An Introduction to Global Counterfeiting

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1 Introduction

To counterfeit means to make an exact imitation of a product with the intent to deceive or defraud. These imitations are produced and distributed illegally, and are often of inferior quality compared to the original items. Today, counterfeiting is a significant and growing global threat − counterfeit goods circulate the globe and jeopardize consumers, industries, and pose serious safety risks. Fake toys containing hazardous and prohibited chemicals, counterfeit microchips for civilian aircrafts, pharmaceutical drugs containing inappropriate quantities of active ingredients have led to injuries and deaths. These products also have detrimental effects on economies due to decreased innovation and loss of revenue and taxation, and harm the original manufacturers by undercutting prices and damaging brand reputation. Lastly, counterfeiters thrive in economies with weak governance standards and counterfeiting has been linked to funding terrorist activities.

Over the years, various organizations have estimated the size of the international counterfeit market. Their figures range from a low $200 billion in 2008 to $509 billion in 2019. Exact scope and impact figures are scant because of the illegal nature of counterfeiting and because the market encompasses goods from and impacts all industries and economies. Some industries are also more heavily represented than others in the research − for example: clothing, electronics, luxury goods, and pharmaceuticals are studied with greater frequency than food or tobacco products.

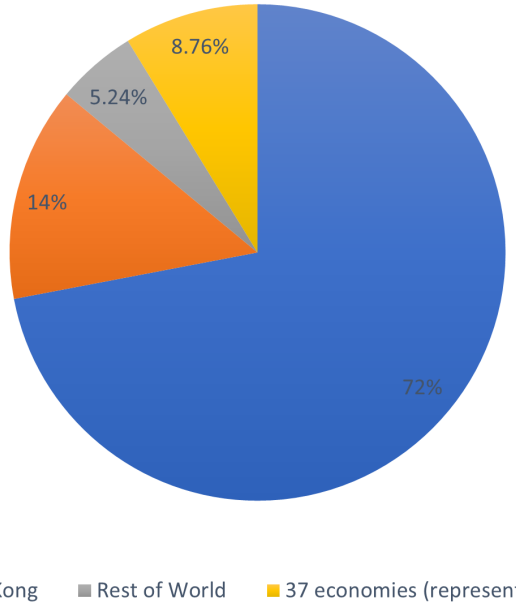
This report attempts to highlight the data points that do exist in the relevant literature, providing a broad look at counterfeiting to make clear its economic impact in the global market. There are three sections: the first section provides a brief overview of the state of trade-related counterfeiting today; the second section presents the idea of using computer science to provide assistance with this problem; the final section offers concluding thoughts and an overview of this report's key findings.

2 Counterfeiting: A Global Threat

The U.S. Customs and Border Protection (CPB) appears to be the main domestic source on counterfeiting. Data provided by the Organisation for Economic Co-operation and Development (OECD) make up the foundation of further research.

2.1 Counterfeiting 101

Hong Kong and China are estimated as the source for 86% of global physical trade-related counterfeiting, translating into $396.5 billion annually. Counterfeiting accounts for the equivalent of 12.5% of China's goods exports and approximately 1.5% of its GDP. A good amount of counterfeiting activity can be attributed to other countries as well (please see Figure 1).



Rank	Economy	Share (in USD) of global physical counterfeiting	Percentage of the 38 economies' share of global physical counterfeiting	Percentage of total global physical counterfeiting figure
1	Ukraine	$1,980,812,670	4.91%	0.43%
2	India	$1,772,500,223	4.39%	0.38%
3	Russia	$1,727,389,244	4.28%	0.37%
4	Turkey	$1,720,857,842	4.26%	0.37%
5	Argentina	$1,714,143,665	4.25%	0.37%
6	Thailand	$1,679,629,489	4.16%	0.36%
7	Indonesia	$1,603,262,413	3.97%	0.35%
8	Vietnam	$1,532,898,029	3.80%	0.33%
9	Peru	$1,518,685,756	3.76%	0.33%
10	Nigeria	$1,445,866,781	3.58%	0.31%

Figure 1: Top 10 Economies' Relative Share in Global Physical Counterfeiting.

