

RETURN AND PROFITABILITY OF SPACE PROGRAMS. INFORMATION - THE MAIN PRODUCT OF FLIGHTS IN SPACE

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Abstract

The basic branch providing global information, as a product on the market, is astronautics and in particular aero and space flights. Nowadays economic categories like profitability, return, and self-financing are added to space information. The activity in the space information service market niche is an opportunity for realization of high economic efficiency and profitability.

The present report aims at examining the possibilities for return and profitability of space programs. Specialists in economics from different countries strive for defining the economic effect of implementing space technologies in the technical branches on earth. Still the priorities here belong to government and insufficient market organization and orientation is apparent. Attracting private investors and searching for new mechanisms of financing are the factors for increasing economic efficiency and return of capital invested in the mentioned sphere.

Return of utilized means is an economically justified goal, a motive for a bigger enlargement of efforts and directions for implementing the achievements of astronautics in the branches of economy on earth.

Market economy is an economic system of forms and methods of organization and management of public production, in which economic solutions have been taken by economically independent producers and consumers who meet on the market and through it coordinate their own actions, which are subjected to the demand and supply laws.

Market economy imposes essential alterations in the realization approach of economic activity, in the goals and tasks of each economic section.

The achievement of goals referred to economic stability and development of economic unit requires good comprehension of economic conditions and the economic law requirements, revealing their impact through the market and the market mechanisms.

Research target on the part of marketing is the type, special features and characteristics of a product offered on market. Diverse economic activities give various products. Under the modern conditions special interest is displayed in the unique product – the “information”.

The basic branch providing global information, as a product on the market, is astronautics and in particular aero and space flights. Nowadays economic categories like profitability, return and self-financing are added to space information.

Space equipment very distinctly manifests its unique, compared to other analogous resources, possibilities to spread information to any place on Earth. Some aspects of human activity like transport, navigation, intercommunications and communications, meteorology and others are impossible to exist without the information provided by satellites. It is hard to imagine any of the world large-scale industrial centers without access to space information channels. The activity in the space information service market niche is an opportunity for realization of high economic efficiency and profitability. Because of the specific and complex character of this activity there exists a slight unclearness regarding the price of such kind of product, control over the financial resources and the market orientation. Still the priorities here belong to government and insufficient market organization and orientation is apparent. Attracting private investors and searching for new mechanisms of financing are the factors for increasing economic efficiency and return of capital invested in the mentioned sphere. Specialists in economics from different countries strive for defining the economic effect of implementing space technologies in the technical branches on the earth.

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The actual tendencies, settled in the modern political way of thinking in the international relations, are the tendencies with high level of cooperation and integration. The countries mutual work originates from the common interest, direct and indirect benefits of the national and international programs, ecological and social risk.

The contemporary space systems and their practical application have international and to some extent global character. As a consequence of this the space program expenses could turn out to be extremely high compared to the benefits for a separate country and fully economically justified for a group of countries. In this sense it is necessary to find out an estimation approach for the economic efficiency of space activity. Particular attention must be paid to the questions of international investigation cooperation and especially the question of space exploration.

The nature of space activities, the scale of their public significance and the specific nature of economic profitability lead to crucial steps

undertaken for reorientation of the national programs in order to gain efficiency growth by participating in international space programs.

The statistical data, characterizing the development of the world astronautics during the last decades, enable us to pay attention to economic indicators closely referred to profitability.

The document analysis made by international organizations and the work of experts from different countries over the economic problems of astronautics give a possibility to form three groups of criteria with stimulating effect on aeronautics concerning the choice of the most effective ways and resources for a definite country regarding the transfer of space achievements in the scope of economics.

The first group of criteria has approximately general character. The funds provided for space programs are compared with the total economic utility, including financial, political, military, prestigious logical benefits, which are evaluated in actual financial values. For example, according to the reports of the Middle West Institute in USA, the positive effect on the american economy of the project "Apolon" is 1:7, i.e. 25 billion dollars investments made and total benefits of 175 billion dollars. On this principle is based the assessment of the economic activity of the investments in aeronautics which principle has been presented by the american congressman D. Fuke in 1982 and it says that every dollar invested in a space program returns new 14 dollars.

