

# Growth through Heterogenous Innovations\*

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29 September 2010

## Abstract

We study how heterogeneous innovations impact economic growth through a tractable endogenous growth framework that contains multiple innovation sizes, multi-product firms, and entry/exit. Our model allows for firms to invest in exploration R&D to acquire new product lines and exploitation R&D to improve their existing product lines. We model and show empirically that exploration R&D does not scale as strongly with firm size as exploitation R&D. The resulting framework conforms to many stylized facts regarding the firm size distribution and innovation, and we closely link our work to observed patterns in patent citations.

**JEL Classification:** O31, O33, O41, L16.

**Keywords:** Endogenous Growth, Innovation, Exploration, Exploitation, Research and Development, Patents, Citations, Scientists, Entrepreneurs.

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\*Comments are appreciated and can be sent to [uakcigit@econ.upenn.edu](mailto:uakcigit@econ.upenn.edu) and [wkerr@hbs.edu](mailto:wkerr@hbs.edu). We thank Daron Acemoglu, John Haltiwanger, Sam Kortum, Dirk Krueger, and seminar participants at Bank of Finland, Harvard University, NBER Summer Institute 2010 Productivity Group, Federal Reserve Bank of Philadelphia, University of Maryland, and University of Pennsylvania Economics Department and Wharton School for their insights. This research is supported by Harvard Business School, Innovation Policy and the Economy forum, Kauffman Foundation, and University of Pennsylvania. Kerr thanks the Bank of Finland for hosting him while working on a portion of this research. Selman Erol and Kaushik Ghosh provided excellent research assistance on this project. The research in this paper was conducted while the authors were Special Sworn Status researchers of the US Census Bureau at the Boston Census Research Data Center (BRDC). Support for this research from NSF grant ITR-0427889 [BRDC] is gratefully acknowledged. Research results and conclusions expressed are the authors' and do not necessarily reflect the views of the Census Bureau or NSF. This paper has been screened to ensure that no confidential data are revealed.