy goes up, entrepreneurial investment in the social network goes up. As market opportunities increase social

network investment goes up because the probability of participating in market competition increases, and this increases the likelihood of encountering government friction. An increase in the size of an entrepreneurs own network is associated with a decrease in social network investment. This is driven by a resultant decrease in the probability of participating in market competition from within one's own network. However, an increase in an entrepreneurs network is associated with a decrease in the rival's social network investment too. This is driven by the decrease in the probability of winning the political contest that the rival entrepreneur experiences which in turn makes increases the marginal return to investing in market competition for the rival. Putting these two effects together implies a reduction in equilibrium social network investment for both players, though since the mechanisms at work are different for each player, the extent of the reductions can be asymmetric.

3 Discussion

[To be added.]

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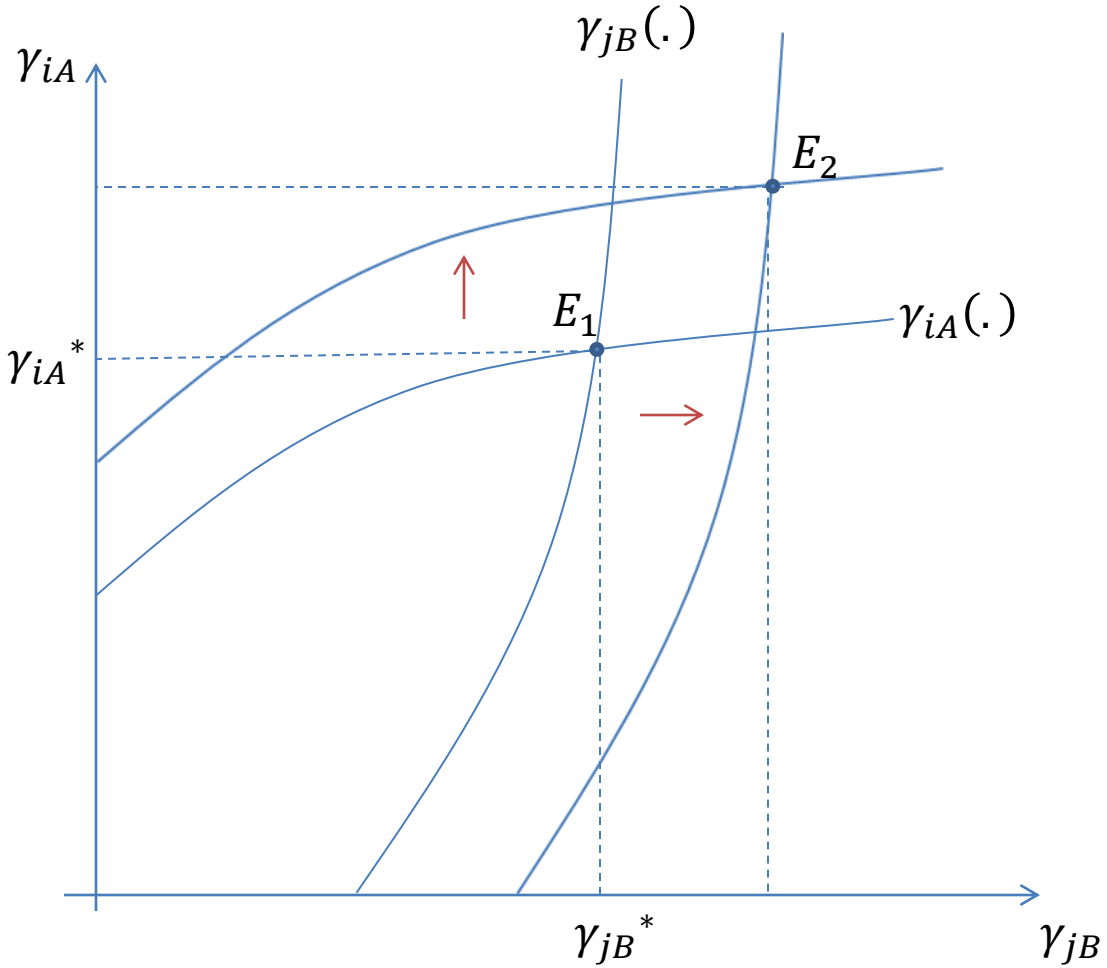

