Political Connections, Entrepreneurship, and Social Network Investment*

Nisvan Erkal†
University of Melbourne

Raja Kali‡
University of Arkansas

May 2011
Preliminary and Incomplete

Abstract

The recent literature on politically connected firms documents that connections between firms and politicians or political 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 influence 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,

*We are grateful to Tim Besley, Avinash Dixit, and participants of the Workshop on Game Theory in Trade and Development (2011 International Summer Festival on Game Theory, Stony Brook) for their comments.

†Department of Economics, University of Melbourne, VIC 3010, Australia; email: n.erkal@unimelb.edu.au.

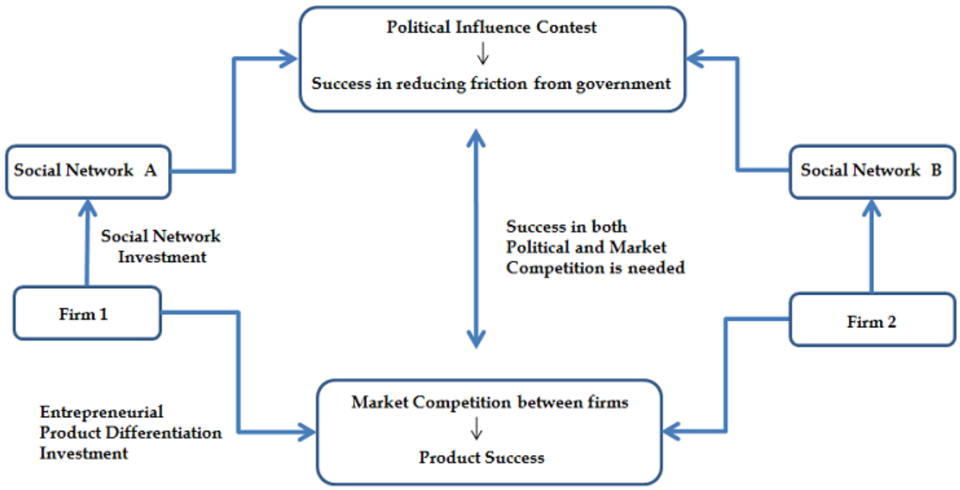
‡Department of Economics, Sam M. Walton College of Business, University of Arkansas, U.S.A.; e-mail: rkali@walton.uark.edu.

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 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 this research aims to develop a theoretical framework to make such tradeoffs clear and understand how they are affected by these elements of the environment. The second part of our research 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, 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 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[1]. Entrepreneurship without political connections is all but impossible in such environments, but cultivating social networks for

1

1. We thus present a different rationale for investing in social networks than existing explanations (contract enforcement, insurance) in the literature.Contract enforcement, such as in Kali '99, Grief '94 etc. Group membership acts as defense/guard against opportunism in contracts.Insurance from idiosyncratic shocks. Risk pooling argument. Has been explored in the context of agricultural and fishing communities in development. Also ex-post insurance from religious groups as in Chin (2010).

their political influence absorbs entrepreneurial energy and thereby retards product success.

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 defense against opportunism in contracts when legal institutions are inadequate (examples are papers by Kali '99, Grief '94 etc.). 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 Platteau and Abraham, 1992). An interesting recent contribution to this litearture by Chen (2010) studies ex-post insurance from religious groups in Indonesia during times of economic distress.

2 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 ethno-linguistic 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. An entrepreneur has a finite amount of time that can be allocated to either entrepreneurship or maintaining links 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. An entrepreneur from each social network is 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 therefore two contests in the economy. In order to be fully successful, an entrepreneur must win both contests. If entrepreneur i belongs to social network A, then θ_{iA} denotes entrepreneur i's time contribution to product success in market competition and γ_{iA} denotes his time contribution to maintaining 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.

