Restrictions on Worldwide Space Technology Exports:
Effects on the European Space Industry

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ABSTRACT

The European Space Agency (ESA) has established a Technology Observatory to actively monitor and benchmark the evolution of space technologies worldwide in support of its space technology strategy. One of the issues that has been recently analysed is the effect of restrictions placed by national governments worldwide on the export of space technologies. In this paper, the authors discuss the main findings of this survey. Import and export restrictions and indicative space related export and import flows are mapped and analysed. In addition, space-related cooperation agreements are reviewed. Positive and negative impacts of export and impact restrictions are identified and analysed. Major space faring countries have national legislations dealing with ‘sensitive’ technologies; however, the scope and type of legislations vary widely. Diverging trends have been identified for major exporting space industries. The European space sector has experienced a large increase while its American counterpart witnessed a net decrease; countries like China, India, Japan, and Russia are more active in export activities. U.S. export regulations have had the strongest impact on shaping the world export market. The widening of the export market strengthens the impact of export restrictions in Europe.

Keywords: European Space Industry, Export Market, Export Restrictions, Space Technologies, Space Technology Strategy

1. OBJECTIVE(S) OF THE SURVEY

The objective of the activity has been to survey import and export restrictions worldwide that impacts space technology sales, cost, production, and R&D, with particular focus on the European Space industry, European National programmes and ESA programmes. The study consisted of the following four steps:

1. Worldwide mapping of the export and import policies that have an impact on the sales, procurement, transfer or development of space technologies and equipment.
2. Worldwide mapping of actual exports and imports and relation to the import and export policies of space equipment and services.
3. Worldwide mapping of collaborations/cooperation and agreements between space players and the relation to import and export policies.

4. Impact (direct and indirect) analysis of the policies for the European space industry.

This study is a first attempt to give an indication of export/import flows between countries and indicate how export/import policies and international/bilateral agreements may influence these flows. The European space industries as well as other space industries worldwide are active exporting and/or importing launch services, satellite systems and satellite equipment. Restrictions may negatively or positively impact a system or equipment supplier’s chances to export. A national restriction may make it difficult or impossible for a supplier in that given country to bid; it may, furthermore, indirectly foster the chances of a competitor in another country to win.

Systems and equipment suppliers may also need to import components that are export controlled. They may experience negative impacts such as delays, costs and risks associated to the procurement of the export-controlled component.

2. METHODOLOGY

In order to study the effects of import and export restrictions in the space industry and particularly on the European space sector, the following methodology has been applied:

Step 1 - Collection and analysis of information about import and export restrictions worldwide that have a potential impact on space related activities

Step 2 - Collection and analysis of export and import flows of the space sectors worldwide

Step 3 - Collection and analysis of collaboration agreements

Step 4 - Identification and analysis of the impact areas of restrictions on space related activities worldwide and specifically on the European space sector

The first 3 steps are used to provide background information and to identify possible hypotheses regarding the impact. The fourth step is then used to identify specific impact areas and to make an attempt at quantitatively and qualitatively assessing these impact areas.

The first step entails 1) the collection and analysis of documents that pertain to international and to national export and import regimes, 2) interviews with representatives from the European space sector that deal with export and import restrictions, and 3) the cross-analysis of the information obtained in sub-steps 1 and 2.

The second step includes: 1) the review of the satellites that have been launched over the 2001-2010 period in order to extract the import and export of satellite systems, launch services and major satellite payloads, 2) the collection and review of publicly available information about the performance of the space sector and the space sector’s equipment export and import flows, and 3) interviews with European space sector representatives about export and import information. The information and the analysis performed are then cross-checked using other available information sources.

The third step consists of 1) collecting and reviewing available cooperation agreements, 2) collecting and analysing information about cooperation activities linked to these agreements, and 3) analysing the potential impact of export and import restrictions.

The fourth and final step builds 1) on the information collected and analyzed in the previous steps, and 2) on interviews with European space sector representatives. These interviews are important in order to identify and to help qualify and to help quantify the positive and negative impacts of import and export restrictions.

3. WORLDWIDE MAPPING OF THE EXPORT AND IMPORT POLICIES

Export control regimes represent a complex patchwork of international and bilateral agreements in one hand and national export control
Real-Time Non-Destructive Evaluation of Airport Pavements Using Neural Network Based Models
www.igi-global.com/chapter/real-time-non-destructive-evaluation/38105?camid=4v1a