The Governance and Organisational Challenges of Evaluating Spaceports in the United Kingdom

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Project description:

The United Kingdom Space Agency (UKSA) announced its proposal to build two Spaceports, one in Cornwall and one in Scotland (from three possible sites). Spaceports function to launch small satellites into space, which is deemed to be a fast growing market, creating a range of socio-economic benefits for the UK and the sub-regions for the two chosen sites.

UKSA set out the following strategic objectives:

1. Make the UK the first country in Europe where commercial operators can launch small satellites into orbit and offer sub-orbital flights.
2. Launch small satellites into low Earth orbit, generating opportunities for the satellite sector and defence.
3. Enable specialist vehicles to enter sub-orbital flight, generating opportunities for science and tourism.
4. Support UK businesses to develop the skills and capabilities to participate in the end to end value chain.

The strategic challenges for this programme include:

- Building Spaceports, launch systems, services and promoting customer interest;
- Developing new technologies, products, services and global links;
- Promoting the UK to a global audience, industry leadership, launch operations and UK suppliers and service providers.

The direct governance challenges identified by UKSA include:

- Launches are not currently regulated in the UK;
- There is a need to ensure safety of new launch services;
- Lack of regulation is a barrier to future growth.

These challenges are nested, however, with a set of deeper and wider ones concerning the role of space exploration in economy and society; governance and law. This proposal builds upon the multi-disciplinary and cross-faculty HEIF funded project from the OU in Scotland on evaluating the socio-economic benefits of the Spaceport Scotland programme. It also adds to the capabilities and capacities created by the ESA-funded BEERS and the STEM-FBL-FASS Research England E3 collaborations, the latter representing new

directions in space governance and law on which all the UK Spaceports will be built. This also builds on the engagement of two OU Strategic Research Areas (SRAs).

For the UK government, space exploration is an important contribution to its industrial strategy in order to address the UK's ongoing productivity problem of which the governance of process innovation is key. One part of this is minimising the transaction costs (administrative costs) in governing and managing large space projects is a key consideration for evaluating socio-economic benefits.

The BEERS project developed four socio-economic benefits categories of:

- Science:
- Economic growth and competitiveness:
- New means of addressing global challenges/sustainable development goals;
- Inspiration.

The evaluation framework for classifying and analysing these four categories is the capitals approach (Figure 1), which was first successfully demonstrated in the multi-disciplinary and cross-OU EGOV4U project funded by the European Commission in 2010 and then successfully demonstrated by the BEERS project. The capitals are a form of community resources that are created in investment projects and whose composition and size may change as a result of the development of these projects. The combination of different capitals provide the means for analysing and evaluating socio-economic benefit categories. For example, environmental, organisational and social capital relate to achieving the UN Sustainable Development Goals (SGDs), which is in turn a key strategic objective of space agencies and their stakeholders.

