



Illicit Trade

Illicit Trade and the Korean Economy



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Foreword

Illicit trade in counterfeit goods is a growing threat in our globalised innovation-driven economy, challenging the integrity of supply chains, while negatively affecting business profits, economic growth, and consumer health and safety. Its harmful impact on global markets and on innovation should not be underestimated.

To provide policy makers with robust evidence about this threat, the OECD carried out a series of analytical studies that deepen our understanding of the scale and magnitude of the problem. The results have been published in a set of reports starting with *Trade in Counterfeit and Pirated Goods: Mapping the Economic Impact* (2016). The OECD has also produced several country case studies similar to the present report, such as *Counterfeiting and Piracy and the Swedish Economy* (2019), *Trade in Counterfeit Goods and the UK Economy* (2019), *Counterfeiting, Piracy and the Swiss Economy* (2021), *Trade in Counterfeit Goods and the Italian Economy* (2021).

The Korean economy is largely based on innovation and intellectual property (IP) and it is one of the global leaders in this area. Its IP-intensive industries are well integrated in the global economy through their active participation in global value chains. Yet while innovation and integration to world trade support Korea's economic growth, it also exposes the country to the risks of counterfeiting and piracy.

In order to design effective policies to tackle the threat of counterfeit trade, such trade needs to be identified and assessed. This report provides a quantitative assessment of the scale and harmful effects of counterfeit trade on Korean IP rights (IPR) holders and the Korean government. The analysis is based on an objective and fact-based methodology that gauges the magnitude and scale of counterfeit trade and quantifies its direct economic impact on a given economy. This methodology relies primarily on a unique set of international customs seizures data, as well as on a series of interviews with customs and IP experts and Korean industry representatives. The findings of this report will help the Korean government design policies to combat counterfeiting and piracy, and to identify the main governance gaps in this area.

This report was prepared under the auspices of the OECD Working Party on Countering Illicit Trade, which focuses on evidence-based research and advanced analytics to assist policy makers to map and understand the vulnerabilities exploited and created by illicit trade.

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Executive summary

Illicit trade in counterfeit goods is a serious threat that continues to grow in scope and magnitude, with multiple impacts on consumers, rights holders and governments. For consumers, counterfeiting poses health and safety risks. It also lowers consumer satisfaction when low-quality fakes are unwittingly purchased. For legitimate intellectual property rights (IPR) holders, counterfeiting means lost sales, lower profits, reduced innovation incentives and longer-term brand erosion. For governments, counterfeiting leads to lower tax revenues and higher unemployment. Governments also face additional expenses in addressing public safety concerns and dealing with anti-counterfeiting legislation.

Korea is one of the most innovative economies in the world. Its innovative ecosystem has been made possible due to significant government support and private investment activities in research and development. The Korean economy is also well-integrated in global value chains, which boosts Korean productivity and competitiveness. However, this high level of innovation and globalisation makes the Korean economy vulnerable as intellectual property (IP) embodied in Korean products has been subject to counterfeiting and theft.

This report examines how trade in counterfeit and pirated goods affects the Korean economy. More specifically, it evaluates the magnitude and impact of global trade in counterfeit goods that infringe the IPR of Korean rights holders. The analysis identifies product categories that are targeted, the main economies of origin of counterfeit goods, and the main trade routes and transit points used. It also assesses the losses due to counterfeiting in terms of forgone sales and profit losses, taxes forgone by the Korean government, and jobs lost in Korea.

The impact of the COVID-19 pandemic on the trade in fake goods infringing Korean companies' IPR is also assessed in this report. It is found that although the pandemic exacerbated existing trends, its impact seems to have been moderate when absolute volumes of counterfeit goods are considered. The key effect of the pandemic has been the proliferation of e-commerce, which has amplified the availability and purchase of counterfeit goods online, demonstrating a discernible shift in consumer behaviour and sales channels.