Counterfeit goods cause a great deal of economic damage to consumers, trademark owners, wholesalers and retailers associated with the brand, and the economy at large. As consumers purchase lower-quality and less-effective products, the brand's integrity is compromised, which results in revenue losses. The blow is worse for intellectual property owners who sustain direct losses due to decreased market shares and irreparable damage and dilution to their brand's reputation. They also incur costs related to defending their intellectual property rights, which are patents, trademarks, and copyrights, that provide their owners with a limited term of protection and exclusive rights to use and benefit economically from their invention or creation. The direct losses of revenue due to counterfeit products are estimated at billions of dollars for each market industry, and some companies spend as much as $20 million dollars each year in attempts to fight the counterfeiters.

In a recent testimony before the Subcommittee on Oversight and Investigations, the U.S. Government Accountability Office reported that counterfeiting slowed the growth of the U.S. economy and produced decreased innovation, contributed to loss of revenue and taxation and higher unemployment rates. The Business Action to Stop Counterfeiting and Piracy initiative estimates that 2.5 million jobs and over $125 billion annually is lost among the G20 economies. It also estimates an additional $6.5 billion loss due to weak IP protection including trademark enforcement, and in extreme cases, the G20 economies discourage direct foreign investment.

2.2 Free Trade Zones (FTZs)

FTZs are designated areas within countries where goods can be imported, handled, manufactured, and re-exported without the intervention of the customs authorities. They are a type of special economic zone exempt from certain national laws and regulations, particularly concerning customs duties and taxes, to encourage trade and investment. FTZs typically offer benefits such as duty deferral, reduction, or elimination on imports and exports, streamlined customs procedures, a less restrictive regulatory environment, and incentives for businesses to set up operations within the zone. The number of FTZs has grown significantly, with over 3,000 zones in 135 countries, creating an economic impact with millions of direct jobs and over $500 billion of direct trade-related value added.

