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 political parties are both globally widespread and contribute 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 influence is usually their social network. We develop a general model linking entrepreneurship, social networks, and political influence. The practices and patterns that motivate our model are widespread in many emerging economies in Asia, Latin America, and the Middle East. One of the best documented examples in the academic literature comes from Jordan. We justify our modeling assumptions by discussing in detail how "wasta" works in Jordan and its impact on the business climate. The model unravels the economic forces behind the trade-offs entrepreneurs face in such environments 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.

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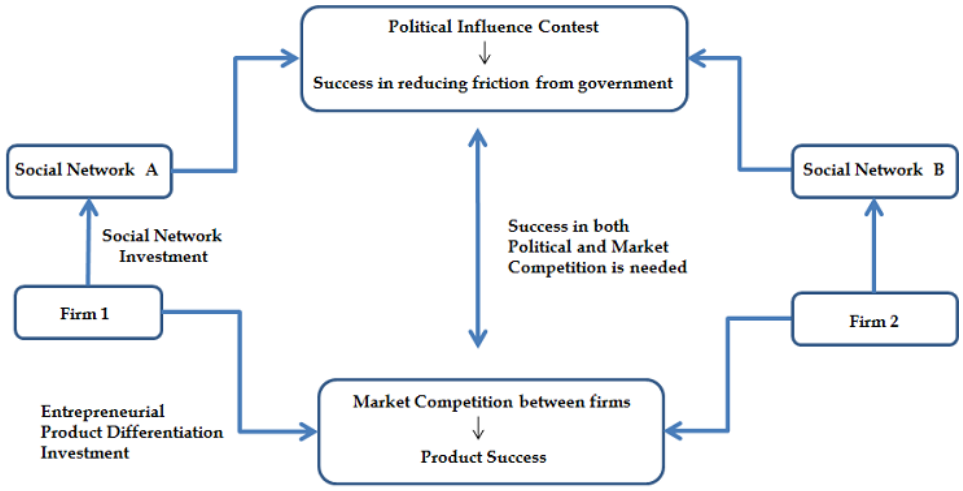
1 Introduction

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. Often referred to as the "grabbing hand" 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 develop a simple 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 changes in political influence.

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 strengthening ties to 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 this research aims to develop a theoretical framework to make such trade-offs clear and understand how they are affected by these elements of the environment. The second part of our research will aim to compare our theoretical predictions to country-level experience.



The diagram below is a representation of the theoretical 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, 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 are 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 trade-off 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. We associate entrepreneurship with investments that increase product differentiation and thereby increase expected profits, which is similar to the idea of entrepreneurial innovation

in the seminal work of Baumol (1990).

A burst of recent empirical work has highlighted the role of political connections in affecting the stock market valuation of firms (Fisman, 2001; Johnson and Mitton, 2003; Faccio 2006), access to credit (Khwaja and Mian, 2005; Charumilind et. al., 2006; Claessens et al., 2008), and corporate bailouts following financial crises (Faccio et. al., 2006). This literature defines firms as politically connected if there is a direct connection between the firm and a politician, either in the form of a large shareholder (10% or more) or top officer (CEO, president, vice-president, chairman, or secretary) who is a member of parliament, a minister, or is closely related to a top politician or party. However, these papers are about firms which are large and significant enough to foster direct political connections. Small firms and entrepreneurs are largely outside the purview of these studies. Theoretical analysis of entrepreneurship in the presence of the need for political connections is scant. Our research aims to fill this gap in the literature.

It is also worth noting that we present a different rationale for investing in social networks and groups than existing explanations in the literature. Existing explanations can be grouped broadly into two categories: contract enforcement and insurance. There is a well-established literature that explains how group membership acts as a defense against opportunism in contracts when legal institutions are inadequate (examples are papers by Grief, 1994 and Kali, 1999). A large separate literature explains how groups provide insurance from idiosyncratic shocks via risk pooling among members of the group. Several papers have explored this argument in the context of agricultural and fishing communities in poor countries with inadequate insurance markets (examples are Bloch, Genicot, and Ray, 2008, and Platteau and Abraham, 1992). A recent contribution to this literature by Chen (2010) studies ex-post insurance from religious groups in Indonesia during times of economic distress.