Key findings

- The total value of world trade in fake goods that infringed Korean IP amounted to USD 9.7 billion in 2021, equivalent to 1.7% of all Korean exports.
- Among goods infringing Korean IPRs, those deriving from information and communication technology (ICT) are the most targeted. Other Korean products commonly faked include fashion items, automotive spare parts, toys and games, and cosmetics.
- Counterfeit and pirated goods that infringe the IPR of Korean rights holders come mainly from Hong Kong (China) and The People's Republic of China.
- Korean products enjoy a high reputation amongst consumers. About 41% of fake goods that infringe Korean IP are sold to consumers unaware they are buying counterfeit goods. This share varies among product categories, ranging from 91.8% for toys and games to 26.2% for electrical appliances.

Impact on the Korean economy

- In 2021, the total lost sales of Korean IPR holders due to trade in counterfeit goods amounted to more than USD 6.1 billion. In relative terms, the watches and jewellery sector experienced the highest losses (22% of sector's sales), followed by the electrical appliances (ICT) sector (13.4% of sector's sales).
- In 2021, job losses due to trade in counterfeit goods totalled more than 13 000, with the highest number of losses in the electrical appliances (ICT) sector.
- Lower sales due to counterfeiting result in lower revenues for the Korean Government from corporate income tax, personal income tax and social security contributions. Altogether, trade in counterfeit and pirated goods contributed to a reduction of Korean public revenues estimated at USD 1.5 billion in 2021.

1 Introduction

1.1. Setting the scene: Innovation and IP infringement

Across the globe, the nurturing of innovation through the protection of intellectual property (IP) represents a catalytic force that propels economic expansion, the creation of well-remunerated employment opportunities and economic competitiveness, while providing avenues for the realisation of imaginative ideas. Innovation also furnishes the impetus for the genesis, investment, and commercialization of novel inventions, commodities, and services, simultaneously buttressing artisans and authors in the diffusion of their creative outputs.

Innovation, however, is undermined when the ideas and achievements of companies, inventors and artistic creators are unlawfully appropriated by infringers of IP. Acquiring an understanding of the impact of IP infringement requires analysis at the macro level, encompassing knowledge of the global magnitude and scope, and at the micro level, through an understanding of the intricate stratagems employed by illicit actors to orchestrate large-scale IP theft for financial gain. Without this understanding, and a grasp of the barriers that impede the effective enforcement of IP rights (IPR), the formulation and execution of effective strategies to address the adverse effects of IP infringement will be difficult.

OECD studies confirm that the magnitude and scope of counterfeiting and piracy affects a multitude of industries that rely on trademarks as integral components of their business strategies. Counterfeit goods affect many sectors, including commonplace consumer articles (such as garments and footwear), business materials (such as spare parts and pesticides), and luxury goods (such as designer attire and premium timepieces). Moreover, counterfeit products raise substantial concerns regarding the health, safety, and environmental hazard risks posed by counterfeit items. Foremost among these are counterfeit pharmaceuticals, but there are also serious concerns with comestibles, cosmetics, toys, medical apparatus, and chemicals.

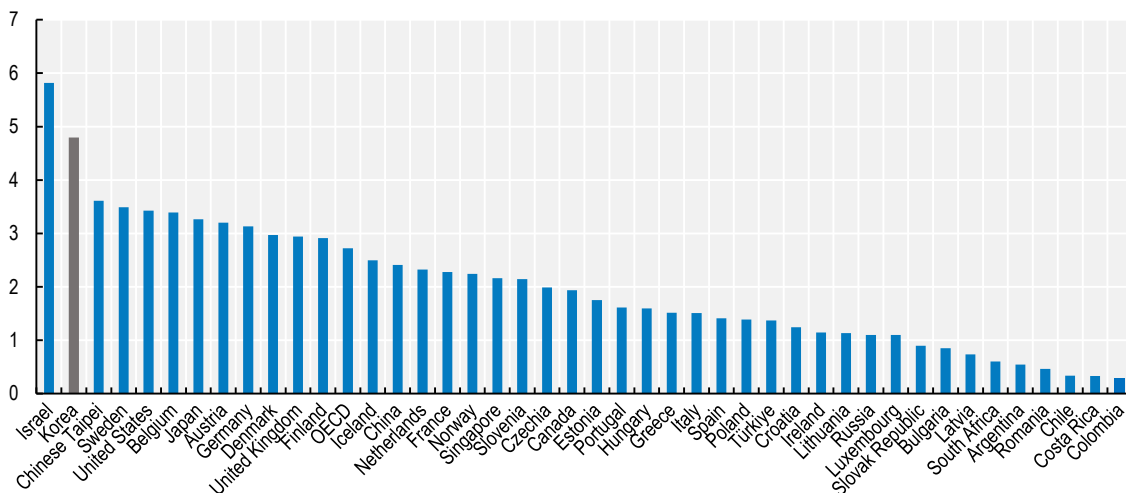
The OECD studies corroborate the enormous volume of trade in counterfeit goods. Drawing upon data from 2019, the studies estimate that counterfeit products accounted for about USD 464 billion during that year, which represented approximately 2.5% of global trade. This magnitude is on par with the Gross Domestic Product (GDP) of many economies.

