Business Networks and Firm Innovation

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Entrepreneurial firms play an important role in increasing employment opportunities and driving economic growth. Despite their contributions, the growth of entrepreneurial firms is often limited by their meager resource endowments. These growth constraints put entrepreneurial firms in a disadvantageous position compared to established corporations, endangering entrepreneurial survival. One important approach to overcoming growth constraints is innovation. Through innovation, entrepreneurial firms can differentiate themselves from existing firms by developing novel products or services to meet new customer needs, better serve existing needs, or even create new needs that consumers have not yet recognized. Given their limited internal resources, in order to innovate entrepreneurial firms can benefit from an "open innovation" model in which internal innovation efforts are complemented by knowledge and capabilities obtained from social networks. Entrepreneurs can then create innovative ideas by combining and recombining both internal and external inputs. The recombination process gives rise to the important question of how inter-firm networks impact innovative performance. Despite the potential importance of this impact, little is known about its existence and magnitude, because data on, and exogenous variation in, firm networks are hard to come by. For example, if we observe a correlation between networks and innovation, it is unclear whether it is the case that the networks cause innovation or that innovative firms are more likely to attract members and thus develop a bigger network. To explore these possibilities, in this project we collect new data and conduct a field experiment in Jiangxi province, China in which we measure the impact of managerial networks on firm innovation.

The original project was started in Summer 2013. The first follow-up (midline) survey was done in September 2014 and the second follow-up (endline) survey is scheduled for Summer 2015. In the original experiment, we invited about 2,200 managers of small businesses established in the past 3 years (having about 10 employees) in Nanchang, Jiangxi, to participate in this project. 1,200 managers were randomly assigned into groups with around 10 managers each. In collaboration with the Industrial and Information Commission of Nanchang, a government department in charge of small businesses, we started to organize monthly business meetings for these groups from September 2013. Participants get a certificate from the Commission if they collaborate in the three-round survey and attend at least 80% of the monthly meetings. In the meetings, managers are offered business-relevant information, can discuss issues they face in running their business, establish new contacts, and exchange information. Evidence from the midline survey suggests that firms value participating in similar associations. The average attendance rate of the first year monthly meeting was 85%. To evaluate the impact of the meetings, we also assigned 1,000 firms to a "no meetings" control group. We selected these firms from the pool of applicants to the meetings program, and explained to them that while there was no room for them in the meetings, we still provide them with business information and give the same incentives to participate. Moreover, in our randomization, we created both homogenous and heterogeneous groups based on firm size and industry. We use this variation to test if/whether the interaction effects on firm innovation are stronger within or across industry and size categories.

In all three survey rounds , we survey treatment and control managers and collect balance sheet data, managerial characteristics, as well as detailed information on business partners and social connections. During the baseline and midline survey, we surveyed the following information: (i) profits, sales, costs, electricity use, spending on intermediate inputs, and other balance-sheet measures; (ii) managerial characteristics, including measures of managerial capital, stress levels, and self-reported happiness; (iii) the number and identity, both within and outside the meeting group, of business partners, and the volume of transactions with business partners. We plan to add a module of firm innovation measures in our endline survey in Summer 2015. In detail, we derive our main variables from the Business R&D and Innovation Survey (BRDIS) conducted by the National Science Foundation.[1] Following BRDIS, we will survey both innovation inputs, including R&D investments and R&D employee counts, and innovation outputs, including patent counts and whether the firm introduces new products/services or improves existing ones. To gain a deeper understanding of innovation inputs, we will examine whether they come from internal sources or external sources (e.g., government); we will also examine whether the firm has developed external R&D partnerships (universities, governments, suppliers or customers, or even competitors). To deepen our insights into innovation outputs, we will examine whether the firm has commercialized them internally based on their own distribution channels or externally through certain technology-transfer activities.

In this context, we ask the following questions: (1) What is the impact of an exogenous change in a manager's business network on firm innovation? We compare the innovation outcomes of firms in the meetings to that of control firms. (2) What types of connections do firms need to improve innovation? We exploit variation in group composition based on firm size and industry to explore what types of partnerships can generate a larger effect on innovation. The answers will inform us about the nature and economic cost of frictions in finding the right business partner.

Our project is directly relevant for policy. We evaluate a concrete policy intervention---organizing business meetings---which can help increase the efficiency of firm-to-firm matching. We do this in collaboration with the Industrial and Information Commission of Nanchang. If the program is successful, the Commission will consider implementing similar meetings on a larger scale. More broadly, our results will bring to light important data on the effectiveness of business meetings in both developing and developed countries.

We ask for NBER support to cover part of the endline survey cost and research assistant salary. The detailed budget description is shown in the following table. The project is co-funded by the Private Enterprise Development in Low-income Countries, the Small and Medium Enterprise Initiative, and the University of Michigan.

		2015	2016	Total
GSRA salary	120 hours per year, $25/hour	3000	3000	6000
GSRA fringe benefits (7.65%)	Fringe benefits (7.65%)	229.5	229.5	459
Travel-international (Jing Cai and Xun Wu)	Round-trip tickets DTW-Beijing, $1500/trip	3000		3000
Travel-within China (Jing Cai and Xun Wu)	Round-trip tickets Beijing-Nanchang, $300/trip	600		600
Accommodation in China (Jing Cai and Xun Wu)	$500/trip	1000		1000
Project coordinator salary	4 months, $1200/month	4800		4800
Subtotal				*15859*
Indirect cost	26%			4123.34
Total				*19982.34*

[1] http://www.nsf.gov/statistics/srvyindustry/about/brdis/