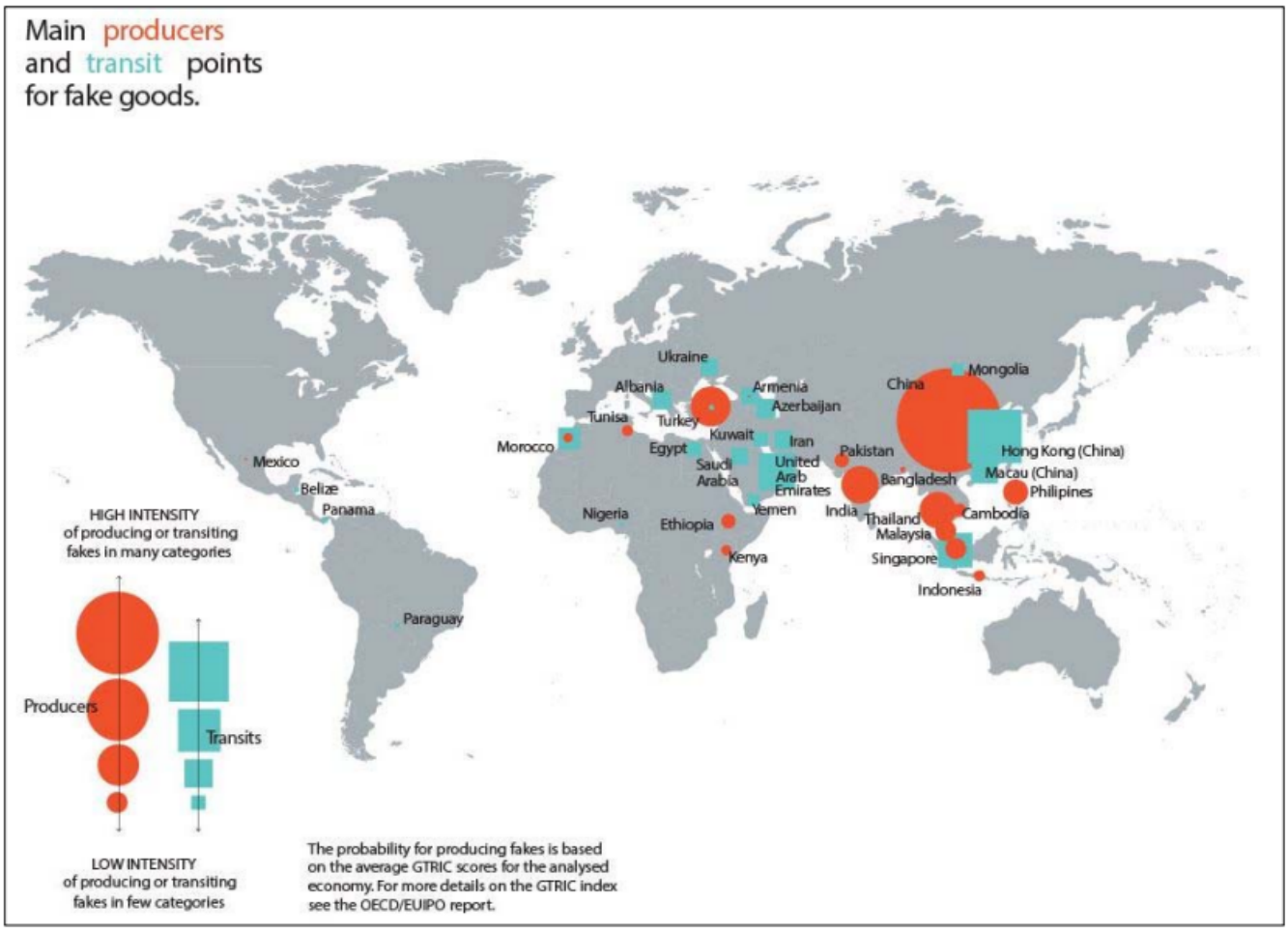


Figure 2: Main Producers and Transit Points for Counterfeit Goods, 2013.

Some FTZs are important hubs in general international trade, while others are associated with weak governance or criminal activities. They are commonly used by counterfeiters to conceal the origin of goods, repackage or re-label items, and establish distribution centers. Since goods in transit are often not within the scope of local enforcement authorities, they are less likely to be intercepted, making FTZs strategic points for facilitating the flow of counterfeit goods. Figure 2 shows the main producers and transit points for fake goods in 2013.

2.3 FY 2021 Intellectual Property Rights (IPR) Seizure Statistics

CPB's FY 2021 IPR seizure statistics revealed a concerted effort to protect American intellectual property, curb smuggling, and combat trade in illegitimate goods. CBP made over 27,000 seizures, with an estimated manufacturer's suggested retail price (MSRP) of over $3.3 billion, marking a 152% increase from the previous fiscal year. These seizures not only affect revenue but also have significant implications for the U.S. economy and public health and safety[1].

The report highlights the prevalence of counterfeit cell phones and accessories, noting the industry's reliance on IPR-protected technologies and the impact of the global semiconductor chip shortage, which counterfeiters have exploited. In FY 2021, over 1895 shipments valued at approximately $64 million were seized, with the majority originating from Hong Kong and China. CBP also targeted illegal imports of counterfeit and substandard COVID-19 related products. These included over 38,000 prohibited test kits, 35 million counterfeit face masks, and nearly 8,700 prohibited hydroxychloroquine tablets. Figure 3 shows the top health and safety products sized for the FY 2022 according to CPB's data. The full report is not yet available.

Figure 3: Top Health and Safety Products Seized - FY2022 (report not yet available).

2.4 The Pharmaceutical Industry

Counterfeit drugs are produced and sold with the intent to deceptively represent their origin, authenticity, or effectiveness. They contain inappropriate quantities of active ingredients or no active ingredients or ingredients that are not on the label, are sometimes supplied with inaccurate packaging and labeling and may cause bodily harm. According World Health Organization's (WHO's) 2017 report, the global counterfeit drug market's profits range from $75 to $200 billion in annual sales and can make up half of all drugs sold in low-income countries. In these countries, one in ten medical products is substandard or falsified and likely responsible for the deaths of tens of thousands of children each year from diseases like malaria and pneumonia.

Production and Transit: India and China are identified as the largest producers of counterfeit pharmaceuticals, which are shipped worldwide, particularly to African economies, Europe, and the United States. Transit economies such as Singapore, Hong Kong, the United Arab Emirates, Yemen, and Iran are crucial transit points and play a significant role in the distribution chain, and there has been a shift in production to other Southeast Asian economies due to increased law enforcement and regulatory pressure within China.

