Fly Me to the EU's New Moon?

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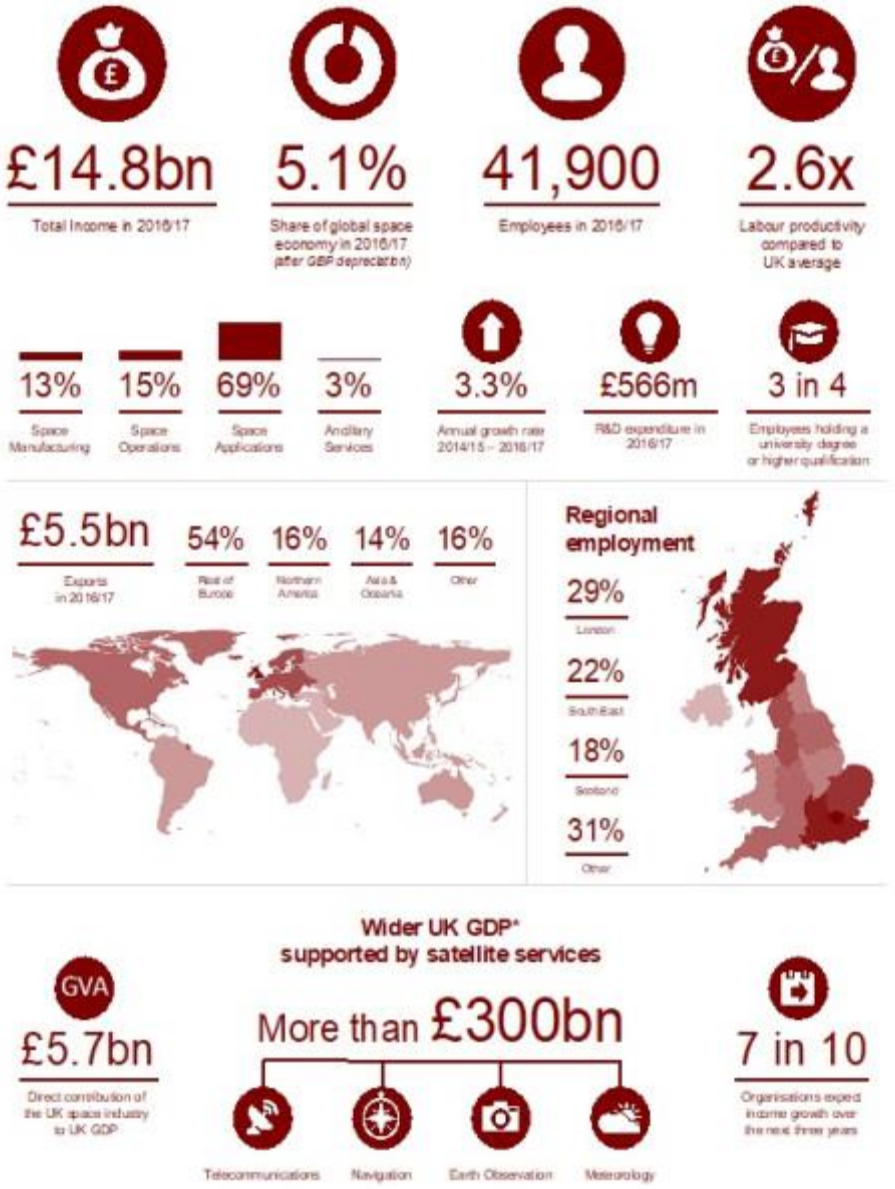
"Fly me to the Moon and let me play among the stars" is a famous song popularised by the American singer Frank Sinatra. The United Kingdom's (UK) exit from the European Union (EU) means no longing flying closely with the other 27 moons that are Member States and has profound consequences beyond the immediate focus on a new trade deal. One industry that tends to be overlooked in the debates about the impact of Brexit and beyond is space.

The UK Space Industry

The contribution of the UK space industry is shown in this infographic:



It consists of a large number of global companies including Airbus, Leonardo and Thales Alenia among others whose numerous sites are spread across the UK. Apart from its direct link to aerospace there are a significant number of complementary industries and services that in 208 generated £1.3bn of value-added and 22,000 in employment.

Input-Output (I-O) analysis undertaken by Open University generated an income multiplier of 2.3. Work for the UK Space Agency generated a multiplier of 4.2 for innovation. That is, for every £1 spent by the space industry £2.30 of national income was created and £4.20 of increased spending on innovation, elsewhere in the economy.

This information does not include grants received by universities and related organisations to undertake research for space agencies and industry. Nor does it include the impact of education programmes that promote Science, Technology, Engineering (STEM) subjects.

Between 2015 and 2016, Tim Peake was the UK's astronaut onboard the International Space Station (ISS) that resulted in the UK Space Agency funded programme, *Principia* to inspire schoolchildren. Costing £3m over 3 years the programme undertook 34 projects that engaged with 2 million children and 33 million people with Peake's ISS mission.

With respect to this key but underreported industrial sector, what the outcome of the post-transition negotiations will be is still uncertain. Given recent announcements, for example the UK's participation in the Galileo navigation system, the situation does not look promising.

The Challenge of Galileo

During the negotiations over the Withdrawal Agreement (WA) between the May administration and the EU, it was announced that the UK would no longer participate in Galileo navigation system project. Developed by the European Commission (EC) and the European Space Agency (ESA), this €10bn project rivals the US Global Positioning System (GPS) but is inter-operable with it along the Russian Glonass system. Galileo will be fully operational by the end of this year.

The launching satellites payloads are built by Surrey Satellites, based in Guildford, whilst the ground support services are manged by Airbus in Portsmouth. Galileo is centred on a European-based supply chain so that UK based suppliers will no longer part of once the UK is a Third Country. The proposed government £92m funding injection proposed for an alternative UK system is small beer given the UK's £1.2bn contribution to Galileo.

The situation is made more complex by the UK's continuing membership of the European Space Agency (ESA). ESA is a 22-member state organisation that includes Canada and Albania as associates, but is not an EU agency. It does work increasingly with

the EC, closely aligning its *Space 4.0l* industrial policy with the EU's *Space 4.0* industrial strategy.

What is to be done?

ESA's collaborative partnerships with other international space agencies have built important global value-chains (GVCs) that have created large and widespread socio-economic benefits for the UK and other nations.

In the event of closer integration between ESA and the EC, the key challenge is whether UK-based companies from the rest of the EU will relocate the main components of their GVCs, following the example of automotive and aeronautics. The Galileo case is not a promising one as the UK will no longer participate in its GVCs and the proposed and poorly funded UK-based system is unlikely to boost the ambitions of Global Britain.

As the UK departs from the EU will its own moon wax or wane as its space industry no longer closely orbits this large universe?