The plan of the paper is as follows. Section 2 describes in some detail the well-documented practice of cultivating social network ties for political influence called *Wasta* in Jordan, and discusses other related empirical evidence. Section 3 describes the theoretical framework and contains the analysis of the model. Section 4 discusses implications.

2 Social Networks, Political Connections, and Entrepreneurship

While the practices and patterns that motivate our model are widespread in many emerging economies in Asia, Latin America, and the Middle East, perhaps the best documented

example in the academic literature comes from Jordan. We therefore describe the Jordanian case in detail here. However, similar features are found in other emerging economies of interest, which we discuss at the end of this section.

The political system in Jordan is an absolute monarchy, albeit with a patriarchal pattern of rule. From 1922 to 1946 the country remained under British supervision, after which it became an independent sovereign country under the auspices of the United Nations. As with other former British colonies, a legacy of the British tenure in Jordan was an administrative bureaucracy which continues to play an important role in almost every aspect of the economy. In order to engage in practically any kind of business activity, approvals, permits, and assorted regulations need to be obtained and bureaucracy navigated, adding significantly to the costs of doing business in Jordan. Primarily because of this, Jordan ranks 95th out of 183 countries in the World Bank's Ease of Doing Business country rankings for 2012[1]. Rankings for individual components of the overall index, such as *Getting Construction Permits* and *Getting Credit* are even lower, at 101 and 150 respectively. The complexity of administrative procedures is considered by the business community to be a major problem for investors, along with a lack of fairness and predictability in administrative decisions (Lowe et al, 2008).

In order to reduce friction and bureaucratic delay in dealings with government departments, the use of social connections, based on tribal, religious, and geographic origin, is common in Jordan. Intercession via such connections in Jordan is referred to as *Wasta*. *Wasta* permeates all aspects of economic life, including job search, promotion, firm contracts, and university admissions.

The background to the use of Wasta is the fact that Jordanian society is stratified along tribal, religious, and geographic lines. Salient social distinctions are the Shamalat (Northerners), Saltiyyih (Saltis), Sharkus (Circassians), Janoub (Southerners), Mesiyyih (Christians), Keraki, Ribdawi (Irbid), and Palestinians. The origins of the pervasive role of Wasta in Jordanian society are often traced to the origins of the modern nation state of Jordan after the handover of sovereignty from the British to Prince Abdullah of the Hashemites. In order to build a nation and recruit a loyal administrative cadre, Abdullah's officials consulted tribal shaykhs to enlist people who could read and write for government jobs. The shaykhs also advised the government on other issues affecting their areas, such as where schools should be located and the hiring of teachers. The early involvement of an influential family member initiating on behalf of an individual planted the seeds of later Wasta. Wasta involving intercession for economic benefit in the face of burdensome administrative regulations is now

[1]Economies are ranked on their ease of doing business, from 1 – 183. A high ranking on the ease of doing business index means the regulatory environment is more conducive to the starting and operation of a local firm. This index averages the country's percentile rankings on 10 topics, made up of a variety of indicators, giving equal weight to each topic.

widespread (Cunningham and Sarayah, 1993).

As may be expected, situations sometimes arise when intercession on behalf of a member of the tribe is in competition with that of some other tribe. The following quote from the comprehensive study of Jordanian Wasta by Cunningham and Sarayah (1993) describes this scenario: "... wasta is totally ingrained in Middle East society. The basic process involves a supplicant, and intercessor, and an object. When several supplicants desire the same goal, or when the goal of one is incompatible with the goal of another, each may have Wasta pushing for the outcome"(page 136).

