



IAF Committee Briefs

Winter 2024

IAF SPACE ECONOMY COMMITTEE

Introduction

The IAF Space Economy Committee focuses on building a more complete and nuanced understanding of the economics of space activities. The term “space economy” refers to both in-space activities and their ground segments, as well as their connections and influence on terrestrial economic activity.

The Committee is founded on the principle that broad-based intellectual exchange and deliberation provides a deeper understanding of the impetuses and impacts of space activities, which when guided into the proliferation of shared norms and assumptions, will benefit all nations, both in their space activities as well as socioeconomic initiatives and activities writ large.

Summary

While the space sector – and government and private investment - has been around since the 1950s, a systematic study of space economics as a discipline is only now emerging. The IAF Space Economy Committee is a major focus of this emerging discipline.

There are no established definitions of this discipline, but one can say that it encompasses the full range of activities and the use of resources that create value and benefits to human beings while exploring, researching, understanding, managing, and utilizing space. Current trends impacting the space economy include growing (see graphic below):

- public interest in space activities *worldwide*;
- government and private sector investment in space activities *worldwide*;
- business and technical innovation that is lowering the cost of entry and activity in space;
- diversity of participants involved *worldwide* in the sector;
- growing space industry revenues;

- expectations of further revenue growth as space is further integrated into the society and economy leading to more value creation and more socio-economic benefits;
- awareness that safety, sustainability and security concerns need to be better baked into space development related activities.

Highlights

In the United States, NASA took on studies on space economy as a major priority. In 2023, it took on several studies examining the economics of debris mitigation and remediation. The first report from this initiative, published in March 2023, is the first ever study on the costs and benefits of debris remediation: https://www.nasa.gov/wp-content/uploads/2023/03/otps_-_cost_and_benefit_analysis_of_orbital_debris_remediation_-_final.pdf. Future reports on the topic are forthcoming.

Also, the US Bureau of Economic Analysis published new and revised statistics measuring the space economy. These space economy statistics provide estimates of the space economy’s contribution to U.S. current-dollar and chained-dollar (“real”) gross output and gross domestic product (GDP) by industry, as well as estimates of private employment and compensation.¹ The updated and revised statistics show that, in 2021, the U.S. space economy accounted for \$211.6 billion of gross output, \$129.9 billion (0.6 percent) of GDP, \$51.1 billion of private industry compensation, and 360,000 private industry jobs.

There is growing interest in the private sector to better understand the space economy. For example, in October 2023, The Economist hosted the first ever Space Economy Summit to connect the space industry with mainstream sectors showcasing latest developments and opportunities for growth in the space economy, and providing a platform to discuss how the industry can

develop sustainably. The in-person day in Los Angeles brought together 79 speakers and 429 attendees, participating across 36 sessions. The virtual day brought together 67 speakers and 851 attendees, participating across 25 sessions.

In 2023, multiple organizations including McKinsey and Company, Deloitte, Euroconsult, and others have published increasingly sophisticated statistics on the space economy.

Future Outlook

The potential for innovative space applications is immense, especially if established aerospace companies form partnerships with businesses that traditionally have not ventured into orbit. Pharmaceutical companies might establish a lab on a space station to study cell growth, for instance, or semiconductor companies might manufacture chips in extraterrestrial factories to determine whether any aspects of the space environment, such as the lack of gravity, improve the process. Such possibilities, which might have seemed like the stuff of science fiction a few years ago, could become an essential part of a business across multiple industries in the near future.

But how and when should companies take advantage of their greater access to space and pursue emerging use cases? And how can they decide what opportunities

are most promising when the technology is so nascent? Although much remains uncertain, the area is ripe for independent analysis. In the coming years, we expect to see growing interest in crystallizing the discipline of space economics. The IAF Space Economy Committee will be a major player in developing this field of study.

Committee activities

The committee will align with the intention of the IAC 2024 to ensure that we can use space to meet our needs without compromising the ability of future generations to meet their needs. The Space Economy committee will therefore focus this coming year on the economics of space sustainability.

One area that is especially amenable to economic analysis is congestion in Earth orbit. While our societies rely ever-more on space applications (e.g., telecommunications, resource management, meteorology, and climate monitoring), Earth's orbits are getting more congested with thousands of satellites, with growing risks linked to heavy space traffic and growing probability of collisions in orbit. NASA, ESA and other organizations are examining this risk quantitatively. The IAF Space Economy Committee will emphasize this topic in the E3 and E6 sessions of the IAC Technical Programme.