Prevalence and Online Trade: The Pharmaceutical Security Institute reports between 15,000 to 17,000 cases of counterfeit drugs globally. Over half of medicines purchased from illegal online sites are counterfeit. A significant percentage of online pharmacies were found to be operating illegally, and a majority

of medicines purchased online were fake or substandard.

Health Risks: Counterfeit medicines can cause significant harm to patients. For instance, in the UK, about one-third of consumers who bought counterfeit medicines experienced health issues. There have been cases where patients have died or suffered harm due to counterfeit drugs, such as a counterfeit diet pill which turned out to be a lethal pesticide.

Counterfeiting Incidents: The PSI reported an 18% increase in the number of products targeted by counterfeiters from 2017 to 2018. Counterfeit drugs often lack the correct active ingredients and may contain undeclared substances that can have serious health consequences. US brands and European economies are most affected by counterfeit pharmaceutical goods.

Challenges: Counterfeiters penetrate supply chains that are mostly secure at the wholesale level but may exploit vulnerabilities among second-tier distributors. The detection of counterfeits requires expert examination, which can be costly and resource-intensive. The ability of counterfeiters to make fake products look like genuine ones is a significant challenge.

Terrorism: Counterfeiting is increasingly linked to terrorist groups. Interpol and Federal Bureau of Investigation (FBI) seizure records suggest that millions of U.S. dollars in proceeds from counterfeit goods (e.g., brake pads and cigarettes) have been destined for terrorist organizations, such as Hezbollah and Al-Qaeda.

Type of product	Number of Member States reporting	Total number of product reports	Percentage of all products reported to database
Anaesthetics and painkillers	29	126	8.5
Antibiotics	46	244	16.9
Cancer medicines	19	100	6.8
Contraception and fertility treatments	19	29	2
Diabetes medicines	7	11	0.8
Heart medicines	22	75	5.1
HIV/hepatitis medicines	9	43	2.9
Lifestyle products	37	124	8.5
Malaria medicines	26	286	19.6
Mental health medicines	19	45	3.1
Vaccines	11	29	2

Figure 4: Examples of substandard and falsified products reported to the GSMS between 2013 – 2017.

