

Across the Universe: Commercial Space Companies and International Cooperation



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Abstract

The space industry has grown exponentially since the end of the Cold War, and with it, the quantity and quality of commercial space companies. While past space enterprises were undertaken by national governments through joint and individual efforts, commercial space have permeated the industry. In this study, I research whether these commercial companies influence international cooperation in space, hypothesizing that increases in commercial space revenue will lead to fewer positive negotiations over space law. To research this, I analyzed changes in international legislation sentiment (hand coded to reflect sentiment towards international cooperation), dependent upon several variables to measure commercial revenue, including national space budgets, commercial infrastructure and support, commercial space products and services, launch attempts, and military expenditure. I included controls for international cooperation changes due to other causes via proxy variables, aggregate trade per capita and intergovernmental organization membership. The results found that commercial infrastructure and support industries often had a positive relationship with international cooperation, providing evidence against my hypothesis. This provides a foundational insight into the role of commercial space companies in international cooperation and the positive role that they may play.

Introduction

After the United States won the Space Race against the Soviet Union, space innovation rapidly became a distinctive trait in American culture. This innovation eventually led to an entire industry, with the United States becoming home to nearly 5,600 space-focused companies (out of almost 10,000 globally).¹ Big names include Boeing, United Launch Alliance, and Blue Origin. As of November 2024, SpaceX, a private space company owned by billionaire Elon Musk, has successfully launched a Falcon 9 rocket one-hundred and fifteen times,

with sixteen launches planned for the rest of the year. While the U.S. is a significant actor in the space industry, commercial space companies are growing internationally. These include groups such as Arianespace (France), Airbus (France) Thales Alenia Space (France/Italy), iSpace (Japan), and Magellan Aerospace (Canada).

With the introduction of these new players, however, comes a new problem. Although national governments frequently contract commercial companies for missions, these companies have the capability to conduct launches independently.

¹ John Koetsier, "Space Inc: 10,000 Companies, \$4T Value ... And 52% American," *Forbes*, June 28, 2021, <https://www.forbes.com/sites/johnkoetsier/2021/05/22/space-inc-10000-companies-4t-value--and-52-american/#:~:text=Elon%20Musk's%20SpaceX%20might%20get,the%20UK%2C%20which%20has%20615>.

Commercial launches have changed the landscape of the space industry, with only six percent of satellite launches being conducted by the civil government (ninety percent being commercial and the final four percent being military).² This is a drastic change from the beginning era of space, where most of the activity was being conducted by a national space agency.³

Despite the exponential increase in commercial companies, their role in diplomatic relations is a rarely studied topic, with existing research mainly noting the substantial lack of space law regulating commercial company activity. This is most likely due to the newness of the industry. Some propose legal frameworks based on similar laws (for example, maritime law). Very few explore how commercial companies have affected the role of space diplomacy in international relations. The more mainstream study of space and space law is in its relationship to the military and defense industries. Security studies

scholars primarily examine how satellites, missiles, and other launched objects play a role in military conflict.

My goal was to help fill the gap in research about space by investigating how commercial space companies affect international cooperation, hypothesizing that increases in commercial space revenue will lead to fewer positive negotiations over space law. I began by creating a foundation for my research using literature from law, economics, and philosophy to create a picture of the commercial space industry and the role of space in diplomacy. I then conducted analyses using supervised machine learning and regression analyses on datasets I constructed. I presented and analyzed the results, then discussed them within the context of current events. Finally, I considered the limitations of the tests.

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² Space Foundation Editorial Team, “The Space Report 2023 Q4 Shows Record Number of Launches for Third Year in a Row, Technological Firsts, and Heightened Focus on Policy.”

³ Barton, “Technology and the History of Commercial Spaceflight.”