From Threat to Control

-Focusing on Corporate Self-Regulation of drones and Japan's Export Control Regime-

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1. Introduction

＜Military Use of Commercial Drones＞

Chinese E-Commerce Accessories (Temu, AliExpress):

Commercial drones could be militarized cheaply & quickly.

Price Examples (RedBallon)

Commercial quadcopter	: 200〜300 USD
Tether (1mile/〜1.6km)	: 260 USD
(7.5mile/〜12km)	: 700 USD
AI-guidance module	: 325 USD
Cargo holder	: 106 USD

(1USD≒145JPY assumed)

Major Accessories Identified

- Object-recognition cameras (detect humans/vehicles at long distances)
- Long-distance tethers (fiber-optic)
- Cargo holders (payload frames)
- FPGA and other advanced components

Reports of the actual use

According to some reports from the Ukraine invasion, the use of AI-guidance modules and tethered drones were confirmed, enabling autonomous penetration and munition release without continuous operator's direct control.

Low-Cost Weaponization ←Distribution Control & Early Detection Needed

Sources: Red Balloon (survey summary, provided text); WIRED Japan summary (2025).※ This slide is reconstructed based on the provided materials.

- No technically advanced modifications required
- Practical attack capability could be created by simply combining commonly available parts

↓

Threat

＜Threat Factors＞

1. **Accessibility** (easy to purchase and operate)
2. **Anonymity** (operator is distant, and hard to identified)
3. **Mobility** (can operate at high speed and high altitude)
4. **Versatility** (surveillance, transport, attack, communication, etc.)
5. **Detection Difficulty** (small size makes identification and tracking difficult)

- **The technological characteristics of drones directly translate into their threat characteristics.**
- **They pose physical, informational, and societal threats.**

Reconstructed and summarized based on Ben Nassi et al., "SoK – Security and Privacy in the Age of Drones: Threats, Challenges, Solution Mechanisms, and Scientific Gaps" (2019).

＜Significance of this Study＞

- Easier militarization of drones through various distribution channels
- Rapid development of drones in recent years : regulation on distribution has not progressed

→ Examining distribution management: a step toward reducing the military use of civilian drones via distribution

＜Focuses of this study＞

1. Corporate self-regulation within distribution channels
2. Japan's government-led security export controls

2.Corporate Self-Regulation in Distribution

＜Research Questions＞

What kinds of distribution controls are implemented by private companies?
How do they deal with the difficulty of regulating dual-use items?

＜Previous Research＞

Google Scholar search → No relevant studies found
→ Conducted original investigation

＜Methods＞

①Document Review — Amazon & Rakuten official websites

Targets : Amazon, Rakuten (No.1 in EC site / EC mall sales rankings←Large distribution base)
Point : How drones are handled from a perspective of prevention of military diversion of civilian drones

② Interviews

Interview focus :・Points unclear from document review alone
・How they deal with the difficulty of regulating dual-use items

＜① Findings from Document Review＞

	Amazon	Rakuten
Regulations Related to Drones	・Regulations on product quality ・No regulations specifically addressing military diversion of drones were found	・No relevant descriptions found ・Some categories require pre-listing screening → Dual-use drones may fall under screening requirements.
Listing Procedures		When drones require pre-screening → Submission of Rakuten-designated confirmation documents is required (No detailed description provided)

Examples of "hazardous materials" listed in Rakuten's "Prohibited Items" category:
e.g., "items that could be used as weapons"
- Drones may fall into this category.

[Unclear Points]

Amazon	Rakuten
・Whether Amazon distinguishes between military and civilian drones ・How Amazon classifies drones and prevents the selling of military-use drones ・What measures are taken to cope with the risk of civilian drones combined with other devices (cameras, tethers, etc.) and diverted for military use	・Whether Rakuten screens sellers who list drones ・What criteria are used to permit or prohibit drone listings ・Whether Rakuten distinguishes between military and civilian drones ・How Rakuten classifies drones and prevents the listing of military-use drones ・What measures are taken to cope with the risk of civilian drones being combined with other devices (cameras, tethers, etc.) and diverted for military use

＜ ②Interview – Not Conducted＞

"Assessment criteria cannot be disclosed."
→ Interview request denied; unclear points remained unresolved

3.Security Export Controls by Japanese Government Agencies

＜Previous Research ＞

Problems and Challenges in Security Export Controls

- Export controls cannot completely prevent access to problematic products or technologies.

= Limits of security export controls

- As regulations become more complex, the administrative, policymaking burden increases.

→Few countries can implement controls with full effectiveness.

Significance of Conducting Security Export Controls Even When Perfect Regulation Is Impossible

【Significance ①】It becomes an obstacle for states or groups attempting military diversion.

- Requires considerable time, labor, and cost ⇨ It has a certain non-proliferation effect.
- In the process of attempting diversion or engaging in disguise activities, the chances of detection by authorities increase ⇨enabling political interventions.

【Significance ②】Continuous monitoring functions as a form of security-related intelligence activity, creating opportunities for private actors and public authorities to share and align their security information and perspectives.