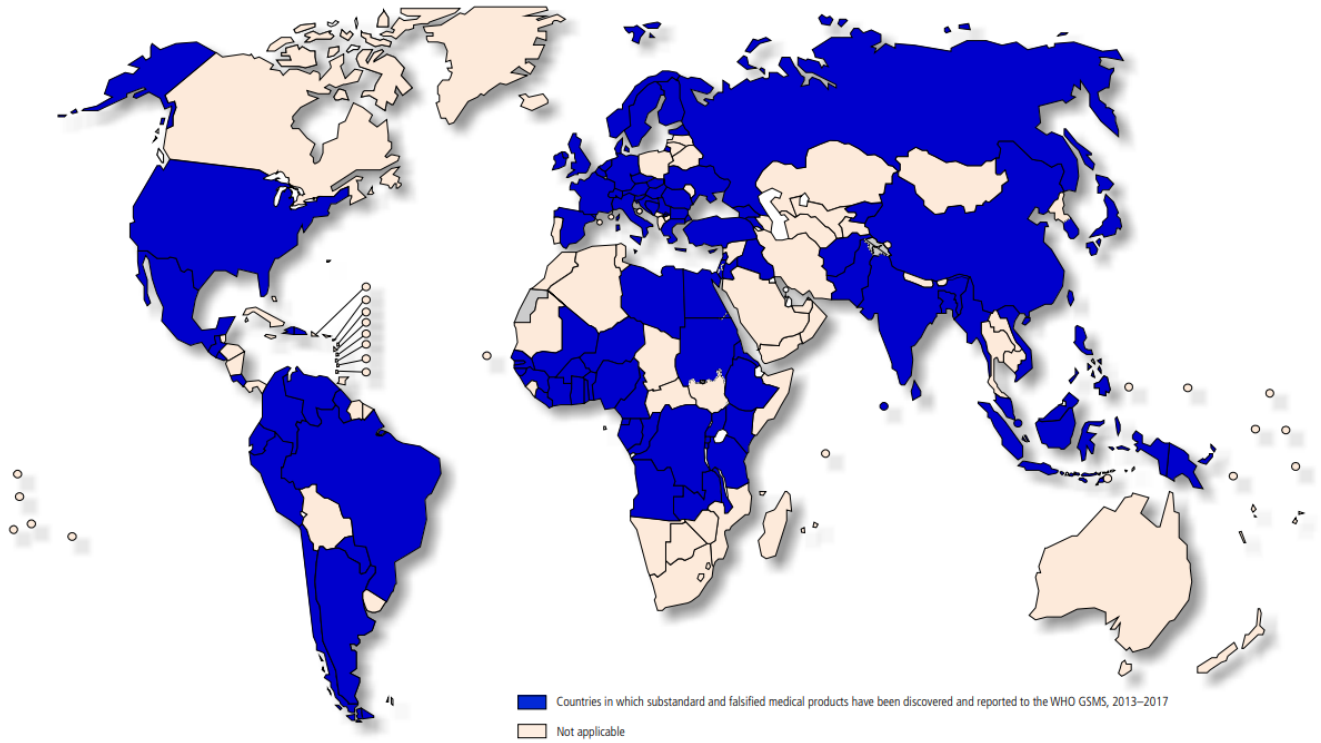


Figure 5: Countries in which substandard and falsified medical products have been discovered and reported to the WHO GSMS, 2013–2017.

Most Counterfeited Pharmaceuticals: Antibiotics, lifestyle drugs, and painkillers are the most targeted by counterfeiters. Other frequently seized counterfeit pharmaceuticals target treatments for malaria, diabetes, epilepsy, heart diseases, allergies, blood pressure, cancer, and more. WHO's 2017 report contains the following cases of counterfeit or falsified drugs (among others):

- *Ghana*: Inspectors found antimalarial tablets with less than 2% of the expected active ingredients at a rural dispensary. The dispensary bought the medicines from a licensed wholesaler, who, in turn, had purchased falsified medicines from a traveling salesman without proper paperwork.

- *Avastin Case*: Changes in insurance policies created opportunities for falsified medicines to be sold below list price. This situation arose when a disease outbreak increased demand for the meningitis C vaccine in Niger, and conflicts disrupted supply chains in the Middle East.

- *Yellow Fever Vaccine in Bangladesh*: New entrants to medical procurement, unfamiliar with certain medications, can become easy targets for falsified products. An example includes the procurement of yellow fever vaccines in Bangladesh, where a supplier provided falsified vaccines.

- *West Africa*: A pharmacist discovered a bag of partially packaged malaria medicines in a public health center. The medicines were found to be subpotent and were not manufactured according to required standards, leading to fines and suspended prison sentences for those involved.

- *Pakistan*: Hundreds of patients suffered from severe reactions due to contaminated cardiac medication. Over 200 patients died, and 1000 were hospitalized. A judicial inquiry found that the contamination was due to poor manufacturing standards where an active pharmaceutical ingredient was confused with an inert excipient.

2.5 Current Remedies

To combat counterfeiting, various laws and actions have been implemented both in the United States and internationally. Here's a breakdown of some of the major initiatives:

2.5.1 United States

Federal Statutes: The primary legal framework for anti-counterfeiting in the U.S. is based on two federal statutes: the Lanham Act and the Trademark Counterfeiting Act of 1984. The Lanham Act provides civil remedies for trademark infringement and counterfeiting. Meanwhile, the Trademark Counterfeiting Act criminalizes violations of the Lanham Act's anti-counterfeiting provisions, making them federal crimes.

CBP: CBP is the federal agency tasked with combating counterfeit goods at U.S. borders. They have the authority to inspect, detain, and seize counterfeit goods. Trademark owners are encouraged to record their trademarks with the CBP to help identify counterfeit goods. The agency has also seen significant increases in the number of seizures, indicating a strong enforcement effort.

2.5.2 International Efforts

The Paris Convention: This is a foundational international treaty dating back to 1883 that established minimum standards of protection for various intellectual property rights, including trademarks and against unfair competition.

Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs): This World Trade Organization (WTO) agreement enhanced the uniform protection of IP rights, setting minimum standards for member states. It has been crucial in the international legal framework against counterfeiting.

Anti-counterfeiting Trade Agreement (ACTA): ACTA aims to establish international standards for enforcing IP rights to combat counterfeiting and piracy. It provides for cooperation among international enforcement authorities, implementation of best practices, and coordination of technical assistance. However, it has been controversial due to concerns about privacy and individual freedoms.