Methodological Critique of Funk (2014)

Funk, R. J. 2014. Making the most of where you are: Geography, networks, and innovation in organizations. *Academy of Management Journal*, 57(1): 193-222.

Russell Funk argues that while geographical proximity to industry peers improves the innovation output of firms, this relationship is moderated by the efficiency of intra-firm information networks. Funk suggests that the underlying mechanism driving that relationship is that diversity facilitates information processing. I found the study interesting for two reasons. First, the geographical effects of innovation is an open area for research and there is still a lot we do not quite understand about the role of geographical proximity in fostering innovation. Second, Funk frames the question as an interaction of two factors geographical proximity and intra-firm network, both of which are neither completely exogenous nor completely endogenous to firm performance. I have structured my comments in the four following sections. For each I provide a summary of my critique and follow it up with numbered comments. The comments are ordered in decreasing order of importance (i.e., the most important comments come first).

THEORY

Start with a summary, and then list issues numbered in order of importance.

1. Firms may self-select into locations. Are location choices exogenous?
2. Could other firms move exogenously to the focal firm?
3. Other firms may be guided strategically by their managers. Is there an assumption that all industry peers are required to take a similar strategic direction?
4. Do intra-organizational information networks evolve over time? Has an assumption been made to the contrary?
5. What is the evidence for the presence of knowledge spillovers. Arora et al. (2017) suggest that patent citations may not be indicative of knowledge flows. It seems that Funk assumes that local spillovers take place, building on earlier work. Recent work is challenging this assumption.
6. Physical proximity does not imply more frequent interactions. AoM meetings maybe the only time neighbors meet.
7. Consider the complement vs compete tension
8. Funk argues that proximity allows firms to capture large volumes of knowledge through spillovers from nearby organizations. This would be incomplete without also considering absorptive capacity of recipient firms

EMPIRICAL METHODOLOGY

We started out attempting to improve our understanding of the mechanisms behind the embedded agent - institutional field engagement.

1. Sample selection
2. If links considered are of co-inventor links from successful patents, could there be a case of selecting on the dependent variable. What about all the knowledge flows that happened but did not end in co-inventor links on a successful patent application.
3. firms that do not list at least one inventor with an address in the same region as a firm's main research facility are excluded. Is this sufficient?
4. Potential bias from eliminating all satellite R&D facilities. I would like to see if the size of the satellite facilities dropped vis-a-vis those retained.
5. Authors shifting location. Not clear how this is addressed.
6. Potential simultaneity or endogeneity among control variables
7. The question of globally sourced R&D. I would like to see statistics about how many of the inventors on the patents on his panel were resident in the US
8. Combinations calculated based on USPTO class 100000 of them means that the chance of diversity is higher. Much of that may be noise. May endup overstating the effect of inefficiency
9. There seems to be a confounding of the location of the facility and that of the inventor. It is not clear which is affecting the results. Would be better to just look at inventor locations.
10. Euclidean distance may be problematic since Houston is much more spread out than is Boston. 5 miles may mean different things in different places.
11. The California control - questionable, especially is it appropriate in the context of nano technology industry?

RESULTS

Summarize the results

1. Can the relationship hypothesized in Hypothesis 2a changed in direction and still hold? Is there a simultaneity here?

OTHER COMMENTS

Summarize other comments

1. Time effect or a time trend
2. A lot of work, collaboration and learning happens over the Internet rather than due to physical proximity. Ask of the sample if virtual proximity matters more than physical proximity
3. Does proximity to peer firms indeed increase the innovation outcome of firms or is it just changing the goal post (like inflation) and not particularly changing the relative standings. It is running faster to stay where you are or is it really improving outcome?
4. Proximity benefits may just be due to knowledge flows from common customers and common suppliers rather then from geography
5. Participation in community clubs, children activities and other local events increases opportunities for employees of different firms to interact: What kind of conversations are likely to ensue. How likely are they to be instruments of innovation
6. Are all firms assumed to be homogenous in all other ways? What are the implications of relaxing that assumption?
7. Could geographically distant peer firms have other advantages, including a superior capability to sense and address local markets. Are product markets assumed to be homogenous? How about factor markets, especially the human capital market?
8. Is it assumed that geographical proximity leads to greater alliance opportunities? Are distant firms at a necessary disadvantage while allying?
9. Does distancing from one group of peer firms, not potentially allow for greater proximity to other firms?
10. Shock or Quasi-experiment to tease out causality
11. Knowledge flows from proximity may help in prevention of early extinction (use the right term), rather than help improve outcomes directly
12. Do cohesive networks naturally better off in accommodating varied views. Can highly cohesive groups tend toward herding rather than diversity?
13. Random effects
14. Mechanism behind the inefficient network approach (could there also be a negative effect out of such little commonality) Prior studies may have suggested an inverted-U relationship.

REFERENCES

Arora, A., Belenzon, S., & Lee, H. 2017. ***Reversed citations and the localization of knowledge spillovers***. Working Paper 23036, National Bureau of Economic Research.

Funk, R. J. 2014. Making the most of where you are: Geography, networks, and innovation in organizations. ***Academy of Management Journal***, 57(1): 193–222.