Universe Finance or Interplanetary Finance

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ABSTRACT:

In science, the adoption of a new direction requires the formation of a complete infrastructure. The first condition for the successful implementation of any project is securing financial resources. Addressing the resulting issues necessitates the exploration of theoretical and practical financial problems, which are essential for the acquisition of resources from other planets and the research of extraterrestrial space on Earth. The author has formulated the term "Universe Finance" or "Interplanetary Finance" and begins to analyse the most general aspects of this problem in this article. Scientifically, both terms are used for the first time in economic literature. The nature, principles, functions, and role in the expansion of society and the acquisition of new planets have been explored, leading to significant results in this article.

Research has been conducted using the principles of data science, primarily through Python, based on the results and information databases available to date. As a result of the research, it has been identified that there is a strong correlation between the overall global indicators and the investments made by governments allocating more than 10 million to space. Additionally, a strong correlation has been identified between the level of economic development of these countries (per capita Gross Domestic Product, share of funds allocated to science and development in GDP, and innovation index) and these investments. Based on this database, a non-linear regression has been established.

org/licenses/by/4.0/). Keywords: Universefinance, Interplanetary, Spaceeconomy, Colonisation.

Introduction

The necessity of Universe Finance is not only for the Earth but also crucial for the entire Solar System. Undoubtedly, such research is currently more essential than ever before. The point is that the colonisation of space, extraction of resources from new planets, discovery of new habitats with potential for life, establishing connections with them, and many other problem-solving activities have become an objective reality. When we look beyond Mars, the Moon, and their surroundings, we see that the solution to these problems lies not in space mechanics or technology but primarily in the field of finance. With sufficient funds and extensive financial resources, the resolution of any problem on Earth is within the reach of humanity.The establishment of a strong financial foundation for interplanetary economics is not just an intriguing prospect but a necessary foundation for the continuous and equitable exploration and development of space.

Additionally, the rapid improvement of science and technology, along with the level of artificial intelligence reaching a point where it can replace humans in many cases, opens up broader opportunities for research on the transition from space to the era of artificial intelligence (2023).Now, Universe countries can send Universe spacecraft to any new planet (near Earth) and conduct extensive research there.

The necessity of exploring new territories and mobilising financial resources for this purpose is one of the factors that underscore the importance of researching Universefinance. Generally, It's no secret throughout history that there are millions of planets and stars in the universe, and the existence of life on them is undeniable. All of these objects are rich in their unique material resources. NASA and the China National Space Administration's discoveries of rich natural resources on Mars and the Moon demonstrate that each planet is as rich as or even richer than the Earth in resources, and most of these resources are of great importance to Earth's inhabitants. Additionally, the rapid increase in Earth's population, coupled with growing demands, creates conflicts over terrestrial resources. Expanding research to address this problem is necessary and, of course, requires significant capital, financial resources, and mobilisation.

The limited availability of resources on Earth, the possibility of richer resources on other planets, and the need to address a range of related problems can significantly contribute to solving several issues. The emergence of ecological problems such as climate change, environmental pollution, and the need for better environmental protection can be more effectively addressed by attracting investment to conduct research in Universe Finance. Continuing scientific research undoubtedly creates opportunities to address suitable problems on other planets. This should be accepted as a reality that does not require natural or empirical evidence.

Literature review and the level of research in the investigation

More specific research needs to be conducted in this direction. In some cases, concepts such as universe finance (Universe finance, 2022) and interplanetary finance are found in economic literature (China'sSpaceProgram,2023). For example, the term "Universe finance" has been used in the context of cryptocurrency. The term "interplanetary" is also used in some cases. However, our concept is forming a completely new field of science and is also entering the field of economics as a rather significant discipline.

