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Author: Mr. Edward Koellner
Masaryk University, United States

CAPITAL AND COSMOS: THE ROLE OF PRIVATE INVESTMENT IN SHAPING THE FUTURE OF SPACE EXPLORATION

Abstract

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The modern space economy is undergoing a profound transformation, with private enterprises not only complementing but increasingly leading the charge in space exploration and commercialization. While government agencies have historically been the primary drivers of space endeavors, the rapid advancement of technology, declining launch costs, and the recognition of space's commercial potential have enabled private actors to redefine the industry. This paper critically examines the interplay between financial innovation and sustainable space development, addressing the urgent need for a regulatory and investment framework that aligns profitability with long-term ethical stewardship.

This study traces the shift from a government-dominated paradigm to a diversified private sector-driven ecosystem, analyzing the financial mechanisms that fuel space entrepreneurship. From venture capital to sovereign wealth funds and decentralized finance models, this research explores how capital is being mobilized to support ventures such as space tourism, asteroid mining, and in-orbit servicing. The paper assesses the financial viability of these industries while scrutinizing their potential risks, including resource monopolization, geopolitical tensions, and the environmental footprint of commercial space activities.

A critical component of this research is the intersection between financial incentives and sustainability. This study advocates for investment strategies that integrate environmental, social, and governance (ESG) considerations into space projects, promoting a future where economic gains are balanced with long-term planetary and extraterrestrial stewardship. It further proposes actionable recommendations for investors, policymakers, and industry leaders to cultivate a responsible space economy that prioritizes ethical innovation over unchecked expansion.

By systematically addressing the financial, technological, and ethical challenges of private space activities, this paper contributes to the broader discourse on space governance and economic sustainability. The findings underscore the imperative of a collaborative, forward-thinking approach that ensures space remains a shared domain of opportunity, rather than an unregulated frontier of exploitation. As humanity ventures deeper into the cosmos, the success of space entrepreneurship will not solely be defined by financial returns but by its ability to foster a sustainable and equitable interplanetary economy.