FINANCE INDIA
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Vol. XXXIV No. 1, March 2020
Pages—59—74

Space Activities : Economic and Legal Aspects

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Abstract

Space activities are an important tool in supporting innovation, developing the global and European economy, and improving the efficiency of state institutions. Applications based on satellite technologies influence economic and social life such as transport, surveying, agriculture, scientific research, and tourism. Satellite transmissions enable telephone connections, financial transactions and power grids but also help in locating and tracking of people and goods (including oil and gas pipelines). Work is in progress on excavation of minerals on the moon and other celestial bodies. Active operations in space include state action international organisations action and cooperate contributions. The European Union and the European Space Agency hold a special position in Europe in this area. Space activities require an effective legal frameworkthat would ensure that today's economy is protected against the threats arising from increasing competition amongst states in this field.

I. Economic aspects

THE SPACE-SERVICE sector is one of the fastest growing and most profitable sectors of the global economy. In 2009 its global revenues amounted to US $ 261.61 billion despite the financial crisis (SF, April 2010). The slow but steady growth in this sector amounted to 1.6% then compared to 2008. As recorded in the *Space Report 2019*, the global space industry grew by more than 8.1% in 2018, reaching a total of US $ 414.75 billion (SF, July 2019). Traditional actors in the space business have continued to grow and are being joined by innovative new space companies[1].

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Submitted March 2019 ; *Accepted* February 2020

Space activities will become a field of increasing interest over the years ahead. It is most likely that we will continue to observe the increasing importance of commercial activities (encompassing increased business innovation and competition) and the increasing reliance of state programmes in procuring services from commercial services. It should be noted that among three main space-based service sectors – telecommunications, navigation and satellite observation – the most dynamic growth is observed in the market of satellite navigation applications, within which field it will be very important to guarantee the protection of rights of both the suppliers and users of the services provided.

It should be noted that although space activities, including satellite technologies, has created for states and their populations unprecedented opportunities, it has also created material threats, challenges and problems of a legal nature. It is not an exaggeration to conclude that the reality has moved ahead of international law, seeking in vain for international legal solutions for emerging problems. It is worth pondering whether the comprehensive regulation of space activities, including particularly satellite technology, is possible today, or is it more probable and easier to prepare separate regulations regarding the use of these technologies in individual fields, such as air transport, maritime navigation and so forth.

It seems that currently operating international organisations such as, for example, the ICAO and IMO are capable of formulating suggestions in narrow areas regarding the enactment of applicable legal regulations. However, both the UN and Legal Subcommittee of COPUOS will remain the most relevant fora, despite the many critical comments directed at them, to carry out the codification work regarding the many aspects of space activity.

The authors would like to thank the National Science Center, Poland for providing research funding under the scientific project No 2015/17/B/HS5/000753 ["Legal and Political Aspects of the use of European Satellite Navigation Systems Galilio and EGNOS"]. The conclusion presented in the research paper on "Space Activities : Economic and Legal Aspects" are a result of this research project.

Notes

1. In 2017, there was a 100% increase in the total number of spacecrafts deployed and a 200% increase in the number of commercial spacecrafts deployed. This trend continued into 2018 with a record-setting 114 orbital launch attempts (Space Foundation, May 2019).
2. WAAS - providing greater accuracy, reliability and availability of GPS, especially in air transport. This is the basic navigation system used in the US airspace. Its use has already resulted in a significant reduction of the need for terrestrial auxiliary navigation systems at US airports (US Federal Aviation Administration, 2019).
3. SDCM - aiming to ensure greater accuracy and availability of GLONASS and GPS in Russia. It is expected to extend its coverage to Australia, Cuba, and South America (possibly Brazil and Venezuela). It should be comparable to US WAAS and European EGNOS. The corrections made will increase the positioning accuracy to 1–1.5 m. Russia has also announced plans to expand the Space-Based Augmentation System (SBAS) for the GLONASS system and to deploy the first ground-based monitoring stations outside of the state (European Space Agency, 2018).
4. IRNSS - is an Indian project intended to remain under civilian control, which covers India and an area of 1,000–2,000 km around it. At present the system consists of a constellation of seven satellites, with two additional satellites on the ground as stand-by. It was expected to be operational by the end 2018. IRNSS will provide two types of services, Standard Positioning Service (SPS) for all users, and Restricted Service

(RS), which is an encrypted service for authorized users only. IRNSS is expected to provide a position accuracy better than 20 m in the primary service area (Government of India, Department of Space, Indian Space Research Organisation, 2019).