1.2. Korean economy: Leading in innovation, but vulnerable to counterfeiting

1.2.1. Korea is an innovation leader

Korea is one of the most innovative economies in the world. Korea's innovative ecosystem has been made possible due to significant government support as well as private investment activities in research and development (R&D). According to recent OECD statistics, Korea is the second largest R&D spender among OECD countries (Figure 1.1), investing almost 5% of its GDP on R&D in 2019. At the corporate level, Korea is home both to huge tech companies and start-ups working on innovative products. High technology industries such as robotics, artificial intelligence, biotechnology, and clean energy have developed.

Figure 1.1. Gross domestic spending on R&D as % of GDP, 2019

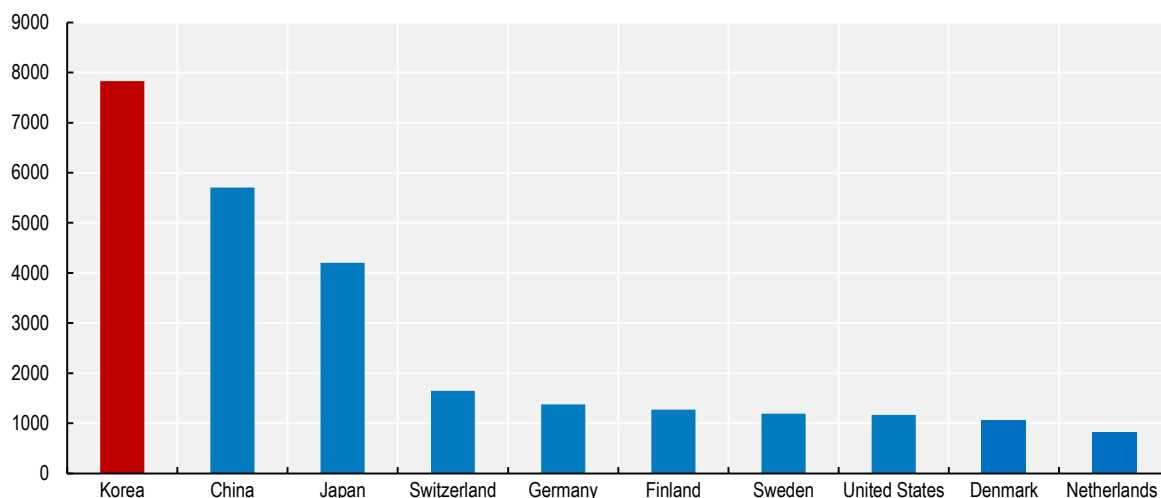


Note: Latest data available for all OECD countries.
 Source: OECD (2024^[1]), accessed on 10 August 2023.

Another quantitative indicator that highlights the innovative character of the Korean economy is the Global Innovation Index (GII) which ranks world economies according to their innovation capabilities. In GII Korea ranks 6th among the 132 economies included in the index. Korea ranked first of the 17 economies in Southeast Asia, East Asia, and Oceania. Korea is also considered an innovation leader since relative to its GDP, the country’s innovation performance is above expectations when its level of development is considered.

