Innovation Policy in Emerging Domains of Activity:
First-Mover Advantage or Curse?

Working paper
February 3, 2009

ABSTRACT:
Do first-mover advantages exist for public policy? The theory of the first-mover advantage has been well studied in organization theory and marketing science. It is generally accepted that first-mover firms have multiple benefits such as technological leadership, asset preemption, and heightened buyer switching costs (Lieberman & Montgomery, 1988; 1998). First-mover firms also have the disadvantages of free-ridership, technology uncertainty resolution, enabling new entrants, and incumbent inertia (Lieberman & Montgomery, 1988; 1998). Previous work has focused on the application of the first-mover theory to firms. However, the author argues that much can be gained in the application of first-mover advantage theory to other areas. Specifically, this study applies the arguments of first-movers to innovation policy in nanotechnology. Billions of public dollars are spent each year on technology research and development in the U.S. (National Science Foundation, 2006). These are mainly guided by innovation policies at the federal and state level. Thus, the long-term value of funding innovation carries significant policy implications.

Methods: I use the development of innovation policy in the nanotechnology field through archival data. Specifically, I examine all first and second-mover nanotechnology innovation initiatives in the United States form 1990-2005. These initiatives include science and technology-based (S&T) initiatives and economic-based innovation initiatives. Table 1 shows the main metrics of interest: distinguishing factors, advantages, and disadvantages. Multiple measures of success are examined to compare the relative performance of each type of initiative.

Table 1. Innovation Policy Timing: Key Factors, Disadvantages, & Advantages

	Innovation Policy and Initiatives	
	First-Mover	**Second-Mover**
Key factors	– Cutting-edge innovation initiatives – High-level – Tend to be broad based	– Follower initiatives – Often based on or building from first-mover initiatives – More focused scope
Advantages	– Scarce resources are preempted – At the forefront of technology – Builds reputation – Low competition – Can help guide innovation diffusion and standards – Can help set regulatory policy – Can help direct future innovation policy	– Build on existing infrastructure – Legitimacy for innovation exists – Lower uncertainty – Lower risk of failure – Participants have been educated via first-mover – Broader base of funding opportunities – Learn from first-mover initiatives – successes and failures

	– Early returns are basis for re-investment	
Disadvantages	– Fewer funding resources	– Scarce resources are locked-in by earlier initiatives
	– Must build infrastructure	– Lack of novelty
	– High uncertainty and risk (technology and market)	– More initiatives exist increasing competition for resources
	– Initiatives serve to educate both those involved in the innovation and the public	– More difficult to establish reputation and influence in market and policy
	– Higher R&D costs since area is emerging	

The study finds that we must consider a broader range of conditions when examining the order of entry in innovation policy. For example, S&T initiatives gain a first-mover advantage from preempting academic resources while economic initiatives gain from preempting corporate resources. The findings also show that the benefits gained by first-mover advantage is specific to the level at which the policy is implemented. For instance, national innovation initiatives gain a first-mover advantage compared to other technologies. Local and state level innovation initiatives gain a first-mover advantage from clustering resources. The article concludes with a discussion of what follower policies can learn from first-movers. The maximization of second-mover advantages is also discussed.

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