5. According to the Start-Up Space report, by Bryce Space and Technology, the number of identified *NewSpace* investors was 555 in 2018 (Bryce Space and Technology, 2018).
6. It is estimated that asteroid 2011 UW158, which in 2015 passed closely the Earth, has platinum resources worth US$ 5 billion. The value of mineral resources on another asteroid (16) Psyche, which is the target of NASA mission in 2023, could amount to approx. US$ 10 trillion. Asteroid (433) Eros containing most likely approx. 20 MM tonnes of aluminium and gold in quantity higher than mined on Earth to date, could be worth even US$ 13 billion (Rojewska, 2017).
7. The leading role is played by the Committee on the Peaceful Uses of Outer Space (COPUOS) and its two subsidiary bodies: the Scientific and Technical Subcommittee and the Legal Subcommittee, both established in 1961 and supported by the UN Office for Outer Space (UNOOSA), which is a part of the UN Secretariat, located at the UN Office in Vienna. Recently, it also serves as the secretariat of the UN International Committee for Global Navigation Satellite Systems (ICG), which was established in 2005.
8. Manfred Lachs states that "it seems clear that the application of the United Nations Charter to space means the actual application of contemporary international law in the form in which the Charter defines it. States can therefore rely on it and demand the implementation of its provisions" (Lachs, 1966).
9. Resolution 1721 (XVI) of 20 December 1961; Resolution 1802(XVII) of 14 December 1962; Resolution 1962 (XVIII) including Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space. They were followed by UN GA Resolutions relating to different kinds of space activities, such as: Resolution 37/92 of 1982 on Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting, Resolution 41/65 of 1986 on the Principles relating to remote sensing of the Earth from outer space or Resolution 47/68 of 1992 on Principles Relevant to the Use of Nuclear Power Sources in Outer Space.
10. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies of 1967; Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space of 1968; Convention on International Liability for Damage Caused by Space Objects of 1972; Convention on Registration of Objects Launched into Outer Space of 1975; Agreement Governing the Activities of States on the Moon and Other Celestial Bodies of 1979.
11. Many issues which should be a subject of thorough analysis not just from the perspective of the EU law, but from the perspective of international and national law as well, have been already highlighted by the European Commission in Green Paper on Satellite Navigation Applications of 2006 (European Commission, 2006).
12. Initially the draft American act regarding the economic use of space and celestial bodies was prepared by Representatives Bill Posey and Derek Kilmer. It was entitled the *Asteroid Act* and was strongly supported by US enterprises and above all by Planetary Resources. The Act was adopted in May 2015 and is a breakthrough regulation of the space law.
13. Mahulena Hofmann's statement at *IISL/ECSL Symposium on Legal Models for Exploration, Exploitation and Utilization of Space Resources 50 years after the Adoption of the Outer Space Treaty*, 27 March 2017, Vienna, Austria. Read at www.unoosa.org/oosa/en/ourwork/copuos/lsc/2017/symposium.html.
14. The Council's conclusions regarding "The space strategy for Europe", adopted by the Council forCompetitiveness at a meeting held on 30 May 2017 (Doc. No. 9817/17).
15. "Make in India", www.makeinindia.com/home..

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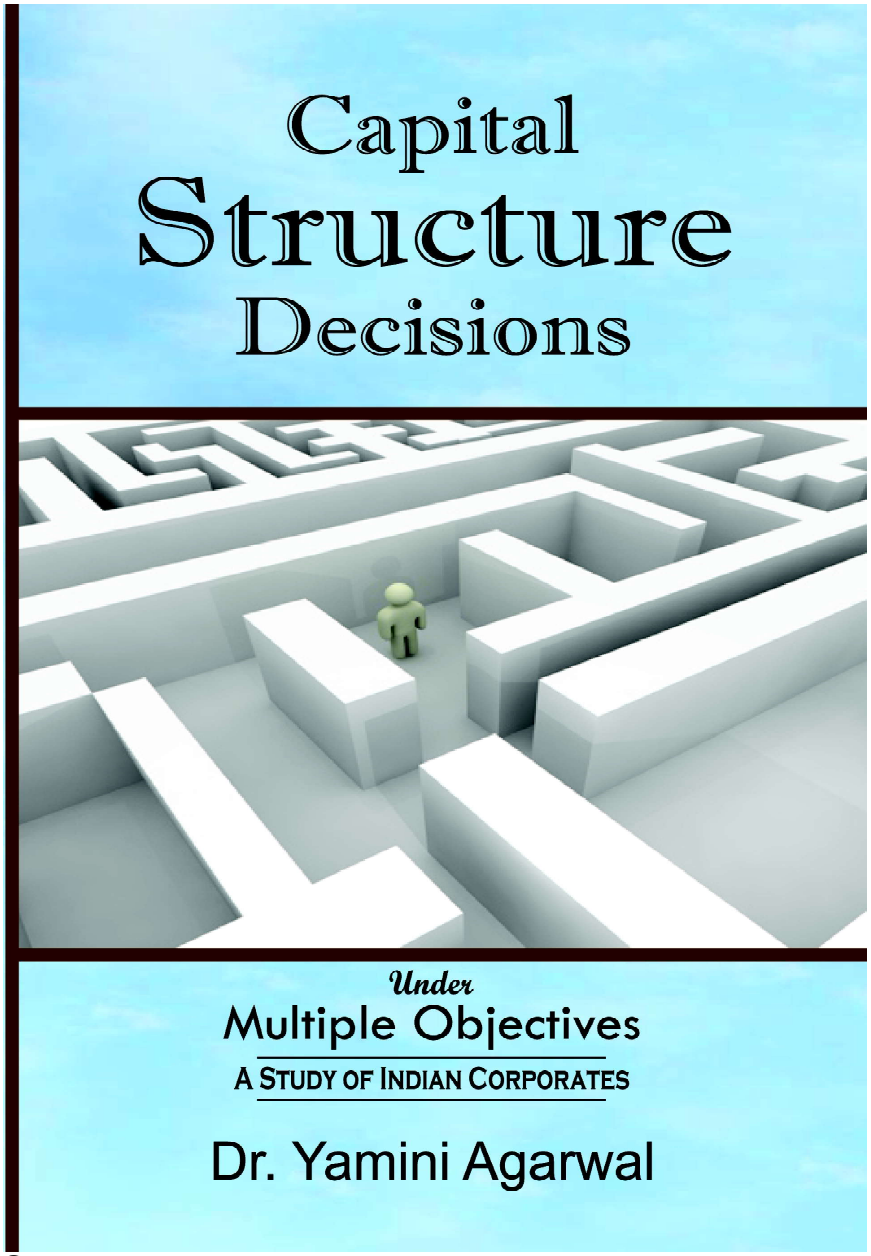

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