We assume very simply that the influence of a social network in the political contest is a function of its size and takes the simplest linear formulation of this, i.e., the influence of social network A is $I_A = N_A$, and similarly for I_B. Success in the political contest is also determined by a contest success function where the probability of success of network A is $P_A(I_A, I_B) = \frac{I_A}{I_A+I_B} = \frac{N_A}{N_A+N_B}$. Since how responsive the network is to a member's need for political influence is proportional to the member's contribution to the network, if the social network works on behalf of firm i, it delivers the favorable outcome (government approval of permit, less friction) with probability $\lambda_{iA}(I_A, I_B) \equiv \gamma_{iA} P_A(I_A, I_B) = \gamma_{iA} \cdot \frac{N_A}{N_A+N_B}$. Note that for now we assume constant resturns 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,

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

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, given the choice of γ_{iA} 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 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 $(1 - \gamma_{iA})\overline{y}$.

2.1 Analysis

2.1.1 Equilibrium

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

$$\Pi_{iA} = p_i(\theta_i, \theta_j)V(1 - g(1 - \lambda(\gamma_i, I_A, I_B))) \tag{PD3}$$

which can be rewritten as period 2 payoff,

$$\Pi_{iA} = \frac{1-\gamma_{iA}}{2-\gamma_{iA}-\gamma_{jB}}V(1 - g(1 - \gamma_{iA}\cdot\frac{N_A}{N_A+N_B})) \tag{PD2}$$

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,

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

or,

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

or,

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

Similarly, the FOC for γ_{jB} yields,

$$MV\left[\begin{array}{c} -(1-\gamma_{iA})(N_A+N_B-g(N_A+N_B-\gamma_{jB}N_B)) \\ +(1-\gamma_{jB})gN_B(2-\gamma_{iA}-\gamma_{jB}) \end{array}\right] - (2-\gamma_{iA}-\gamma_{jB})^2(N_A+N_B)(N_B-M)\overline{y} = 0 \qquad (4)$$

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 $\frac{\partial G_A}{\partial \gamma_{jB}}$.

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

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

Now consider whether the reaction function is concave or convex.

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

Now, consider the following second-order conditions.

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

and similarly

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

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

$$g > Max\left\{\frac{(N_A+N_B)(N_A-M)\overline{y}}{MVN_A}, \frac{(N_A+N_B)(N_B-M)\overline{y}}{MVN_B}\right\}$$

Assuming the first term within brackets is greater than the second (this will be so if $\frac{N_A-M}{N_A} > \frac{N_B-M}{N_B}$), we can write the condition in the following way,

$$\frac{(N_A-M)\overline{y}}{N_A} < \frac{MVg}{(N_A+N_B)} \tag{A1}$$

The LHS can be interpreted as the expected per capita reservation payoff from the non-market activity. The RHS can be interpreted as the expected per capita market value absorbed by government friction. In other words, the per-capita value-loss from government friction in market activity is greater than per capita reservation payoff from the non-market activity. This seems like an intuitive condition for the maximization-choice problem to be well-defined. Call this assumption **A1**. Note also that since we know $g < 1$, this leads to the condition $(N_A - M)\overline{y} < MV$, i.e., the gross payoff from the reservation sector must be less than the gross payoff from the market sector.

Now,

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

and,

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

Then,

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

This expression is decreasing in g. Even if we we use the bound on g from SOC's in this expression, it does not seem that it can be signed without knowing γ_{iA}^*. At the extreme, if $g = 1$, the expression $[N_A + N_B - g(N_A + N_B - \gamma_{iA}N_A) - (1-\gamma_{iA})gN_A]$ is > 0 if $\gamma_{iA} > \frac{1}{2}$. So it seems that in general $\frac{d^2\gamma_{iA}}{d\gamma j_B^2} < 0$, (i.e., concave reaction function), unless g is quite high and γ_{iA} is also quite high. Though hard to make an unambiguous statement. But the comparative statics below seem to not depend on the concavity/convexity of the reaction function.

2.1.2 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}. Intuition seems straightforward here. Higher levels of government friction induce greater investment in 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 increasing social network ties is greater than that from investing in market competition. There are probably a number of factors at work here behind the intuition. 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-CRS form, while increasing θ_{iA} has a second order effect as it enters the expected payoff in non-linear form.