Additionally, numerous studies have been conducted on Universe finance as an element incorporated into the field, and we have utilized the series of resources. However, individual segments still need to characterise the comprehensive scientific aspect fully. For instance, MatthewC. Weinzierl and Alissa Haddaji's (AliassaH,2019), Matthew Weinzierl

(Matthew W, 2018), Joseph Fargnoli's contribution to "Space Finance for 'New Space' and Small Satellites" as well as "The Space Economy: From Science to Market" (Joseph F., 2020) edited by Giorgio Petroni and Barbara Bigliardi, and Permyakov Roman (Permyakov R., 2023), Radhey Soundarya Gnanesh (Radhey S, 2021), have speculated on certain elements of space finance, which is a part of Universe finance.

Several scientists have focused on the study of planetary resources, which are increasingly seen as forming the material base of a future space economy. Among those leading this research are Songyu Wang (Songyu W, 2022), Nammi Choe (Nammi C, 2022), Michael Sureth, Matthias Kalkuhl, Ottmar Edenhofer, and Johan Rockström (Michael S. and others, 2023), M. L. Almeida and Rosa Doran (Almedia M. and others, 2020), Matthew Weinzierl and Brendan Rosseau (MatthewW.andothers,2023), and Samuel J.Payler (SamuelJ,2017). Additionally, Tanya Scalia (Tanya S, 2020) has contributed significantly to the analysis of these issues. These studies are crucial in understanding the economic potential tied to extraterrestrial material resources and hold a special place in shaping future financial and exploration processes.

Other studies have devoted special attention to investments in space activities. In Samuel J. And other authors, investments for the acquisition of resources of other planets (Samuel J,2016), in the works of Shai Bernstein and other co-authors, as well as attracting investors for the space economy (5, 2017), in the studies T.NRyzhikovaandotherco-authors, the problems of the space

Market and the problems of attracting investments for this purpose are discussed (T.Ryzhikovaand others, 2021).

The UK Center for Greening Finance and Investment (CGFI) has been preparing the State and Trends of Spatial Finance 2023 report for two years now, which can serve as a significant contribution to the research on space finance. (CGFI,2023).In addition, efforts have been made by several scholars and organisations to establish interplanetary financial banking relationships, with the aim of organising currency circulation and transfers. Despite its speculative nature, companies like PayPaland Monese have attempted to establish interplanetary banking relationships in the past decade. Interplanetary banking is not a product of scientific imagination but a visionary idea explored by some companies and organisations. For example, in 2013, PayPal initiated the PayPal Galactic venture, aiming to create the first interplanetary banking system on Earth for purchasing items in space (Paypal, 2018). Similarly, Monese, a European banking service, announced plans in 2018 to create the first interplanetary banking service facilitating transactions between Mars and Earth. Interplanetary banking presents a myriad of challenges and opportunities, such as the need for a universal currency, regulation of financial transactions across different jurisdictions, security and speed of data transmission, and the impact of the Universe environment on human behaviour and decision-making. Interplanetary banking is still in its early stages of research and development. Still, it could become a reality in the near future (https://internationalfinance.com/banking/monese- mission-build-first-ever-interplanetary-banking-service/s). Overall, the emergence of Universe Finance is currently in its developing stage. Extensive research and effort are required to obtain substantial results. In this preliminary investigation, we will focus on the conceptual issues of Universe Finance. We will address the formulation of the problem, the challenges encountered during research and implementation, the ways to address the sources of financing, and explore the impact of realising a global and universal project on human development.

The main purpose, objective, and imperatives of the research

Universe finance encompasses a broad network of economic relationships. Its primary aim is to analyse financial transactions occurring throughout the cosmos, examine economic

interactions and relationships between planets, and efficiently manage trade and resource flows. Specifically, the main imperatives of the study can be characterised as follows:

First and foremost, establishing the foundations for free activity in space is essential. The primary challenge for the implementation of any project should be the financial aspect. As permanent habitable zones and even civilisations emerge on other planets, the need for complex financial systems will surpass everything else. Early establishment of these frameworks will ensure the smooth functioning of planetary communities and economic systems. Consequently, trade and investment, aid, or credits will naturally emerge in this field. A comprehensive financial framework is crucial to facilitate trade and investment with various resources and potential markets spread across the planet. Without it, barter systems or cumbersome currency conversions will stifle economic activity and limit growth.