A survey of businesses people in Jordan sponsored by the German Development Institute/Deutsches Institut für Entwicklungspolitik (DIE) finds that such practices can have significant costs, both in a static and dynamic sense for the Jordanian economy (Lowe et al, 2008). First, the use of connections makes state-business relations unfair and unpredictable and thereby raises the risks of investors and the barriers to competition. The pervasive use of social connections to gain political influence implies unequal access to public sector services, licenses, and political decision-making. When, for example, licenses are granted on the basis of personal relations, the costs and risks of applying for it may become very high — sometimes even too high — for people that do not know anybody in the public administration. On the other hand, entrepreneurs with good connections benefit from this barrier to competition because they can exploit rents. Likewise, favoritism can distort law and policy making: entrepreneurs with good connections to parliamentarians and policy-makers can use their influence and lobby for rules that are beneficial only for themselves, while those without connections are not heard. Second, where personal connections are crucial to get licenses and win government tenders, businesspeople have to build up and maintain social networks, which in turn uses up resources that could be applied to enhance their product market competitiveness. Lowe et. al. report that respondents to their survey are well aware that they use their time and money for improving their social networks rather than their products. This rent-seeking lowers the rate of physical investment and thereby potentially harms future growth prospects.

Parallel scenarios are found in other emerging markets such as China, India and Turkey, for example. The prevalence of the Chinese practice of investing in social networks (the Chinese term is Guanxi) for business advantage is has been well documented in the economic sociology literature (Guthrie, 2003). A paper by Li et al. (2008) goes further in examining the role of affiliation with the ruling Communist Party in the operation of private enterprises in China. Using a nationwide survey of private firms, they find that the Party membership of private entrepreneurs has a positive effect on the performance of their firms when human capital and other relevant variables are controlled for. Party membership helps private

entrepreneurs obtain loans from banks or other state institutions, and affords them more confidence in the legal system. Party membership is found to be more important to firm performance in regions with weaker market institutions and weaker legal protection.

Like Jordan, India shares a colonial heritage and a labyrinthine government bureaucracy that has historically been a drag on entrepreneurship. A couple of recent papers highlight the role of caste connections in obtaining economic benefits via government channels. Fisman, Paravisin and Vig (2011) find that there is same-caste preferential treatment to borrowers from a large government-owned bank. A recent paper by Damaraju, Makhija and Yonker (2012) studies the role of caste/religion in the hiring of CEO's in India and finds a strong preference for own-caste hiring.

[Coming soon: South African examples]

3 Theoretical Framework

We develop a theoretical framework along the following lines. Individuals, whom we consider to be entrepreneurs, compete in duopoly markets against other entrepreneurs. Entrepreneurial effort increases the probability of success in market competition. However, government 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 we think of as being based on ethnolinguistic or regional origin, though other origins are also possible. We call it a social network since the responsiveness of the group to the needs of an individual member increases with the time the member contributes to the group. This can be thought of as the strength of the tie to the group. An entrepreneur has a finite amount of time that can be allocated to either entrepreneurship or strengthening ties to his social network.

There are two 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. The competing entrepreneurs in a duopoly market each belong to a different social network. There are M duopoly markets. We model market competition between the two entrepreneurs as a contest. An entrepreneur from each social network is selected uniformly at random to compete in these market contests. In addition, an entrepreneur's social network can eliminate government friction for the entrepreneur with probability P_k, $k = A, B$, which can be considered the political influence of the network[2]. For entrepreneur i belonging to social network A, θ_{iA}

[2] P_k could depend on a number of factors such as the size, organization, and resources of the social network. We take these factors to be exogenous for now while noting that the "influence production

denotes entrepreneur i's time contribution to product success in market competition and γ_{iA} denotes his time contribution to strengthening his link to the social network. We normalize the total amount of time an entrepreneur has to unity. Thus $\theta_{iA} + \gamma_{iA} = 1$ for all $i \in A$ and likewise for all $j \in B$. The social networks are of size N_A and N_B. We assume the number of markets is less than the number of agents in each social network, i.e., $M < \min\{N_A, N_B\}$.