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 $\frac{\partial G_B}{\partial N_B}$.

$$
\begin{aligned}
\frac{\partial G_B}{\partial N_B} &= MV[-(1-\gamma_{iA})(1-g(1-\gamma_{jB})) + (1-\gamma_{jB})g(2-\gamma_{iA}-\gamma_{jB})] - (2-\gamma_{iA}-\gamma_{jB})^2(N_A+N_B+N \\
&= -MV(1-\gamma_{iA})(1-g(1-\gamma_{jB})) + MVg(1-\gamma_{jB})(2-\gamma_{iA}-\gamma_{jB}) - (2-\gamma_{iA}-\gamma_{jB})^2(N_A+N_B
\end{aligned}
$$

The first term in the expression above is negative, the second term is positive and the last term is negative. Consider the last two terms. Note that $(1-\gamma_{jB})(2-\gamma_{iA}-\gamma_{jB}) < (2-\gamma_{iA}-\gamma_{jB})^2$. Hence a sufficient condition for the second term to be smaller than the third term is $MVg < (N_A+N_B+N_B-M)\overline{y}$. This can be written as $g < \frac{(N_A+N_B+N_B-M)\overline{y}}{MV}$.

Under this assumption $\frac{\partial G_B}{\partial N_B} < 0$, and the reaction function $\gamma_{iA}(\gamma_{jB})$ shifts down.

Since $g < 1$, if $(N_A + N_B + N_B - M)\overline{y} > MV$ then this condition will always hold. Call this condition **A2**. Under **A2** both reaction functions shift down and the new equilibrium involves lower values of γ_{iA} and γ_{jB}. (It can be shown that **A1** and **A2** are consistent with each other.)

Another way to write condition **A2** is $\frac{(N_A+N_B+N_B-M)}{M} > \frac{V}{\overline{y}}$. If we focus on the LHS of this expression, this could be interpreted as saying that the market payoff is not too large relative to the fall back/reservation sector option.

In this comparative static exercise the intuition behind the shift of the reaction curve for $i \in A$ and that of $j \in B$ are different and are therefore worth considering separately. First consider the change in the reaction function for $i \in A$, $\gamma_{iA}(\gamma_{jB})$. An increase in the size of j's (the rival) social network (B) reduces the probability of success in the political contest. This could be countered by increasing i's contribution to his social network (A). However, from the FOC the marginal benefit of diverting effort into market competition ($\theta_{iA} = 1 - \gamma_{iA}$) is greater. The intuition here is probably that an increase in the rival network size B decreases i's marginal benefit by a second order amount since it enters the expected payoff in a non-linear fashion. As a result the marginal benefit of responding via an increase in θ_{iA} is greater than from increasing γ_{iA}. Therefore, the reaction function $\gamma_{iA}(\gamma_{jB})$ shifts down.

Next consider the change in j's reaction function $\gamma_{jB}(\gamma_{iA})$. Under **A2** $\frac{\partial G_B}{\partial N_B} < 0$, and the reaction function $\gamma_{iA}(\gamma_{jB})$ shifts down. If the size of B's (own) social network increases, the probability of winning in the political contest goes up, but the probability of being selected for market competition in the first place goes down. Intuitively it would seem that this would imply that it is better to invest in improving the odds of winning in market competition if selected, associated with a decrease in social network investment γ_{jB}.

The new equilibrium thus involves lower values of γ_{iA} and γ_{iB}. Note however, that since the mechanisms behind the shifts of the two reaction functions are different, the magnitudes of their shifts are likely to be different even though it seems they shift in the same direction, implying lower levels of social network investment. Also an interesting implication of this result is that smaller groups have stronger ties (more social network investment) than larger groups.

3 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 size of the competing social networks (N_A and N_B). 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 the first three parameters (g, M,and V) are likely to change. The size of competing social networks based in ethnolinguistic or regional origin are arguably less flexible and therefore less likely to change over time, but the comparative statics on network size are still useful for cross-sectional comparisons. Moreover, since other interpretations for the bases for such social networks are also possible there could be scenarios where their size is also open 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 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.

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).