Regardless of human intelligence, managing the risks and uncertainties that arise during activities will take precedence, as these factors can persist at any moment. Naturally, space exploration carries high risks -from resource conflicts to environmental issues, natural disasters to artificial accidents, all events and processes are inevitable. A joint financial system established through space finance allows for mechanisms such as insurance and hedging to distribute risks, protecting individuals and institutions at risk.

Promotion of Collaboration and Innovation: Interplanetary finance can inspire joint institutions and interplanetary initiatives. Collaborative currencies and financial instruments can facilitate cooperation, promote knowledge exchange, and accelerate technological advancements in space exploration and resource utilisation. Accessing global financial resources through space finance can open up greater opportunities and play a significant role in addressing global challenges. Currently, only 0.1% of global financial assets are directed towards space exploration. This amount is less than the funds Russia spends annually on supporting the destruction of Ukrainian lives. This amount is less than the funds Russia spends on the war wages with Ukraine.

Promoting and organising the equitable distribution of resources is also included in the core imperatives of interplanetary finance. These resources are plentiful and still need to be explored. The evidence of the discovery of natural resources on the Moon and Mars by countries like the United States, the People's Republic of China, and others suggests that the resources of each planet beyond Earth are no less than those of Earth. The extraction and utilisation of interplanetary resources raise ethical concerns about fair distribution. A transparent and inclusive financial system can ensure that all interested parties benefit from planetary resources, prevent resource hoarding, and promote continuous development among celestial bodies.

These grand objective and extensive tasks are, of course, an objective reality in their execution. However, accomplishing such complex tasks will inevitably bring forth many challenges and difficulties along the way.

The greatest challenge in such issues will arise during the stages of funding and resource management. The demand is immense. However, the number of parties willing to participate in funding is limited. Out of nearly 200 countries, only a few invest in space research, and they do so with very limited financing. The United States, which invests the most, spent only $62 billion on space research in 2022.

Universe finance: articulating the nature of the problem

Two years ago, in my published Digital Finance book, I explained the articulation of the issue called Universe Finance. (Mammadov S, 2022) Human society is still studying and applying financial relationships around the Earth. In addition to this, science and technology are constantly advancing, and discoveries, innovations, and spaces are continuing to open

up. Starting from the Middle Ages, Europeans began to explore other spaces starting from their continents and discovered continents such as America, Australia, Antarctica, etc. Europeans, especially the English, established new states in these areas, such as the USA, Canada, Australia, New Zealand, Brazil, Argentina, and so on. Currently, the administration of humanity is mainly carried out by these states. The same tendencies continue in modern times. Enterprising nations, with the help of science, have begun to embrace other planets in the universe, and the struggle for the division of the universe is underway. The value of material resources discovered by NASA alone on other planets is several times greater than the existing resources of the entire Earth. Therefore, there arises a necessity for the re-examination of financial science. Universe finance refers to the division of interplanetary financial resources, the flow of interplanetary capital, the acquisition and financing of the material reserves of individual planets, and the organisation of interplanetary currency resources. We initiated the opening of Universe Finance for the first time. But its research is crucial. The transportation and marketisation of the resources of the Moon and Mars alone can completely reverse world markets and shake up the global markets on Earth. Therefore, it is necessary to prepare from now on and see mitigating measures for risks.

It should also be noted that during the research and execution of Interplanetary finance, along with the management of risks, many more complex and multifaceted problems will arise. Firstly, it is necessary to highlight the establishment of an administrative management system, the conflict of financial resources, and the problems of creating a coordination system in this field. Currently, the research of space and, in general, planets beyond Earth is mostly affected by the need for more effective coordination. There is no single international organization regulating all aspects of Universe finance, Universe research finances, Universe technology, etc., which negatively affects the provision of all needs and the rapid development of the business.

Nevertheless, there are some international agreements and principles regulating the use of space, such as the Outer Space Treaty of 1967, the Liability Convention of 1972, and the Registration Convention of 1975, adopted by states and other interested entities (https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html).