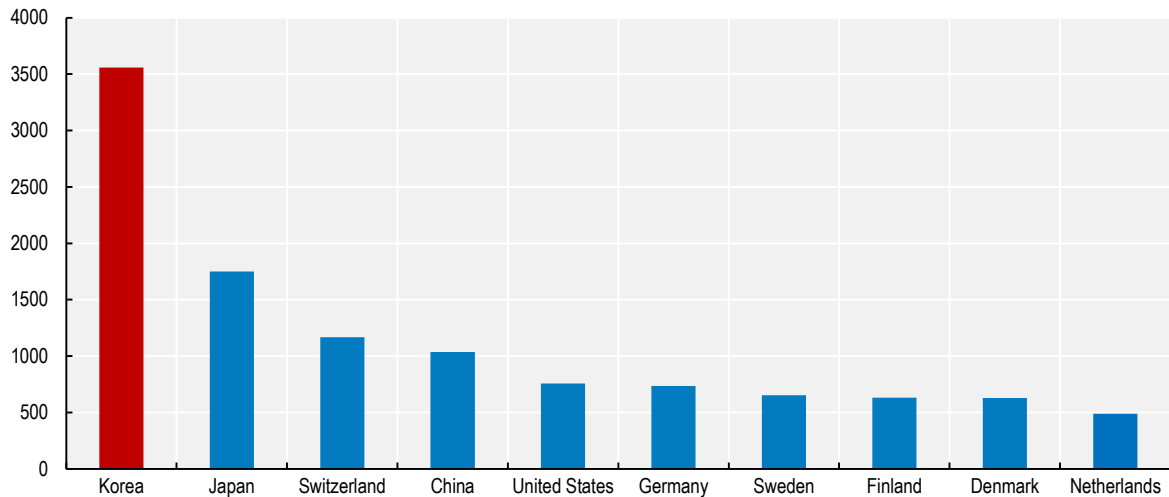
Korea’s performance is reflected in the number of patent applications, which have been increasing since the 1980s. Figure 1.2 and Figure 1.3 present indices which track Korea’s strong patenting activity.

Figure 1.2. Resident patent applications per USD 100 billion GDP for the top 10 origins, 2022



Source: WIPO Statistics Database and World Bank.

Figure 1.3. Resident patent applications per million persons for the top 10 patent countries, 2021



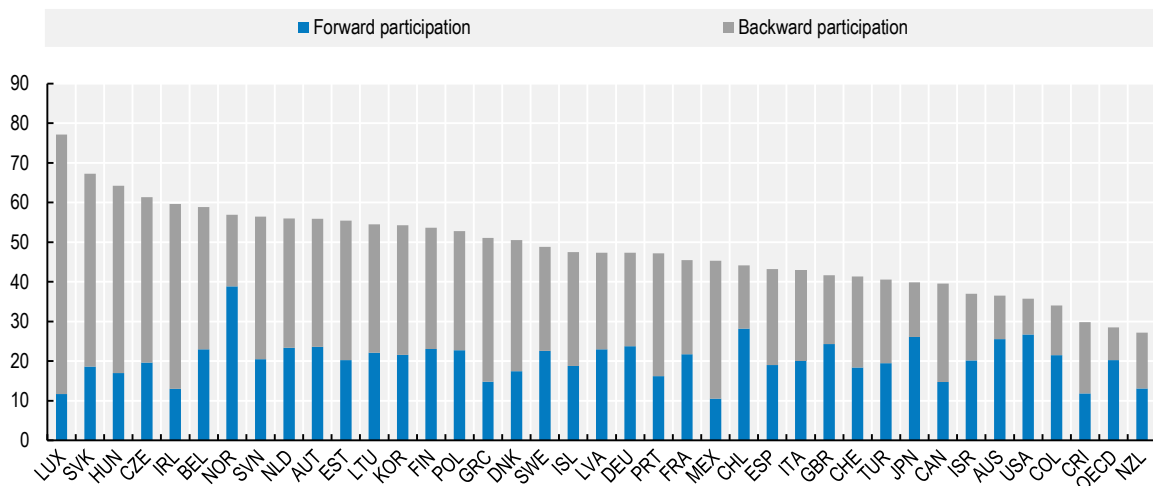
Source: WIPO Statistics Database and World Bank.