In each duopoly market, competition between the two firms ($i \in A$ and $j \in B$) is modeled by a simple contest success function of the form $p_{iA}(\theta_{iA}, \theta_{jB}) = \frac{\theta_{iA}}{\theta_{iA}+\theta_{jB}}$ that is symmetric for the two firms. Success in market competition yields a payoff of V.

How responsive the social network is to a member's need for political influence is proportional to the strength of the member's tie to the network. If the social network works on behalf of firm i, then it delivers the favorable outcome (such as government approval of permit, no bribes or bureaucratic delay) with probability $\lambda_{iA} \equiv \gamma_{iA} P_A$. Note that for now we assume constant returns to scale in social network responsiveness.

We 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 entrepreneurial 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 entrepreneur $i \in A$ as,

$$\Pi_{iA} = p_{iA}(\theta_{iA}, \theta_{jB})V(1 - g(1 - \lambda_{iA})) \tag{1}$$

Note that if $g = 0$, then $\Pi_{iA} = p_{iA}(\theta_{iA}, \theta_{jB})V$. If $\lambda_{iA}(\gamma_{iA}, I_A, I_B) = 0$, then $\Pi_{iA} = p_{iA}(\theta_{iA}, \theta_{jB})V(1 - g)$. If $\lambda_{iA}(\gamma_{iA}, I_A, I_B) = 1$, then $\Pi_{iA} = p_{iA}(\theta_{iA}, \theta_{jB})V$.

We consider the following sequence of events.

In period 1, entrepreneurs decide how much to invest in their social network. γ_{iA} denotes 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 via time-effort levels θ_{iA} and θ_{jB}. Given the sequential timing of investments, once the choice of γ_{iA} is made in period 1, period 2 time-effort is just the remainder $\theta_{iA} = 1 - \gamma_{iA}$.

In period 3, payoffs are realized. For those entrepreneurs who participate in the market contest, expected payoff is as in equation (1). For an individual who is not selected for entrepreneurial/market competition the fallback reservation payoff comes from a low-return "traditional" sector where the payoff from one unit of time is $\overline{y}$. Payoff/output in the

function" is interesting in its own right.

traditional sector is assumed to be constant returns to scale in the amount of time and convex, i.e., $1-\gamma_{iA}$ time input yields $(1-\gamma_{iA})\overline{y}$.

3.1 Analysis

3.1.1 Equilibrium

The period 3 expected net payoff for market-entrepreneur $i \in A$ is,

$$\Pi_{iA} = p_i(\theta_i, \theta_j)V(1 - g(1-\lambda_{iA})) \tag{PD3}$$

which can be rewritten as period 2 payoff,

$$\Pi_{iA} = \frac{1-\gamma_{iA}}{2-\gamma_{iA}-\gamma_{jB}}V(1-g(1-\gamma_{iA}P_A)) \tag{PD2}$$

Period 1 expected payoff is,

$$\Gamma_{iA} = \frac{M}{N_A}\Pi_{iA} + (1-\frac{M}{N_A})(1-\gamma_{iA})\overline{y} \tag{PD1}$$

Recall that the period 1 choice of γ_{iA} determines subsequent payoffs. We solve for the symmetric Nash equilibrium.

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

$$\frac{\partial \Gamma_{iA}}{\partial \gamma_{iA}} = \frac{MV}{N_A}\left[\begin{array}{c} \frac{-(1-\gamma_{jB})}{(2-\gamma_{iA}-\gamma_{jB})^2}(1-g(1-\gamma_{iA}.P_A)) \\ +\frac{1-\gamma_{iA}}{2-\gamma_{iA}-\gamma_{jB}}gP_A \end{array}\right] - (1-\frac{M}{N_A})\overline{y}$$

or,

$$MV\left[\begin{array}{c} -(1-\gamma_{jB})(1-g(1-\gamma_{iA}.P_A)) \\ +(1-\gamma_{iA})gP_A(2-\gamma_{iA}-\gamma_{jB}) \end{array}\right] - (2-\gamma_{iA}-\gamma_{jB})^2(N_A-M)\overline{y} = 0 \tag{2}$$