These treaties and principles serve to regulate space activities. The United Nations Office for Outer Space Affairs (UNOOSA) and the Committee on the Peaceful Uses of Outer Space (COPUOS) act as key entities in overseeing these regulations. There is no single international organization that regulates all aspects of space finance, finance of space research, and so on. However, there are some international treaties and principles that govern the use of outer space by states and other actors, such as the Outer Space Treaty of 1967, the Liability Convention of 1972, and the Registration Convention of 19751. These treaties and principles are overseen by the United Nations Office for Outer Space Affairs (UNOOSA), which also serves as the secretariat of the Committee on the Peaceful Uses of Outer Space (COPUOS).In addition, some international organisations deal with specific aspects of space finance, such as the European Union Agency for the Space Programme (EUSPA), which manages the EU space program and its components, including Galileo, Copernicus, and EGNOS (https://www.euspa.europa.eu/european-space/egnos/what-egnos). Space finance is a complex and evolving field that requires coordination and collaboration among various stakeholders, including governments, the private sector, civil society, and academic institutions. Legal, regulatory, and ethical issues related to space finance, as well as the potential benefits and challenges for the global economy and society, require further research and dialogue. We propose the creation of the Interplanetary Space Development Association (IPSDA), an international and interplanetary organisation dedicated to managing and coordinating

financial activities in the evolving economy of space.

In modern times, it is essential to establish the foundation for the creation of an international institution for the organisation and coordination of Universe Finance to address global challenges. We introduced Universe Finance to economic literature for the first time above and explained its nature, research necessity, and significant role. However, there are serious challenges in this endeavour, hence the need to create an institution to address these problems.

The Interplanetary Space Development Association (IPSDA) will be established with the participation of the majority of countries and major transnational corporations, functioning as an international and interplanetary organisation that benefits from cooperation. Physical persons will also be able to participate in the organisation, holding shares and accordingly receiving dividends based on their investment volume.

The IPSDA will issue its digital currency, which will be used to conduct transactions and operations.

Economic boundaries are expanding beyond Earth's borders due to resource extraction, space tourism, and the potential colonisation of extraterrestrial bodies. This necessitates a robust financial infrastructure to address the following challenges:

Lack of regulation and oversight - Current financial frameworks need to address legal and operational uncertainties, creating ambiguities for interplanetary operations.

- Currencydisparities-Variouscurrenciesamongcountriesandorganisations venturing into space will hinder trade and financial stability.

- Limited liquidity- market fragmentation restricts capital flow and poses obstacles to large-scale projects.

- Technological inequality-Access to financial tools and services varies, creating an uneven playing field.

IPSDA aims to address the following problems:

1. Creating a unified regulatory framework: Implementing standardised rules and procedures for interplanetary financial operations to ensure transparency and fair competition.

2. Issuing a universal digital currency: Establishing the "Interstellar Currency Unit" (ICU), a stable and universally accepted currency facilitated by blockchain technology for secure and cost- effective transactions.

3. Promoting the development of capital markets: Strengthening liquidity and access to finance through interplanetary banks, exchanges, and investment platforms.

4. Bridging technological gaps: Ensuring

5. the development of technical assistance and infrastructure to facilitate equal participation in the space economy.

Membership and Structure:

IPSDA will be an inclusive organisation open to membership:

1. National states: Participating governments will provide broad representation and shape policy by contributing resources.

2. International organisations: Existing financial institutions such as IMF, World Bank, and regional banks will provide expertise and leverage existing infrastructure.

3. Transnational corporations: Major space agencies and technology providers will drive innovation and economic activity.

4. Individuals: Open participation for investors, entrepreneurs, and individuals with specific interests in the Space economy.

Management and Revenue:

The IPSDA will be governed by a representative council of member categories, ensuring balanced decision-making. Membership rights, operational rights, and revenues in the ICU will be obtained through seigniorage, supporting operational expenses and development

initiatives.

