CENTRE FOR INTERNATIONAL AND DEFENCE POLICY

POLICY BRIEF
WINTER 2015-16

Queen's University

An export control regime… without the control

The export of sensitive space technologies falls under the purview of existing international export control regimes, including the Nuclear Suppliers Regime (1975), the Australia Group (1985), the Missile Technology Control Regime (1987), and the Wassenaar Arrangement (1996). These regimes primarily aim to increase international security and stability by promoting the transparent and responsible transfers of material, equipment, and technology related to conventional weapons and weapons of mass destruction (WMDs). They are consensus-based, voluntary, and amenable arrangements that aim to restrict the trade of sensitive material, equipment, and technologies useful in the development of conventional weapons or WMDs, in an effort to stop states and non-state actors from weapons proliferation.

Unfortunately, member states are not forthcoming and do not consistently provide complete information regarding their export denials to one regime. For example, between 1996 and 2002, the United States (US) did not notify the Australia Group that it denied 27 licenses to export items controlled by the Australia Group to states including China, India, and Syria.

While it is the case that the existing export control regimes are amenable, these regimes have displayed an inability to remain relevant and adapt to new concerns in a timely manner. That is, advances in technology have not yielded changes in these multilateral regimes and these regimes have not engaged with the puzzle of how to deal with an increasingly complex international composition of state and non-state actors.

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states to control the billions of small objects that circle Earth, which are a danger to spacecraft and satellites and cause light pollution. Overcrowding is also a threat to security—more specifically, to the assets in space—as collisions in space may create conflict between states. Existing international export control regimes do not regulate security issues associated space debris and overcrowding, which is clear in the way that states prioritize the weaponization of space over other threats to the security of space. For example, much like other states, China expresses strong sentiments in favour of nuclear non-proliferation in outer space, but does not advocate for the regulation of other sensitive materials and technologies in outer space, nor does it consider the need to secure outer space from space debris or orbit overcrowding.

Due to the military strategic aspects of outer space, all space related technologies are deemed inherently dual-use; they can be used for either military or non-military purposes. Export licensing officials are tasked with determining whether an importing state is seeking these items for civilian use, undeclared military use, or for a WMD program. Such assessments are prone to issues, namely, the issue of transparency. By establishing front companies and brokers who purchased desired equipment for allegedly commercial purposes, Iraq was able to acquire much of the technology for its weapons program. Unfortunately, the existing export control regimes largely ignore the role of non-state actors in the procurement of sensitive space technologies. Terrorist or other non-state groups can establish front companies in non-threatening states to obtain important components of weapons. Additionally, it is pertinent to note that a definition of a threatening versus non-threatening state remains a topic of contention among export control regime members. While the US perceives Iran as a state that ought to have strict control regulations imposed upon it, Russia, as well as many European states, does not view Iran as a threatening state. Disagreement among export control regime members is particularly problematic. In January 2001, notwithstanding the objections of 32 other members of the Nuclear Suppliers Group, Russia shipped nuclear fuel to India. The definition of insanity is the repetition of the same actions in anticipation of different results; expecting a different outcome for sensitive space technologies than WMDs is just that. One may refute this argument by claiming that most of the international community's regimes are toothless, consensus-based, voluntary agreements that lack enforcement mechanisms. This counterclaim still lends support to the argument that the existing export control regimes are insufficient, as it speaks to clear deficiencies that exist across multilateral agreements, in general, including those on export control regimes.

Dissimilar to many other states, Canada imposes stringent policies to effectively regulate the export of sensitive space technologies. The Canadian government states that it "tightly regulates the export of material, equipment and technology in the nuclear, chemical, and biological fields, and conventional weapons, as well as related dual-use goods and a number of additional strategic goods and technologies, such as sensitive space components." Canada expresses a strong desire to ensure that exports are consistent with its foreign and defense policies, and as such, it will only export material, equipment, and technology to states that meet requirements relating to the arms control and non-proliferation of WMDs and conventional weapons. Conversely, the United States' domestic export control reforms are examples of the prevalence of under-regulation by states and its implications on the security of outer space. The

commercial space industry in the US successfully sought to overturn particular export control restrictions that were enacted in the late 1990s. In December 2013, the US Congress passed a provision in their defense authorization bill, which removed satellites and satellite-related items from the United States Munitions List, notwithstanding that prohibitions on the export of the aforementioned items to a number of other states remained on the bill. The deregulation efforts in the US illustrate that relying on states to self-regulate, particularly in light of economic interests and implications, is problematic.

False positives

There is no compelling evidence to suggest that these regimes have been successful in regulating exports to other states and to space. The examples relating to regime success only concern exports on earth and only address WMDs. For example, the most cited case of export regime success involved the United States' ability to persuade Argentina and Brazil to become members of the Missile Technology Control Regime and consequently, halt their nuclear-related activities in exchange for expanded access to international cooperation for peaceful nuclear purposes.

There is also no way of directly crediting these export control regimes with stopping, slowing, or raising costs for states suspected of seeking to acquire WMDs. Scholars and pundits merely prophesize that states would have more access to advanced and dangerous weaponry in the absence of these export regimes. A contradictory example is Obama's decision in 2012 to license sensitive US space technology to China from a US company that was previously fined for illegally supplying space support that improved Chinese ballistic missiles.

A slippery slope, recommendations and the way ahead

In January 2007, China tested an anti-satellite weapon against one of its own ageing weather satellites. Although the US vehemently opposed China's test, it continued with its own space and missile defense projects, related to dual-use space technology. In February 2008, the US followed China's example and shot down one of its own failed satellites, which was carrying half a ton of hydrazine rocket fuel, a highly toxic chemical. The US military shot down the failed satellite with a Standard Missile 3, which is an interceptor for the US Navy's missile defense system. This is a failure on the part of existing international export control regimes vis-à-vis regulation.

Given the inability of the current international export control regimes to properly regulate the weaponization of space and given these regimes' complete disregard of issues relating to space debris and overcrowding, consider this: should WMDs arrive in space, what will happen when, inevitably, one of the 20,000 pieces of debris larger than a softball, one of the 500,000 pieces of debris larger than the size of a marble, or one of the millions more pieces of debris that cannot be tracked because of their size, traveling at speeds of up to 17,500 mph, collide with one of these weapons. It is not difficult to imagine a catastrophic outcome. The international community is ineffectively regulating the export of sensitive space technologies, inadequately managing the weaponization of space, and ignoring the impact of space debris and overcrowding on the security of outer space.

A separate international regime dedicated to regulating the export of sensitive space technologies would illuminate security issues in outer space that extend beyond weaponization. A separate regime that complements the existing regimes would be specific enough that the international community would not have to rely as heavily on state self-regulation.