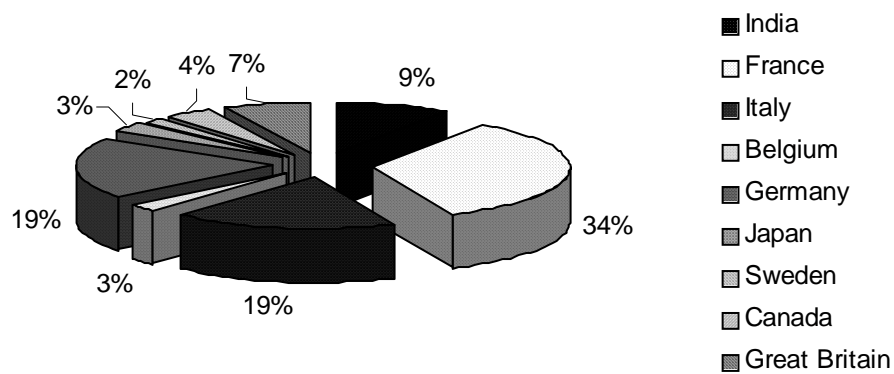
The second group includes concrete and universal criteria according to the possibilities of their usage for project assessment in separate countries and international organizations. These criteria are distributed in space systems to resolve practical tasks (connected with meteorology, navigation, remote study of natural resources, environment protection, etc.) and are defined by the principal of comparing the expenses for development, production and exploitation of space systems to the relevant expenses of "not space systems", performing similar functions. This group includes assessment of the benefits for economics, households and the population from definite regions as a result of the space systems exploitation.

The third group of criteria for the economic efficiency and profitability of aeronautics is not directly connected with the space systems development and exploitation. But it includes very important heterogeneous indicators, stimulating the effect of space activities over scientific and technical progress. These criteria describe the scale and profitability of the choice and application of space programs innovations in other economic branches and in the field of services.

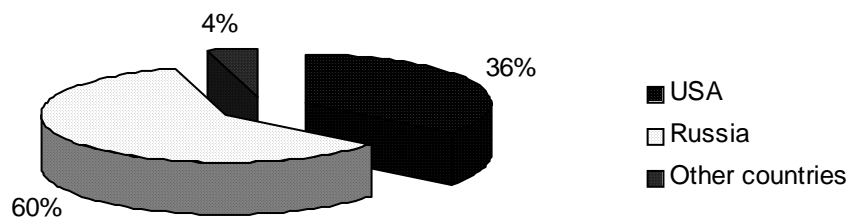
The statistics shows that the expenses for space programs are considerable in different countries. The reinstatement of the resources used is economically justified task and a motive for a larger extension of the efforts and directions for utilization of aeronautics achievements in economical branches on the Earth.

Fig.1, 2 Expenses for space researches

Expenses for space researches



Expenses for space researches



Space forecast

The different space researches and the real utilization of the Universe in all countries are accomplished in accordance with short- and long-term programs. These programs cover planned activities in details for the near future, forecasts of results expected and necessary resources. Space prognoses for the coming years worldwide are as follows:

2005-2020 – international system of new generation for intercommunications and telecommunications;

- foresight of elemental calamities;

2010-2015 – semi-industrial production of unique materials in Space;

2010-2025 г. – release of dangerous industrial wastes in space;

2015-2035 – pilot operated stations on the Moon, as well as a possible stage for preparation of pilot operated expedition to Mars;

2015-2040 – pilot operated expeditions to Mars and other planets;

2015-2040– release of radioactive wastes from nuclear power engineering at special places in the Space (initially with volume of 800 tones per year and later in complete volume of over 1200 tones per year);

2005-2025 – utilization of 200 kilowatt and 1 megawatt power in space solar energetics

2020-2050 г. – system for global military security.

National Aeronautics and Space Administration

The National Aeronautics and Space Administration (NASA) conducts research in four areas: 1) Space Science inquires into the origins, evolution, and nature of life and our universe; 2) Earth Science seeks to understand the forces affecting our planet's environment; 3) Biological and Physical Research uses the space environment to gain insight into how the laws of nature work; and 4) Aeronautics Technology develops new technologies to improve the nation's air transportation system.

NASA is a science and technology agency pursuing research in fields as diverse as astronomy and astrophysics, global climate change, human physiology, and aeronautical engineering. Because the agency conducts so many types of research, it must prioritize its resources to accomplish its most important research goals.

NASA's New Mission

- To understand and protect our home planet
- To explore the universe and search for life
- To inspire the next generation of explorers

Table 1 National Aeronautics and Space Administration

(In millions of dollars)

Spending	2002 Actual	Estimate	
		2003	2004
Discretionary Budget Authority:			
Science, Aeronautics and Exploration (non-add)	(6,542)	(6,975)	(7,661)
Space Science	2,902	3,414	4,007
Earth Science	1,592	1,628	1,552
Biological and Physical Research	824	842	973
Aeronautics	997	947	959
Education Programs	227	144	170
Space Flight Capabilities (non-add)	(8,326)	(8,000)	(7,782)
Space Flight	6,773	6,131	6,110
Crosscutting Technology	1,553	1,869	1,672
Inspector General	24	25	26
Total, Discretionary budget authority	14,892	15,000	15,469

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