Advantages:

1. Enhanced stability and growth: A unified financial system strengthens trust, transparency, and predictability, promoting economic stability and development.

2. Rapid progress: Cost-effective capital markets and liquidity enable the extraction of resources and infrastructure development and create new opportunities for scientific research.

3. Increased inclusivity: Greater participation in the space economy promotes equitable access to resources and opportunities.

4. Technological advancement: Collaboration and knowledge exchange drive innovations in financial technologies, benefiting all participants.

Challenges and next steps:

The establishment of IPSDA is a complex task. The main challenges include the following:

1. Attaining political consensus: Balancing national interests with global needs will require careful diplomacy and negotiations.

2. Removing technological barriers: Implementing a secure and expansive interplanetary financial infrastructure will necessitate the latest technological solutions.

3. Developing evolving legal frameworks: Aligning existing legislative frameworks and crafting new ones for interplanetary commerce will be an ongoing process.

Despite these challenges, the potential benefits of IPSDA are significant. Through the collective efforts of governments, international organisations, and private institutions, IPSDA can pave the way for a prosperous and equitable interplanetary economy.

The next steps require extensive research and practical action on a large scale:

1. Conducting in-depth technical-economic foundations and analysis of legal and technological outcomes.

2. Engaging in initial discussions and discussions with interested parties to establish consensus.

3. Developing a comprehensive organizational structure and implementation plan and drafting several regulatory conventions and multilateral agreements.

4. Establishing secure financial and resource gathering and utilisation rules for the operation of IPSDA.

The development of IPSDA in managing and coordinating finance in the emerging space economy is a bold yet necessary step. Promoting stability, inclusivity, and technological advancement has the potential to unlock unprecedented opportunities for humanity. Despite the challenges ahead, the potential rewards of a unified and regulated interplanetary financial system are immense. Now is the time to act.

This research serves as a starting point for discussion and only encompasses some of the potential complexities of creating IPSDA. Further research and engaging interested parties are necessary to refine the concept and develop a plan for implementation.

Additionally, another important problem in space finance is acquiring financial resources and resolving conflicts in financial resource allocation. Currently, expenditures on space research and exploration of extraterrestrial planets account for only 0.1% of the world's gross domestic product (GDP).The total volume of the space economy is estimated at 352 billion dollars. The financing of the space economy mainly relies on two sources: government resources and private funds. In 2022,

governments allocated a total of 101 billion dollars for this purpose, which represents 0.1% of the GDP (the figures for 2023 are expected to be significantly higher, but the analysis includes the figures for 2022 due to the unavailability of reports). Private institutions also utilise substantial funds. Private investment in space capital has seen a significant increase in recent years. Surpassing

42.4 billion dollars, indicating a 47% increase compared to previous years and reflecting the growing attractiveness of the space economy for private investors.

Among the investment directions of private institutions, examples include satellite internet (such as Starlink), launch services (for instance, SpaceX), space tourism (like Virgin Galactic), and space manufacturing (such as Made in Space), among others.

Several factors, including technological advancements, growing demand for space-based services, and government incentives, drive this increase.

The United States remains the dominant player in global private space investment, accounting for over 70% of the total. Leading companies such as SpaceX, Boeing, and Blue Origin have established themselves as key players in this sector. In Europe, companies like Airbus and Ariane Group are emerging as strong competitors with increasing investments. The European Space Agency also plays a significant role in stimulating private participation. China, with its ambitious state programs, stands out in this market by combining state support with private sector involvement. Companies like One Space and SpaceX have entered the space business in China. Other countries like Canada, Israel, and Japan also assert their significance by showcasing diverse global perspectives. Establishing a robust international regulatory framework is essential for the space economy to ensure safety and prevent conflicts. Increasing access to space technology and resources for developing economies and smaller companies is crucial for inclusive future development. Furthermore, the rapidly growing space industry demands a skilled workforce, making talent management essential for sustained growth.

