

17. Insurance market for space activities

Although launching satellites appears to be a routine operation to the general public, there are still major risks involved. A branch of the insurance sector specifically covers the commercial space sector's operations. The main risks covered still tend to be a failure at launch or mechanical troubles for large commercial telecommunications satellites. In addition to launch and deployment failure, space debris and solar storms pose collision and damage risks for satellites. The insured values usually cover the satellite's replacement costs and/or the resulting business interruption.

In late 2013, there were around 205 insured satellites in orbit, of which 185 were in geo-synchronous orbit (GSO). The total insured value represented about USD 24 billion (XL, 2013). Every year, there are on average 70-80 launches worldwide, of which 30-40 are insured, carrying 20-25 GSO satellites and 15-30 low-earth orbit satellites. Average insured value for a satellite in low-earth orbit is approximately USD 40 million with an operational lifespan of five years, while the more costly GSO satellites (USD100-400 million insured value) have an operational life span of about 15 years (Allianz, 2012). A dual launch may be insured for up to USD 750 million. Annual premiums average between USD 750 million and USD 1 billion (XL, 2013). The number of satellite failures in a given year has dropped

in the last decades, but the average claim per loss has gone up from USD 38 million in the mid-1990s to USD 116 million in 2013, due to the increased size and complexity of telecommunications satellites. For instance, 2013 may be the first money-losing year for the insurance industry since 2007, with reported premiums of USD 775 million and possibly more than USD 800 million in claims.

Commercial suborbital flights and space tourism are not covered by any existing insurance regime. The few paying space tourists to the International Space Station have so far taken out personal accident insurance. As suborbital vehicles transporting paying customers on the edge of space (not entering into a full orbit) are to start operations in 2014-15, insurance issues will need to be addressed.

Sources

International Organization for Standardization (2014), ISO standard 16126:2014: Space systems – Assessment of survivability of unmanned spacecraft against space debris and meteoroid impacts to ensure successful post-mission disposal, ISO/TC 20/SC 14, March, www.iso.org.

XL Group space insurance (2014), www.xlgroup.com.

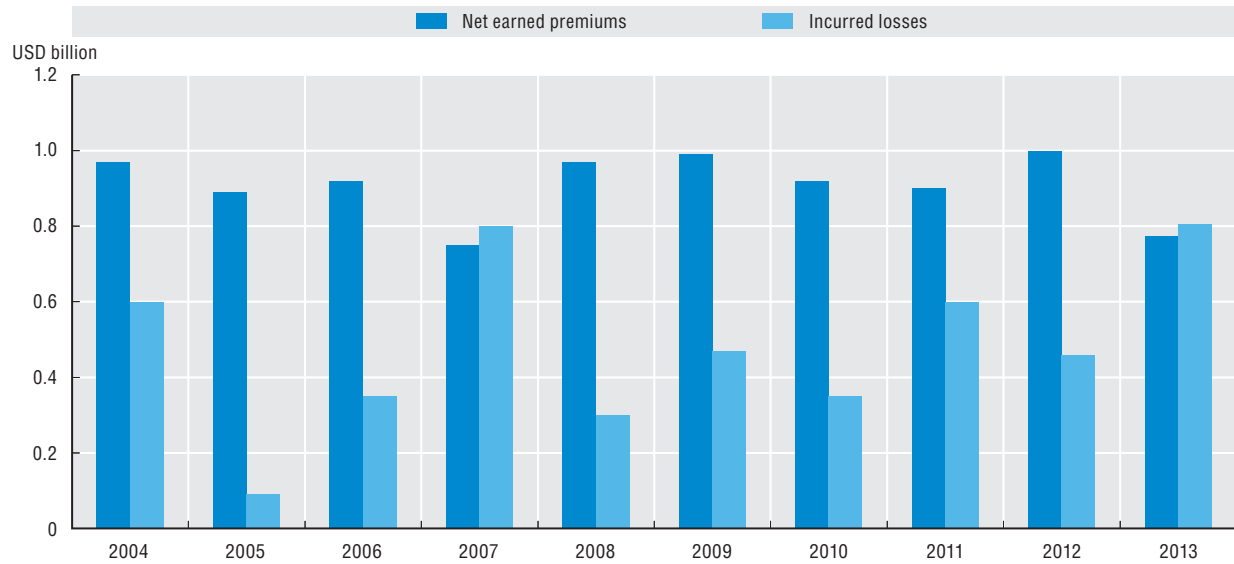
Space debris: a growing problem for the long-term sustainability of satellite operations

The number of space debris in the most used orbits around the Earth is still growing. Several commercial satellite operators and the International Space Station partners have had to repeatedly use space debris avoidance maneuvers over the past couple of years (e.g. four maneuvers for the International Space Station alone in 2012). The annual rate of new tracked debris began to decrease in the 1990s, largely because of national debris mitigation efforts, but accelerated in recent years as a result of collision due to the Chinese destruction of one of its satellites in 2007, and the 2009 impact of an active U.S. Iridium satellite and a defunct Russian Cosmos satellite.

Experts estimate that there are over 300 000 objects with a diameter larger than one centimetre and several million that are smaller. The U.S. Department of Defense's Space Surveillance Network currently tracks some 23 000 pieces of debris approximately 10 centimeter in diameter or larger, with a detailed catalog of more than 16 000 objects. The Inter-Agency Space Debris Co-ordination Committee (IADC) includes twelve major space agencies. They developed in 2007 joint "Space Debris Mitigation Guidelines", which were later endorsed by a United Nations' General Assembly resolution. This was followed in 2010 by the ISO standard 24113, which became the top-level standard in a series of standards addressing space debris mitigation. A series of lower level implementation standards provide methods and processes to industry and governmental actors to enable compliance with these requirements (ISO, 2014). A number of recent satellite failures in orbit (e.g. Envisat, Briz-M) have demonstrated the complexity of securing orbits and the need for more international co-operation to find solutions to mitigate and free up orbits of some space debris if possible, for the long-term sustainability of key orbits.

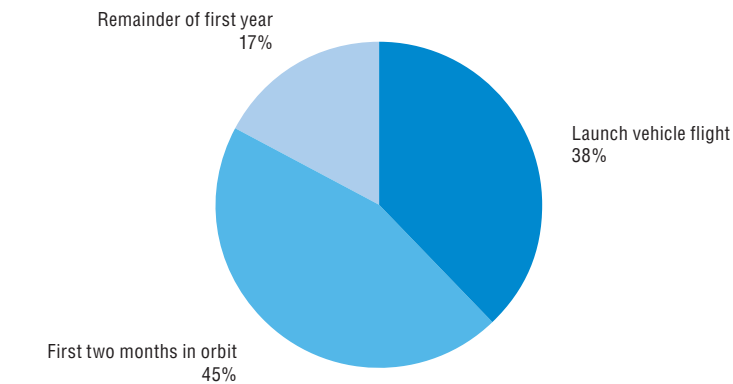
17.1. Space insurance annual premiums and claims

USD billion, 2002-13



Source: Adapted from XL Insurance, 2013.

17.2. Insured losses by phase of mission



Source: Adapted from XL Insurance, 2013.



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