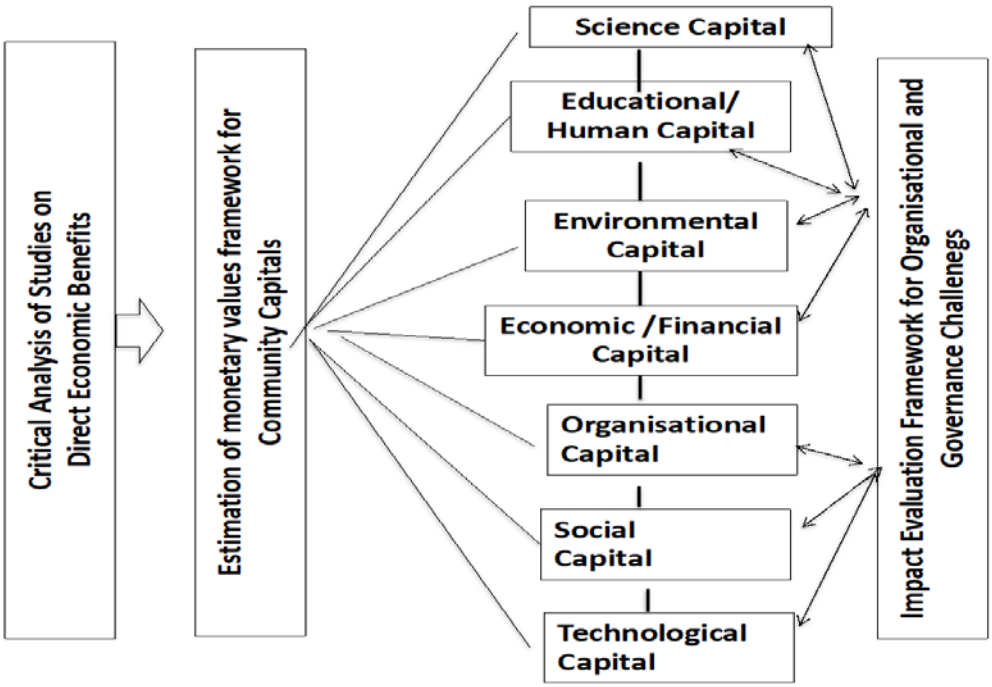

Figure 1: Methodological components of the capitals approach

Methodology:

The capitals approach has consistent recognition in being able to identify socio-economic benefits that are not easily measured in monetary terms. In the case of space missions, it is able to facilitate a more fine-grained analysis of their indirect and more downstream benefits. By being part of an Multi Criteria Analysis (MCA) framework, the capitals approach can build upon the results of conventional studies thereby strengthening their analysis.

The student will review the use of the capitals approach in evaluation studies in both space and non-space contexts and, on this basis, choose the appropriate capitals to evaluate categories of socio-economic benefits with respect to the UK Spaceports programme. They will develop and define the capitals, including identifying key indicators of impact and then use these to underpin the analysis and evaluation of benefits and challenges (for example, organisational and governance challenges) of the UK Spaceport programme.

This approach rest on an *ex ante* and estimated *ex post* assessment of the inputs and outputs of the UK Spaceports programme.

Training and skills:

The student will receive training in research methodologies methods in the social sciences and in relevant statistical packages. They will to work alongside economists, space scientists and governance experts to facilitate a holistic skills development programme.

Possible timeline:

Year 1 – Perform a literature review and design the evaluation framework using capital approach.

Year 2 – Identify indicators/evidence of different capitals as appropriate to UK Spaceport programme. Present initial findings to a national/ international conference

Year 3 – Evaluate results and present results to stakeholders as part of sensitivity analysis of research Submit international conference/paper and or journal article. Write up and submit thesis.

Further reading:

Bourdieu, P (1985) *Distinction: A Critique of Taste,* Oxford: Oxford University Press.

European Commission (2016) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions *Space strategy for Europe* COM(2016) 705 final, Brussels; European Commission.

London Economics (2016) *Development of the Scottish Space Industry* London Economics, London

London Economics (2019) *Size & Health of the UK Space Industry 2018. A Report to the UK Space Agency*, London Economics, London

Nussbaum, M. (2011). *Creating Capabilities: The Human Development Approach*. Cambridge, MA: Harvard University Press

OECD (2012) *OECD Handbook on Measuring of the Space Economy*, Paris; Organisation for Economic Co-operation and Development, p.9.

Salter, A.J. and Martin, B.R. (2001) The economic benefits of public funded research: a critical review, *Research Policy*, vol. 30, 509-532.

Thomas, M.P. and. McElroy, M.W. (2016) *The MultiCapital Scorecard: Rethinking Organizational Performance*, Vermont: Chelsea Green Publishing.

Upper Quartile (2016) *UK Vertical Launch: Feasibility Study*, prepared for Highlands and Islands Enterprise, Glasgow: Upper Quartile.

Further details:

Students should have a strong background in some combination of in business and management, economics,, law and related social sciences with a keen interest in science and technology underpinning space-exploration. The successful candidate will be supervised by members of the Benefits of the ESA Exploration Roadmap in Socioeconomics (BEERS) Research Team whose research project is funded by the European Space Agency. They will be associated with the Citizenship and Governance Strategic Research (SRA) in the Faculties of Business and Law and Art and Social Sciences at the Open University and other

associated networks, including AstrobiologyOU in which they will interface with governance and law experts, and members of the Space SRA. The student will be joining a vibrant community of PhD students drawn from multi-disciplinary backgrounds.

Please contact Leslie Budd (leslie.budd@open.ac.uk) for further information.

Applications must include:

- a cover letter outlining why the project is of interest and how your skills are well suited to the project
- an academic CV containing contact details of three academic references
- and an Open University application form, downloadable from: http://www.open.ac.uk/students/research/sites/www.open.ac.uk.students.research/files/documents/Application%20form.docx