Allocation of resources for space exploration is closely linked with addressing global challenges and can be explained by several factors. Exploration of space opens access to valuable reserves such as minerals, water, ice, and energy sources that are scarce on Earth, stimulating innovation, creating new industrial sectors, and potentially driving economic growth. Comparing today's space exploration to the discovery of new continents and territories on Earth in the 15th century, it can be noted that the nations that took the lead then also reaped the greatest rewards, establishing themselves as hegemonic powers in the global governance system despite the passage of centuries.

The current situation encompasses a broader and more global sphere. Research and developments in space exploration contribute to technological advancements beneficial to terrestrial life, such as in medicine, materials science, and communication technologies. Activities related to space are essentially scientific and technological processes, and scientific inquiry is the engine of society. It is through this factor that the discovery of new planets, new habitats, and potential new forms of life becomes possible. It is widely believed that there may be civilisations on many planets besides Earth in the infinite universe. Space exploration expands our knowledge about the cosmos, the origin of life, and the potential for life elsewhere. This can lead to significant scientific discoveries and a deeper understanding of our place in the universe.

Expanding space exploration can create new job opportunities in various fields, such as engineering, research, manufacturing, and logistics, within more advanced sectors like the space industry. This will contribute to the formation of long-term economic potential and provide additional markets and economic opportunities for future generations through the establishment of extraterrestrial colonies and the extraction of resources from space.

Space exploration can contribute to international collaboration and mutual assistance, as well as to the consolidation and unity of humanity in a shared space like Earth, creating bridges between nations and helping to address global issues such as climate change and ecological catastrophes. Additionally, research on other planets and celestial bodies can lead to insights into the sustainable management of resources and potential solutions to

environmental problems on Earth.

The experience of past periods shows that both states and private companies that invest in space exploration are among the most developed entities. Analysis of historical and recent data indicates that investments in space research are positively correlated with the majority of world states and companies. The data science analysis of gross-section information in Python confirmed this hypothesis (See Appendix, Table 1).

The direct correlation of space expenditures with positive indicators once again proves that allocating substantial financial resources to space exploration becomes an objective necessity. To confirm this, research has been conducted on our part, and a result has been obtained that confirms this conformity to the law. We had to make do with limited information regarding space expenditures and their utilization directions, as they are sometimes kept somewhat confidential, and also due to the limited allocation of funds by certain countries to this direction.

Database and Methodology

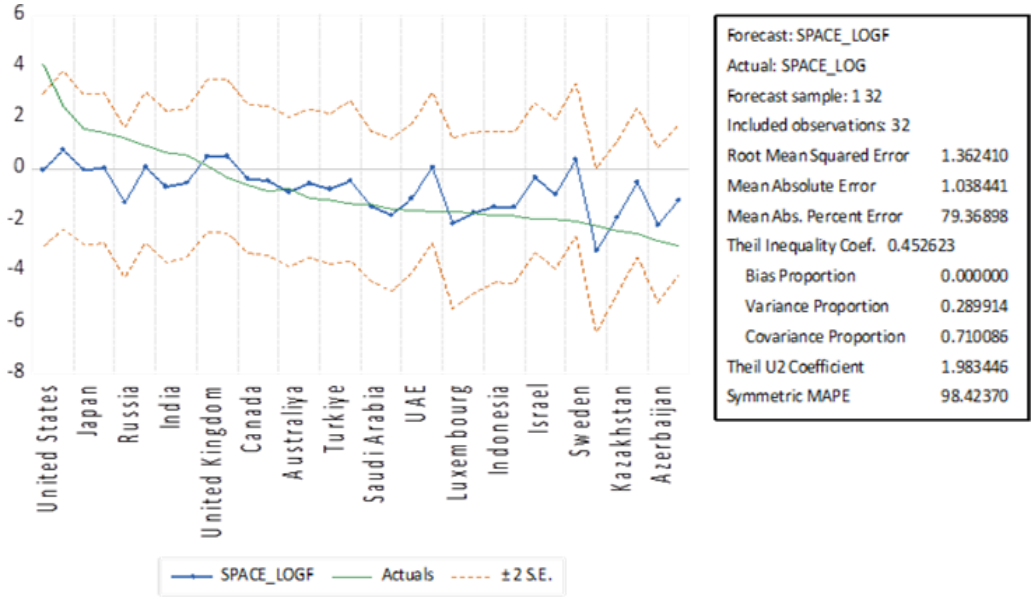
Access to official data in this field is somewhat limited, so we have relied more on information from organisations such as the World Bank, Euroconsult, Statista, and various countries' space agencies. The database includes the names of countries whose space expenditures exceed$10 million. There is a total of 32 such countries. Additionally, data from global indicators and summaries from the European Union have been utilised. Total space expenditures, as well as variables such as space expenditures per capita, the share of research and development expenditures in GDP, and the innovation index by country, were analysed for the year 2022 based on gross section data, and forecasts were made accordingly.