1.2.2. Korea is an open economy with high contribution to GVCs (Global Value Chains)

Korea is well integrated in the global economy, with high participation in global value chains (GVCs). Such integration enhances competitiveness and lowers production costs, thereby allowing Korea to increase its productivity. Figure 1.4 shows that forward participation predominates in Korea like in higher income countries, which tend to export technically sophisticated intermediate inputs for use in the final assembly.

Figure 1.4. GVC participation among countries, 2019

As % of gross exports



Note: Backward participation in GVCs refers to the foreign value-added share of gross exports, by value added origin country. Forward participation in GVCs refers to the domestic value-added in foreign exports as a share of gross exports, by foreign exporting country.
 Source: OECD TiVA (Trade in Value Added) database, Principal Indicators.

The data presented above clearly demonstrate the strong integration of the Korean economy in global value chains. Korean products are thus playing a pivotal role as inputs in various stages of production for international industries. It also underscores the interdependence of Korea's economy with inputs sourced from other countries, reflecting the nation's adaptability, strategic positioning in global markets and export-oriented approach.

Furthermore, the Korean economy demonstrates a high level of sophistication by actively participating in the production of goods with intense IP components. These innovative and modern products contribute significant value to the Korean economy.

The sophistication and globalisation of Korea's economy also makes it vulnerable to counterfeiting, as IP embodied in these products can be subject to theft. Counterfeiters can exploit opportunities by strategically targeting weak points in IP governance across different countries. They carefully select entry points into global supply chains for their counterfeit products to minimise the risks associated with their illicit activities. Thus, the complexity of global value chains presents a favourable environment for criminals seeking to infringe IPRs by engaging in counterfeiting.

2 Measuring counterfeiting and its effects

Quantitative analysis in this report relies principally on two sources of statistical information: trade statistics and seizure data. These data have been complemented with additional relevant industrial and economic data. Moreover, the quantitative analysis was completed with qualitative research based on a literature review and structured interviews with industry experts.

2.1. Trade statistics

Trade statistics are based on the United Nations (UN) Comtrade database (landed customs value). With 171 reporting economies and 247 partner economies (76 economies in addition to reporting economies), the database covers most of world trade and is considered the most comprehensive trade database available. Products are registered on a six-digit Harmonised System (HS) basis, meaning that the level of detail is high. As mentioned above, data used in this report are based on landed customs value, which is the value of merchandise assigned by customs officials for the purpose of assessing tariffs. In most instances, this is the same as the transaction value appearing on accompanying invoices. Landed customs value includes insurance and freight charges incurred when transporting goods from the economy of origin to the economy of importation.

2.1.1. Seizure data

Data on customs seizures originate from national customs administrations. These data are aggregated and harmonised at the national or regional level and then submitted to international agencies that maintain datasets on seizures. Two agencies and two datasets were used as inputs into the analysis of this report:

- The World Customs Organization (WCO)
- The EC Directorate-General for Taxation and Customs Union (DG TAXUD)

The analysis in this report focuses on global customs seizures data available from 2011 to 2021.

Global customs seizures data is generally provided every three years, which explains why the most recent data originates from 2020-2021. This latest data has been given a special focus and has been treated separately. This is because it covers the unique period of COVID-19, which was marked by a distortion in counterfeit trade. The OECD and EUIPO addressed the impact of COVID-19 on illicit trade in their report released in 2024, *Illicit Trade under COVID-19*.

A detailed analysis of data reveals a set of limitations due to discrepancies between DG TAXUD and WCO datasets, product classification levels, outliers in terms of seized goods or provenance economies and seizures of valuations of seized goods or patent-infringing products. These limitations are broadly discussed in the 2016 study (OECD/EUIPO, 2016^[2]). However, it seems appropriate to examine the latter limitation in greater depth given that Korea is particularly active in the field of patent filing.