- Officials responsible for export control routinely gather information on end-users who may pose concerns.
- Updating technical information
- Maintaining networks and know-how for gathering/analyzing information on demanders and technologies

（Suzuki Tatsujiro, Tanikata Masayuki, Shiroyama Hideaki, Aoki Setsuko, Kutsuzumi Ryoko,"日本の安全保障貿易　管理　ーその実践と課題ー" (2004), pp. 8–9）

＜Research Question＞

Do current export controls on drones in Japan, the U.S., and Europe function as mechanisms for deterring military diversion and for enabling information-sharing between the public and private sectors?

Reason for including the U.S. and the EU: They strongly influence global standards.

＜Methods＞

① Based on the significance highlighted in previous research, establish evaluation criteria as shown in Table 1.

＜Table1:Evaluation Criteria I made based on Significance① ＞

【Significance①】It becomes an obstacle for states or groups attempting military diversion.		
Viewpoint 1 | Strictness and Precision of Export Screening	**Viewpoint 2 | Ability to Detect Diversion or Disguise Activities**	**Viewpoint 3 | Ability to Identify High-Risk Actors (States / Groups / Companies)**
1. Transparency of Application Screening	**1. Number of Detected Illegal Exports**	**1.Completeness of User Control Lists**
—Whether screening criteria are publicly available	**2. Strength of Export-Control Intelligence Functions**	—Number of listed states / groups / companies
—Whether approval / denial numbers are published	—Export-control intelligence organization : Yes / No	—Categories covered
2.Administrative burden of screening	— Analytical reports publicly available : Yes / No	—Frequency of updates per year
—Number of documents a company must submit when exporting drones	**3. Company inspections (on-site audits)**	—Detailed information
—Screening period	— Number of annual inspections	—Presence of stated reasons for export prohibition : Yes / No
3. Number of denials within the regulatory scope for drones	— Public availabilty of audit methods	2. End-User Screening System
4.Severity of Penalties (Cost When Violated)		—Number of denials
—Criminal penalties		—At which stages end-user list checks are mandated
—Administrative penalties		—Presence of specialized end-user screening organizations : Yes / No
—Presence of warning system : Yes / No		
—Presence of a company-name disclosure system : Yes / No		

②Collect data of Japan, the U.S., and the EU based on the evaluation indicators defined in ①, and compare them.

③Create an integrated index using the data collected in ②.

④ Conduct interviews with practitioners and verify whether the integrated index created in ③ is consistent with actual conditions

⑤Improve the indicators and evaluate whether drone export controls are functioning effectively.

＜Results＞

At the present stage, data for Significance ① of method② have been collected and organized into Table 2.

＜Table2 : Data Based on the Indicators for Significance ①＞

Viewpoint	Item	Japan	United States	EU
Viewpoint 1 | Strictness and Precision of Export Screening	**1. Transparency of Application Screening**	Only abstract criteria are public	Not public	Not public
	2.Administrative burden of screening	The number of required documents List controls: approximately 3–7 catch-all controls, they vary depending on the case.	The standard number of required documents is 4–6, but depending on the end user and other risks, the number can increase to several dozen.	Varies from country to country
	3. Number of denials within the regulatory scope for drones	Not public	Approximately 758.86 cases were denied (2% of a total of 37,943 cases in FY2023).	570 denials (2022, dual-use items including drones)
	4.Severity of Penalties (Cost When Violated)	**Criminal Penalties**:Fines of up to 20 million yen (700 million yen for corporations) and imprisonment of up to 7 years for exports of conventional weapons–related goods or related technologies. **Administrative Penalties**: Export suspension for up to 3 years.	**Criminal Penalties:**Up to 20 years of imprisonment, a fine of up to USD 1,000,000, or both. **Administrative Penalties:**Up to USD 300,000 per violation, or twice the value of the transaction, whichever is greater.	Varies from country to country ; e.g., Germany: up to 15 years imprisonment
Viewpoint 2 | Ability to Detect Diversion or Disguise Activities	**1. Strength of Export-Control Intelligence Functions**	Yes	Yes	Varies from country to country
	2. Company inspections (on-site audits)	Reviewing the "Self-Management Checklist" submitted prior to export; 102 cases in FY2023.	Pre-export screening and post-export audits: 1,509 cases in FY2023.	Not public
Viewpoint 3 | Ability to Identify High-Risk Actors (States / Groups / Companies)	**1.Completeness of User Control Lists**	Only "The Foreign End User List"; 835 entities in total; updated 3 times (2022–23)	Multiple lists exist; the Entity List, which includes drones, covers 3,163 entities in total; updated 18 times during (2022–2023)	No user-control list for export control ※EU Sanctions List" exists, which applies export/transaction bans,but not just a trade control list
	2. End-User Screening System	Screening under Catch-All control; no specialized expert organization	Screening at export-decision stage; specialized expert organization exist	Screening at export-decision stage; no specialized expert organization

4.Discussion and Implications

- All systems appear to function as barriers.
- The U.S. has post-export inspections, while Japan does not; therefore, the U.S. system functions as a barrier even after export, whereas in Japan, once an item is exported, it is unlikely to remain as a barrier.
- The U.S. appears to have the strongest system among three, but this may simply reflect its greater manpower and financial resources.

＜Challenges and Future Directions＞

1. Plan to collect data based on the evaluation indicators for Significance ②
2. Create an integrated index using the data described in Method ③
   ↑Need to quantify data → Challenge: how to convert multiple datasets into a single index
3. Conduct interviews with officials responsible for the practical operations described in Method ④

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