The methodology encompasses identifying gaps in knowledge or experience that the research aims to address, as well as clarifying research problems or objectives. Data has been processed, tests have been conducted, and relevant results have been obtained in several programs such as Python, Excel, and EViews, and the next results have been received.

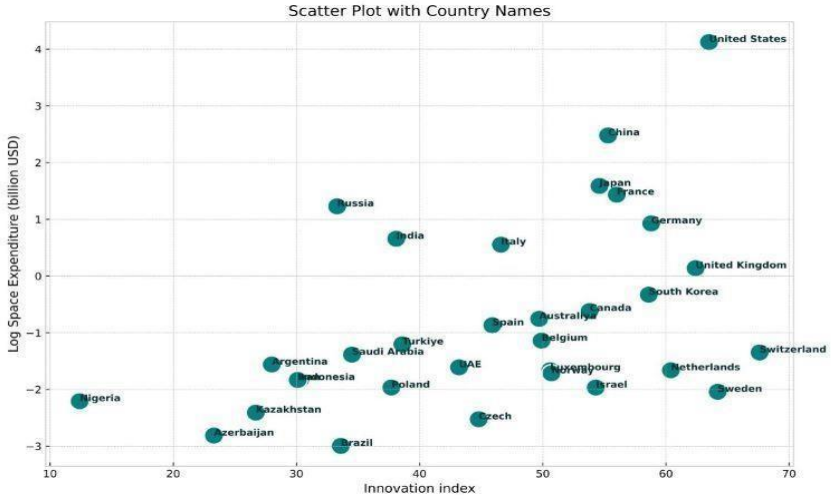
Tabel1.Correlation data

	Space_ex_b_usd	**GDPpc_USD**	**R&D_GDP_percent**	**Inn_ind**	**Gdp_log**	**Space_log**	**Inn_quadr**
Space_ex_b_usd	1	0.15	0.23	0.28	0.15	0.67	0.31
GDPpc_USD	0.15	1	0.44	0.68	0.88	0.09	0.67
R&D_GDP_percent	0.23	0.44	1	0.80	0.59	0.32	0.81
Inn_ind	0.28	0.68	0.80	1	0.79	0.46	0.99
Gdp_log	0.15	0.88	0.59	0.79	1	0.18	0.76
Space_log	0.67	0.09	0.32	0.46	0.18	1	0.45
Inn_quadr	0.31	0.67	0.81	0.99	0.76	0.45	1

Graph1.



Graph2.



Space_log_pred=-3.213+0.057*Inn_ind-0.00008* Inn_ind^2

The provided output presents the results of a non-linear regression analysis examining the impact of two innovation indices on government space expenditure. TheR-squared value of 0.312 indicates that approximately 31.2% of the variation in space investigation expenditure is explained by the innovation indices. The F-statistic of 6.797, with a corresponding probability of 0.00368, suggests that the regression model is statistically significant at the 1% level. The coefficients of the two innovation indices, denoted as 'x1' and 'x2', are -0.0998 and 0.0017, respectively. A negative coefficient for 'x1' indicates that, on average, a one-unit increase in the first innovation indexresultsinadecreaseof0.0998unitsinspaceinvestigationexpenditure. Conversely, a positive coefficient for 'x2' suggests that a one-unit increase in the second innovation index leads to an increase of 0.0017 units in space investigation expenditure. Both coefficients are statistically significant at the 1% level, with p-values less than 0.05. The standard errors of the coefficients reflect the variability of the coefficient estimates, while the t- values measure the significance of the coefficients. Both 'x1' and 'x2' have t- values greater than 2 in absolute value, indicating their statistical significance.

