

## Innovation and Small Business Performance: Examining the Relationship Between Technological Innovation and the Within-Industry Distributions of Fast Growth Firms

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### Purpose

Theory holds that industry conditions favorable to the performance of small private firms are fundamentally different from industry conditions favorable to the performance of large, established firms. However, research into this question has been hindered by data limitations. This report seeks to determine empirically, via examination of a unique dataset, how changes in conditions of some industries, e.g., technological intensity and production and sales intensity, impact the performance of small fast growing small firms and fast growing large public firms in those industries.

### Overall Findings

Industries that are more technically oriented (as evidenced by increased employment of scientists and engineers) are more accommodating to small fast growing private firms. As industries become more production oriented, they become more accommodating to large fast growing public firms.

### Highlights

- Distribution of large high growth established firms and small high growth private firms is not even across industries. Forty percent of the large firms are concentrated in ten industries; 54 percent of the small firms are also found in just ten industries.
- Small and large high growth firms were concentrated in differing industries. Of the top ten small and large high growth industries, only computer programming and data processing, as well as computer and office equipment were on both lists.
- Of the 283 industries studied, 192 had at least one private high growth firm and 154 had at least one public high growth firm.
- By major industry, about 60 percent of high

growth small private firms were in services versus about 28 percent for large public firms. Manufacturing had the highest number of large public high growth companies. From 1984 to 1997, the share of high growth small private firms in services surged, while the percent of high growth large public firms in the services sector declined.

- The econometric models found that changes in the technical intensity of an industry are positively linked to the number of high growth small private firms, and change in production intensity is negatively linked. The results were reversed for high growth large public firms.
- A relationship between an industry's mix of sales and distribution employees and the number of high growth private firms was not found.
- The results of the paper support the notion that as an industry evolves over time, opportunities for new entrepreneurs will change based on how the industry evolves. They also support the notion that small private and large public firms perform different roles in different industries, and in the economy as a whole.

### Scope and Methodology

Following the number of high growth companies by industry from 1984 to 1997, regression models for small private and large public firms were created. The lagged percentage of technical, sales and distribution, and production workers in an industry were independent variables. Model controls included patent counts, establishment counts, and large establishment counts to account for variations among the industries (as a further check, an industry's total sales were also included).

Data from various sources were used. *Inc.* magazine's "Inc. 500" were used as a data set for high growth small private firms. The Inc. 500 is a group of high sales growth firms at least 5 years

old with sales between \$100,000 and \$25 million. (Because of the limited availability of information on private firms, industry counts were used in the models.) Using Standard and Poor's COMPUSTAT database and the Inc. 500 methodology for picking high growth companies, the 500 high growth public firms were selected and judged to be large firms. Employment levels were created from occupation data in the U.S. Census Bureau's Current Population Survey. Industries were coded using the U.S. government's three-digit Standard Industrial Classification (SIC) system.

This report was peer-reviewed consistent with Advocacy's data quality guidelines. More information on this process can be obtained by contacting the Director of Economic Research at [advocacy@sba.gov](mailto:advocacy@sba.gov) or (202) 205-6533.

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