

Does mission-oriented funding stimulate private R&D? Evidence from military R&D for US states

Gianluca Pallante¹

¹Institute of Economics and EMbeDS, Sant'Anna School of Advanced Studies, Pisa, Italy

PhD Thesis extract

Firms' innovation activities play a crucial role in fostering productivity and economic growth (Nelson and Winter, 1982; Dosi, 1988; Romer, 1990; Aghion and Howitt, 1992). Yet, Research and Development (R&D) underinvestment is a well documented feature of contemporary economies, and governments are seeking new ways to boost research in the private sector (Bloom et al., 2019). Among different policy tools, mission-oriented innovation programs are gaining increasing relevance, posing the question on whether public policy may contribute to spur economic growth and channel the direction of technical change (Mazzucato, 2015).

In the US, military R&D expenditures arguably represent the best example of mission-oriented policy (Mowery, 2012). They are sizeable, with a clear-cut public purpose (national defense) and with the government being the exclusive beneficiary. Exploiting a longitudinal dataset linking public R&D obligations to private R&D expenditures for US states, we investigate the impact of defense R&D on privately-financed R&D. To address potential endogeneity in the allocation of funds, we use an instrumental variable identification strategy leveraging the differential exposure of US states to national spending shocks. We document "crowding-in" effects with elasticities in the 0.11-0.14 range. These positive effects extend also to the labor market, when focusing on employment in selected R&D intensive industries and especially for engineers. This work contributes to filling a gap in the literature, where much of the empirical evidence on mission-oriented policies is anecdotal and based on historical case studies (Nelson, 1982; Mazzucato, 2015; Foray et al., 2012; Azoulay et al., 2019).

References

- Aghion, P. and Howitt, P. (1992). A model of growth through creative destruction. *Econometrica*, 60(2):323–351.
- Azoulay, P., Fuchs, E., Goldstein, A. P., and Kearney, M. (2019). Funding breakthrough research: Promises and challenges of the "ARPA Model". *Innovation policy and the economy*, 19(1):69–96.

- Bloom, N., Van Reenen, J., and Williams, H. (2019). A toolkit of policies to promote innovation. *Journal of Economic Perspectives*, 33(3):163–84.
- Dosi, G. (1988). Sources, procedures, and microeconomic effects of innovation. *Journal of Economic Literature*, 26(3):1120–1171.
- Foray, D., Mowery, D., Nelson, R., et al. (2012). Public R&D and social challenges: What lessons from mission R&D programs? *Research Policy*, 41(10):1697–1702.
- Mazzucato, M. (2015). *The entrepreneurial state: Debunking public vs. private sector myths*. London: Anthem Press.
- Mowery, D. C. (2012). Defense-related R&D as a model for grand challenges technology policies. *Research Policy*, 41(10):1703–1715.
- Nelson, R. and Winter, S. (1982). *An evolutionary theory of economic change*. Cambridge, MA: Harvard University Press.
- Nelson, R. R. (1982). *Government and Technical Progress*. New York: Pergamon Press.
- Romer, P. M. (1990). Endogenous technological change. *Journal of political Economy*, 98(5, Part 2):71–102.