Additional diagnostic statistics, such as the Omnibus, Durbin-Watson, Jarque-Bera (JB),

skewness, and kurtosis, provide insights into the regression model's performance. These statistics test for normality, symmetry, autocorrelation, skewness, and peaked ness of the residuals. Overall, the results suggest that both innovation indices significantly impact space investigation expenditure. However, it's important to interpret these findings cautiously and consider potential limitations, especially given the non-linear nature of the regression model.

Further analysis may be necessary to fully understand the direction and magnitude of the relationships between the independent variables and the dependent variable.

Conclusion

These analyses demonstrate that a significant increase in space expenditures is required to solve numerous problems facing humanity. To organise this mobilisation, it is necessary to create infrastructure and establish mechanisms for attracting investments. The article elaborates on the rules for creating such infrastructure and the mechanism for attracting financial resources.

This research covers conceptual issues of Universe Finance, and its continuation requires extensive research. Key issues included in the agenda for the near future are attention to specific investmentareas,extractionandtransportationofresourcestotheearth,preparationofcost-benefit analysis, identification of technology for mobilising investment sources, calculation of economic- scientific benefits, initiation of textbook and personnel training, and establishment of connections with interested parties, emphasising the benefits of space research for various sectors, and the preparation of a methodology for obtaining support from the scientific community, private sector businesses, and the public.

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Appendix-Table1.GovernmentSpaceExpendituresandEconomicIndicators.

No.	Country	Space_ex_b_usd	GDPpc_USD	R&D_GDP_percent	Inn_ind
1	UnitedStates	61.97	69185.00	3.46	63.5
2	China	11.94	12378.00	2.43	55.3
3	Japan	4.9	42860.00	3.30	54.6
4	France	4.2	44995.00	2.22	56.0
5	Russia	3.42	12703.00	1.09	33.3
6	Germany	2.53	51860.00	3.14	58.8
7	India	1.93	2338.00	0.65	38.1
8	Italy	1.74	36833.00	1.45	46.6
9	United Kingdom	1.15	46344.00	2.91	62.4
10	SouthKorea	0.72	34549.00	4.93	58.6
11	Canada	0.54	54918.00	1.70	53.8
12	Spain	0.42	29674.00	1.43	45.9
13	Australiya	0.47	65099.00	1.83	49.7
14	Belgium	0.32	49926.00	3.43	49.9
15	Turkiye	0.30	10674.00	1.40	38.6

16	Switzerland	0.26	93259.00	3.36	67.6
17	SaudiArabia	0.25	30448.00	0.02	34.5
18	Argentina	0.21	13650.00	0.52	28.0
19	UAE	0.20	53708.00	1.50	43.2
20	Netherlands	0.19	57025.00	2.31	60.4
21	Luxembourg	0.19	125006.00	1.04	50.6
22	Norway	0.18	106177.00	1.94	50.7
23	Indonesia	0.16	4788.00	0.28	30.3
24	Iran	0.16	4669.00	0.79	30.1
25	Israel	0.14	54930.00	5.56	54.3
26	Poland	0.14	18688.00	1.44	37.7
27	Sweden	0.13	56373.00	3.42	64.2
28	Nigeria	0.11	2162.00	0.13	12.4
29	Kazakhstan	0.09	11492.00	0.13	26.7
30	Czech	0.08	27223.00	2.00	44.8
31	Azerbaijan	0.06	7762.00	0.21	23.3
32	Brazil	0.05	8917.00	1.15	33.6

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