Figure 2

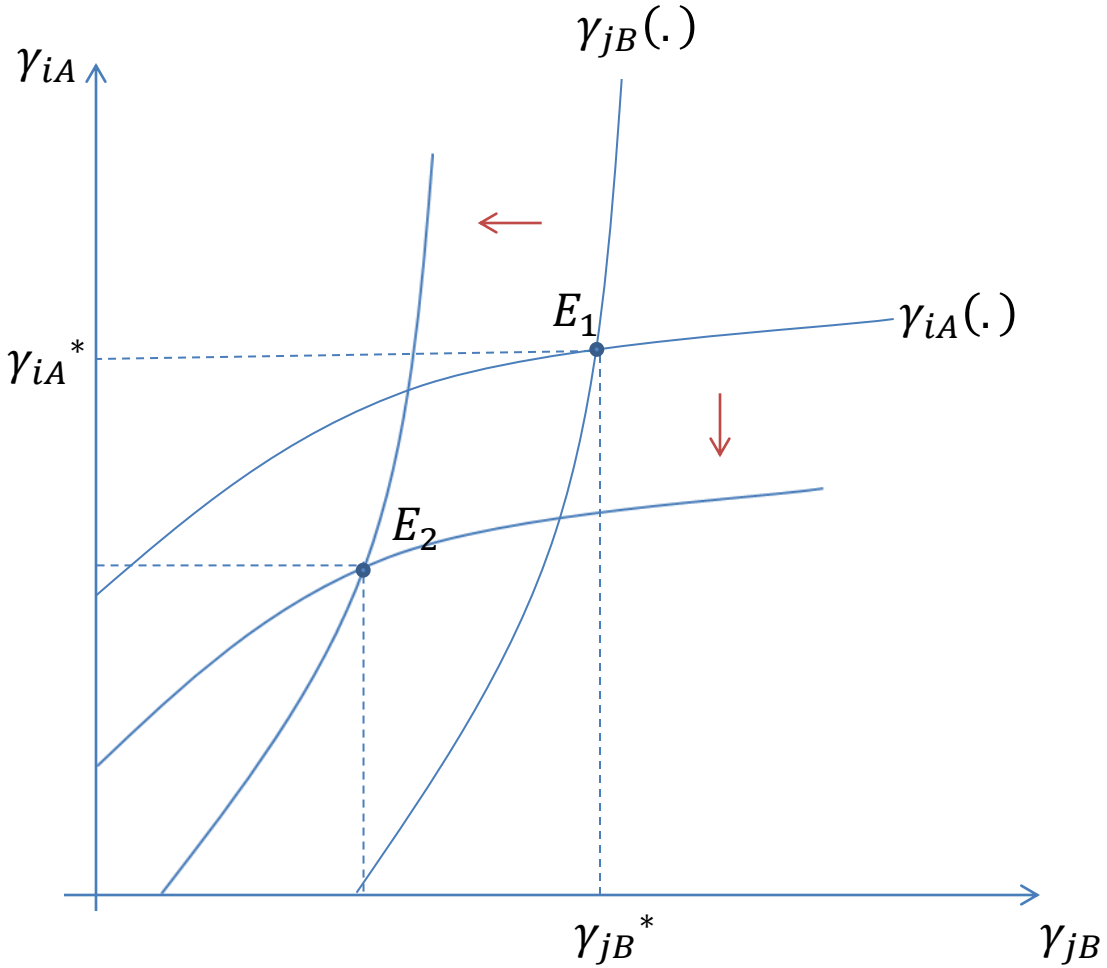

Figure 3