Similarly, the FOC for γ_{jB} yields,

$$MV\left[\begin{array}{c} -(1-\gamma_{iA})(1-g(1-\gamma_{iA}.P_A)) \\ +(1-\gamma_{jB})gP_B(2-\gamma_{iA}-\gamma_{jB}) \end{array}\right] - (2-\gamma_{iA}-\gamma_{jB})^2(N_B-M)\overline{y} = 0 \tag{3}$$

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 these reaction functions depends on the sign of $\frac{\partial G_A}{\partial \gamma_{jB}}$.

$$\begin{aligned}\frac{\partial G_A}{\partial \gamma_{jB}} &= MV\left[1-g(1-\gamma_{iA}.P_A)-(1-\gamma_{iA})gP_A\right] \\ &\quad +2(2-\gamma_{iA}-\gamma_{jB})(N_A-M)\overline{y} \\ &= MV\left[(1-\gamma_{iA})(1-g(1-\gamma_{iA}.P_A)\right] \\ &\quad +(2-\gamma_{iA}-\gamma_{jB})^2(N_A-M)\overline{y} \\ &> 0\end{aligned}$$

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

Now, consider the following second-order conditions.

$$\begin{aligned}\frac{\partial G_A}{\partial \gamma_{iA}} &= MV\left[-(1-\gamma_{jB})gP_A-(1-\gamma_{iA})gP_A-gP_A(2-\gamma_{iA}-\gamma_{jB})\right] \\ &\quad +2(2-\gamma_{iA}-\gamma_{jB})(N_A-M)\overline{y} \\ &= 2(2-\gamma_{iA}-\gamma_{jB})(-MVgP_A+(N_A-M)\overline{y}) \\ &< 0 \Rightarrow (N_A-M)\overline{y} < MVgP_A\end{aligned}$$

and similarly

$$\frac{\partial G_B}{\partial \gamma_{jB}} < 0 \Rightarrow (N_B-M)\overline{y} < MVgP_B$$

Note that the SOC's above provide lower bounds on the value of g.

$$g > Max\left\{\frac{(N_A-M)\overline{y}}{MVP_A}, \frac{(N_B-M)\overline{y}}{MVP_B}\right\}$$

The RHS can be interpreted as the ratio of expected payoff from the traditional sector to the market sector if an entrepreneur does not invest at all in the social network. Call this assumption **A1.** Condition A1 implies a lower bound on the extent of government friction g, which we label $\widehat{g}$.

Now consider whether the reaction function is concave or convex.

$$\begin{aligned}\frac{d^2\gamma_{iA}}{d\gamma_{jB}^2} &= -\frac{\frac{\partial^2 G_A}{\partial \gamma_{jB}^2}}{\frac{\partial G_A}{\partial \gamma_{iA}}}+\frac{\frac{\partial G_A}{\partial \gamma_{jB}}}{(\frac{\partial G_A}{\partial \gamma_{iA}})^2}\frac{\partial^2 G_A}{\partial \gamma_{iA}\partial \gamma j_B} \\ &= \frac{1}{\frac{\partial G_A}{\partial \gamma_{iA}}}\left[-\frac{\partial^2 G_A}{\partial \gamma_{jB}^2}+\frac{\frac{\partial G_A}{\partial \gamma_{jB}}}{\frac{\partial G_A}{\partial \gamma_{iA}}}\frac{\partial^2 G_A}{\partial \gamma_{iA}\partial \gamma j_B}\right]\end{aligned}$$

Now,

$$\begin{aligned}\frac{\partial^2 G_A}{\partial \gamma_{jB}^2} &= -2(2-\gamma_{iA}-\gamma_{jB})(N_A-M)\overline{y} \\ &< 0\end{aligned}$$

and,

$$\begin{aligned}\frac{\partial^2 G_A}{\partial \gamma_{iA}\partial \gamma j_B} &= -2[-MVgP_A+(N_A-M)\overline{y}] \\ &> 0 \text{ by SOC above}\end{aligned}$$

