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The space economy: what are the socio-economic impacts? (3)

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ANALYSIS OF THE SOCIO-ECONOMIC IMPACTS OF SPACE ACTIVITIES

Abstract

This paper summarizes a study performed for NASA to characterize the socio-economic impacts from NASA activities as it pursues its vision and mission.

Historically, attempts at measuring the impacts of space activities, or RD activities more generally, have been hindered by the significant complexity and ambiguity in the data. These studies have not resulted in a reliable methodology for measuring these impacts quantitatively. A main goal of this study was to employ the same sound economic reasoning, but find common sense and non-controversial proxies for analysis. This yields results with non-theoretical figures, easily accessible to a lay audience, that accurately depict how NASA affects the economy as a whole.

NASA expenditures affect the economy through its support for critical industries, creation of new businesses and jobs, and attracting students to science and engineering. NASA invests in technologies and discoveries for the future, and in the process, it delivers social and economic impacts. Given that no single metric can capture the returns from these activities, this paper considers impact in six different categories.

These categories include:

- Investment in technology and U.S. industry: This category reflects returns from NASA's spending on competitively important areas: technology, manufacturing, businesses and universities.
- Spurring innovation and business growth: This category reflects returns from NASA's transfer of its unique knowledge, products, services, and processes.
- Advancing space-related industries: This category reflects returns from NASA's advancement of globally important, space-related industries.
- Promoting collaboration and supports U.S. foreign policy: This category reflects returns from NASA's collaboration with U.S. and international partners.
- Leveraging interest in science and technology: This category reflects returns from NASA's involvement of individuals and companies in volunteer science and technology research (challenges, citizen scientists).
- Inspiring people around the world: This category reflects returns from NASA's public visibility and shared data.

The results present a comprehensive view of how NASA spending and investments create value in the US economy. The results are useful for communicating the value of NASA, managing future programs for improving the impact of activities, and measuring space programs generally. The paper will present multiple quantitative measures of impact for each of the categories addressed, ranging from budgetary expenditures to social media usage to spinoffs.