3.1 Thoughts on empirical work etc.

Would be nice to be able to compare relative effects of decrease in g and increase in M. Or look at how $\frac{d\gamma_{iA}}{dM}$ depends upon g, and over the feasible range of g, i.e., condition $A1$. Also how $\frac{d\gamma_{iA}}{dg}$ depends on M.

Our approach is a different rationale for investing in social networks than existing explanations (contract enforcement, insurance) in the literature. Should we discuss this link to the literature at some point? Another question is whether to discuss the link to the change in identity, i.e., investing more in yourself rather than the group? Perhaps have a separate section that discusses links to other literatures?

Some thoughts.

I've downloaded the World Bank data on "Doing Business" (http://www.doingbusiness.org/) which has data from 2004-2011 on 183 countries on various government imposed barriers (no. of procedures, fees, total time) to entry. This could be a proxy for government friction g.

I also have cross-country measures of ethnic and religious polarization, which could be thought of as a crude proxy for the importance/salience of ethnic and religious networks. One issue is the polarization measures are considered fairly stable and not something that changes much over short periods of time. But size of exogenous-criteria based networks is something that doesn't change much over time either. Though their salience may change, but then polarization may not be a good measure to pick up this change.

I downloaded the World Values Survey data (http://www.wvsevsdb.com/wvs/WVSData.jsp), though we will need to learn more about the questions that are asked and whether there is data that we can use as a proxy for social network ties. I will read the paper you forwarded today.

The flip side of social network ties/investment would be some measure of entrepreneurial effort/product differentiation/Advertising per capita/R&D per capita. It seems like there is cross-country data on entrepreneurship (http://www.unleashingideas.org/blog/measuring-entrepreneurship-around-world seems like a good starting point). The WorldBank entrepreneurship data is probably a reliable source.

What would be a good proxy for market size/opportunities? Maybe GDP per capita would capture this?

What kind of data analysis would we want to do? We need to think more about this, but here are some initial thoughts for a cross-country regression.

Entrepreneurial Effort=a+b1(govt friction)+b2(market opportunities)+b3(Network Salience/Influence) +b4(govt friction*market opps)+(other controls?)+e

Expected signs: b1<0, b2>0, b3>0, b4<0. The signs for b3 and b4 would be the key ones for us. But one problem is that the data are likely to be at the country-level, though our model is at the individual/firm level.

This is all quite preliminary and I will first try to work on the draft and on the side perhaps try to organize/investigate the data.

References

[1] Charumilind, C., Kali, R., & Y. Wiwatanakantang (2006), "Connected Lending: Thailand Before the Financial Crisis," Journal of Business.

[2] Chen, D. (2010), "Club Goods and Group Identity: Evidence from Islamic Resurgence during the Indonesian Financial Crisis," Journal of Political Economy, 118(2), 300-354.

[3] Claessens, S., E Feijen, & L Laeven, (2008), "Political connections and preferential access to finance: The role of campaign contributions," Journal of Financial Economics.

[4] Ensminger, J. (1992), Making a Market: The Institutional Transformation of an African Society. New York. Cambridge University Press.

[5] Faccio, M. (2006), "Politically connected firms," American Economic Review, 96: 369-386.

[6] Faccio, Mara, Ronald W. Masulis, and John J. McConnell, (2006), "Political connections and corporate bailouts," Journal of Finance, 61: 2597-2635.

[7] Fisman, Raymond, (2001), "Estimating the value of political connections," American Economic Review, 91: 1095-1102.

[8] Johnson, S. and T. Mitton (2003), "Cronyism and capital controls: Evidence from Malaysia", Journal of Financial Economics, Volume 67, Pages 351-382.

[9] Khwaja, A. I., and A. Mian, (2005), "Do Lenders Favor Politically Connected Firms? Rent provision in an Emerging Financial Market," Quarterly Journal of Economics, Vol. 120, Issue 4, November 2005.

[10] Platteau, Jean Phillippe (1992), "Share Contracts and Their Rationale: Lessons from Marine Fishing", Journal of Development Studies, Vol. 28, No. 3, 386-422.

[11] Shleifer, A., R W. Vishny (2004), "The Grabbing Hand: Government Pathologies and Their Cures." Harvard University Press.