Then,

$$\begin{aligned}\frac{d^2\gamma_{iA}}{d\gamma j_B^2} &= \frac{1}{\frac{\partial G_A}{\partial \gamma_{iA}}}\left[\begin{array}{c}2(2-\gamma_{iA}-\gamma_{jB})(N_A-M)\overline{y} \\ +\frac{1}{[2(2-\gamma_{iA}-\gamma_{jB})(-MVgP_A+(N_A-M)\overline{y}]}\frac{\partial G_A}{\partial \gamma_{jB}}[-MVgP_A+(N_A-M)\overline{y}]\end{array}\right] \\ &= \frac{1}{\frac{\partial G_A}{\partial \gamma_{iA}}}\left[2(2-\gamma_{iA}-\gamma_{jB})(N_A-M)\overline{y}-\frac{1}{(2-\gamma_{iA}-\gamma_{jB})}\frac{\partial G_A}{\partial \gamma_{jB}}\right] \\ &= \frac{1}{\frac{\partial G_A}{\partial \gamma_{iA}}(2-\gamma_{iA}-\gamma_{jB})}\left[\begin{array}{c}2(2-\gamma_{iA}-\gamma_{jB})^2(N_A-M)\overline{y} \\ -MV\left[(1-\gamma_{iA})(1-g(1-\gamma_{iA}.P_A)\right] \\ -(2-\gamma_{iA}-\gamma_{jB})^2(N_A-M)\overline{y}\end{array}\right] \\ &= \frac{1}{\frac{\partial G_A}{\partial \gamma_{iA}}(2-\gamma_{iA}-\gamma_{jB})}\left[-MV\left[(1-\gamma_{iA})(1-g(1-\gamma_{iA}.P_A)\right]\right] \\ &> 0\end{aligned}$$

The reaction functions are thus convex.

3.1.2 Comparative Statics

Now consider comparative statics in 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 below, with higher levels of γ_{iA} and γ_{jB}. The intuition seems straightforward here. Higher levels of government

friction induce greater investment in strengthening social network ties.

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 entrepreneurs invest more in ties to their social network.

Change in V: $\frac{d\gamma_{iA}}{dV} = -\frac{\frac{\partial G_A}{\partial V}}{\frac{\partial G_A}{\partial \gamma_{iA}}} = -\frac{+}{-} > 0$, since $\frac{\partial G_A}{\partial V} > 0$ from the FOC. The diagram for an increase in V is similar to that for g. The new equilibrium involves higher values of γ_{iA} and γ_{iB}. The marginal benefit from strengthening social network ties is greater than that from investing in market competition. There are a couple of factors at work here. One is that an increase in V increases the expected payoff from market competition relative to the fall back traditional sector payoff and this serves to increase period 1 contribution to social network ties γ_{iA}. A second factor is that, within the ambit of market competition, increasing γ_{iA} has a first order impact on marginal benefit since it enters the expected payoff in linear form, while increasing θ_{iA} has a second order effect as it enters the expected payoff in non-linear form. Recall that both γ_{iA} and θ_{iA} are less than 1.

Change in Political Influence, P_A: $\frac{d\gamma_{iA}}{dP_A} = -\frac{\frac{\partial G_A}{\partial P_A}}{\frac{\partial G_A}{\partial \gamma_{iA}}}$. The denominator is the SOC and so negative. The sign of the expression thus depends upon $\frac{\partial G_A}{\partial P_A}$.

$$\begin{aligned}\frac{\partial G_A}{\partial P_A} &= MV[-(1-\gamma_{jB})(g\gamma_{iA}) + (1-\gamma_{iA})g(2-\gamma_{iA}-\gamma_{jB})] \\ &= MVg[-(1-\gamma_{jB})\gamma_{iA} + (1-\gamma_{iA})(2-\gamma_{iA}-\gamma_{jB})]\end{aligned}$$

Consider the term within square brackets. The first term in the expression is negative and the second term is positive. The sign depends upon the magnitude of γ_{iA}. There are two cases to consider.

