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# Evaluating the NASA small business innovation research program: preliminary evidence of a trade-off between commercialization and basic research

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## Abstract

In 1982, the Small Business Innovation Development Act established the small business innovation research (SBIR) program. This program reserves a percentage of federal agencies' extramural R&D budgets for research projects conducted by small businesses. When this Act was reauthorized in 1992, the selection criteria for funding dramatically increased the likelihood of funding for projects that promised to lead to commercial success. Using data from a survey of the SBIR program award recipients at NASA Langley Research Center, we address three questions about this change: (i) was there a shift to projects with more commercial potential? (ii) did these projects experience higher rates of commercial success? and (iii) was there a reduction in basic research accompanying the increased commercial success? Our analysis suggests, the answer to all three of these questions is 'yes'.

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## 1. Introduction

The Small Business Innovation Development Act of 1982<sup>1</sup> created a set aside program for research funded by federal agencies but conducted by small businesses. In 1992, the Small Business Innovation Research (SBIR) program was reauthorized. The Small Business Innovation Reauthorization Act of 1992<sup>2</sup> both raised the percentage of research expenditures dedicated to the SBIR program and increased the importance of the goal of commercializing SBIR

projects. In this paper, we investigate the effects of the change in importance of the commercialization goal using the results of a survey of SBIR projects funded by the NASA Langley Research Center.

We present evidence on three questions concerning the increase in the importance of commercialization. Our first question concerns the effects of this change on NASA's behavior. Has the selection process for the SBIR program increased its emphasis on commercial success? Our results suggest that it has. Commercial success has increased importance since 1992. This leads to the final two questions. Has this shift in emphasis on commercial success actually led to more commercial success? And, has this shift in emphasis on commercial success come at the expense of something else? Specifically, any research

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<sup>1</sup> See Public Law 97-219, 22 July 1982.

<sup>2</sup> See Public Law 102-564, 28 October 1992.

project is likely to yield a mix of benefits, some of which have potential to lead to commercial success and others that cannot be put to immediate use in the marketplace. Policymakers and evaluators should be concerned that these non-market outcomes have decreased as the emphasis on commercial success has increased. Our results suggest that the answer to both of these questions is yes. The increased emphasis on commercial success has led to more commercial success, and the increased emphasis on commercial success has been associated with a decrease in basic research.

The paper follows in four sections. In [Section 2](#), we briefly describe the SBIR program and the data from the survey of NASA Langley SBIR contractors, conducted in the summer of 1995. In [Section 3](#), we present evidence of a change in emphasis in NASA's selection process for projects. In [Section 4](#), we present our analysis of the relationship between measures of commercialization and basic research. The conclusions are presented in [Section 5](#).

## 2. The SBIR program and the survey of NASA Langley SBIR contractors

### 2.1. A brief summary of the SBIR program<sup>3</sup>

The Small Business Innovation Development Act of 1982 was the result of a recommendation of the first White House Conference on small business in January of 1980. The delegates to this conference voted to recommend only one specific piece of legislation, the bill which authorized the creation of the SBIR program. There were several reasons this piece of legislation found support in the conference and eventually in the Congress. First, evidence suggested that small business had been having difficulty obtaining funds in general and had a declining share of federal R&D contracts. Second, several well-publicized studies indicated that small business was a very important source of job growth,<sup>4</sup> and the recessions of the early 1980s created a supportive climate for any proposal which could claim job creation potential.

<sup>3</sup> For a more detailed discussion of the SBIR program, see [Wallsten \(1996\)](#).

<sup>4</sup> See for example, [Birch \(1981\)](#).

Third, a successful SBIR pilot project established at the National Science Foundation demonstrated that the program was feasible.

The original 1982 Act created the SBIR program and listed the following objectives for the program:

- (1) to stimulate technological innovation;
- (2) to use small business to meet federal research and development needs;
- (3) to foster and encourage participation by minority and disadvantaged persons in technological innovation; and
- (4) to increase private sector commercialization of innovations derived from federal research and development (96 STAT. 217).

The 1992 Act that reauthorized the SBIR program listed the following objectives:

- (1) to expand and improve the small business innovation research program;
- (2) to emphasize the program's goal of increasing private sector commercialization of technology developed through federal research and development;
- (3) to increase small business participation in federal research and development; and
- (4) to improve the federal government's dissemination of information concerning the small business innovation research program, particularly with regard to program participation by women-owned small business concerns and by socially and economically disadvantaged small business concerns (106 STAT. 4250).

The goal of commercialization moved from being listed fourth in 1982 to second in 1992. This change was reflected in important ways in the language describing the selection process after 1992. Under the 1982 legislation ties between projects deemed to be of equal scientific and technical merit could be broken in favor of projects that were more likely to be commercial successes. Likelihood of commercialization was clearly a secondary concern. This was changed in 1992. The 1992 legislation listed commercialization on an equal footing with scientific and technical merit.

The SBIR program diverts a portion of the extramural research or R&D budgets of eleven federal

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