Case (i): If $\gamma_{iA} < \frac{1}{2}$,then $[-(1-\gamma_{jB})\gamma_{iA} + (1-\gamma_{iA})(2-\gamma_{iA}-\gamma_{jB})] > 0$ implying $\frac{\partial G_A}{\partial P_A} > 0$. Then $\frac{d\gamma_{iA}}{dP_A} = -\frac{+}{-} > 0$.

Case (ii): If $\gamma_{iA} > \frac{1}{2}$,then it is possible that $[-(1-\gamma_{jB})\gamma_{iA} + (1-\gamma_{iA})(2-\gamma_{iA}-\gamma_{jB})] < 0$. If this is so then $\frac{\partial G_A}{\partial P_A} > 0$ and then $\frac{d\gamma_{iA}}{dP_A} = -\frac{=}{-} < 0$.

Cases (i) and (ii) imply that when γ_{iA} is relatively "low" an increase in political influence of the network is associated with a strengthening of social network ties while if γ_{iA} is relatively "high" an increase in political influence of the network could be associated with a weakening of social network ties. This then suggests a threshold value of γ_{iA}, call it $\widetilde{\gamma}_{iA}$, $0 \leq \widetilde{\gamma}_{iA} \leq 1$,

that separates these two cases. Note also that the threshold $\widetilde{\gamma}_{iA}$ is increasing in $\widetilde{\gamma}_{jB}$, the strength of social network ties of the rival firm. In other words, as $\widetilde{\gamma}_{jB}$ increases, the range over which an increase in political influence P_A is associated with strengthening of social network ties also increases.

4 Discussion

The analysis in the preceding section focuses on four parameters: government friction (g), entrepreneurial opportunities (M), the value of the market (V), and the political influence of the social network (P_A). These are interesting parameters to consider particularly because the impetus for the model is the context of a country in the midst of economic development, liberalization, and economic growth, where these parameters are likely to change.

What interpretation can we give to these parameters? Government friction in entrepreneurial activities (g) is associated with government regulation in the economy and the costs imposed on entrepreneurs by the government. Economic liberalization is usually associated with a decline in such friction. An increase in entrepreneurial opportunities (M) can be associated with the opening up of industries to private enterprise that were previously the exclusive domain of state owned enterprises (such as defense, education, mining, air travel, and media such as newspapers and television). These are all demand-side examples, but an increase in entrepreneurial opportunities could also be associated with the availability of supply-side resources such as greater access to finance. An increase in the value of the market (V) could be associated with increased international trade opportunities, technological change which increases the market size of a product, or a favorable change in consumer preferences for the product such as becoming a fad or fashion. Conversely, a decrease in V could be associated with an increase in competition from the appearance of closely-related substitute products as in monopolistic competition. The rise and decline of political influence for a social network could be associated with changes in the size, resources and organization of the network, as well as factors such a political regime change and the rise of ethnic and regional politics.

Of course, a country that is on a path of economic development is often likely to be changing in all of these dimensions simultaneously. Liberalization, market expansion, and the dismantling of stifling government regulation sometimes happen together, such as in the case of India, Brazil, and Turkey. The model suggests that some of these changes may work in opposite directions to each other. For example, according to the model, if g goes down and M goes up, as happens with deregulation/liberalization and market expansion, the effects on social network investment from g and M work in opposite directions. Empirical work

will therefore need to carefully disentangle the effects of changes in different dimensions.

Another interesting direction to explore would be to consider the specific example of a particular country that has experienced transition in various parameters and evaluate how these changes have played out. A case study, essentially. A case study could lead to a detailed empirical calibration-test as in Besley-Buchardi-Ghatak (2011).

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