The share of seizures of patent-infringing goods in the total set of seizures appears relatively small. While this may be surprising given the importance of patents in modern economies, and the easily tradable nature of patent-infringing goods, differences in the way that patent-infringing goods are traded, compared to other tangible goods that infringe trademarks, copyrights or design rights may explain this under representation in the data. In particular, patent infringements are often identified for products that are already in a given economy, and thus seized within economies, so that only a small fraction is seized by customs at borders. Given that there is no robust and sound way of extrapolating the existing information

on customs seizures of patent-infringing products into domestic seizures, this report conservatively and exclusively relies on customs seizures. By doing so, this analysis recognises that a large volume of traded patent-infringing products seized domestically remains outside the scope of the analysis.

2.2. What additional data are used?

A quantitative analysis of the scale, magnitude and impacts of counterfeiting needs to take the structure of an economy into account. For example, the volume of counterfeits in each sector should be presented by considering the overall flows of trade in the sectors. Industry impacts, such as job losses and foregone sales taxes should be presented in contrast with the overall volume of employment and sales of the Korean manufacturing sector.

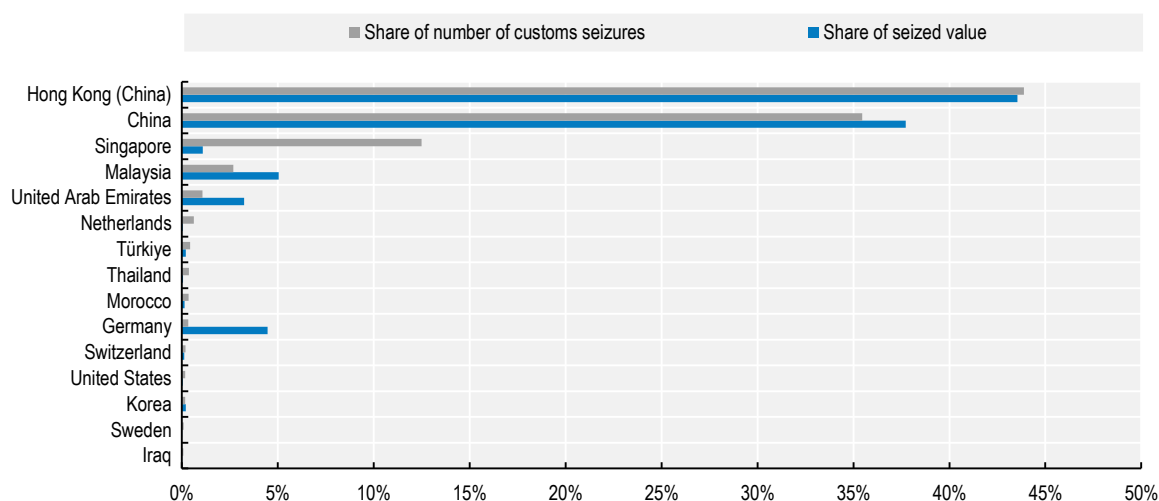
To capture the economic context, the analysis relies on the OECD database on Structural and Demographic Business Statistics. This database provides a wide range of statistics on businesses and business activity. It features a number of key variables, such as value added, operating surplus, employment, and turnover, for example, broken down by 4-digit International Standard of Industrial Classification (ISIC Revision 4) industry groups. This enables for more precise impact estimates to be made at the manufacturing sector's level.

3 What are the main characteristics of trade in counterfeit goods infringing Korean IPR holders?

3.1. Where do fake products that infringe on Korean IPR holders come from?

During the 2011-19 period, the largest share of fake products seized for infringing on Korean intellectual property (IP) originated from Hong Kong (China) and the People's Republic of China (hereafter "China") (Figure 3.1). These economies represented 44% and 35% of customs seizures, respectively. They were followed by Singapore (12%) and Malaysia (3%). In terms of seized value, China and Hong Kong (China) also accounted for the largest share of counterfeit products infringing on Korean IPRs.

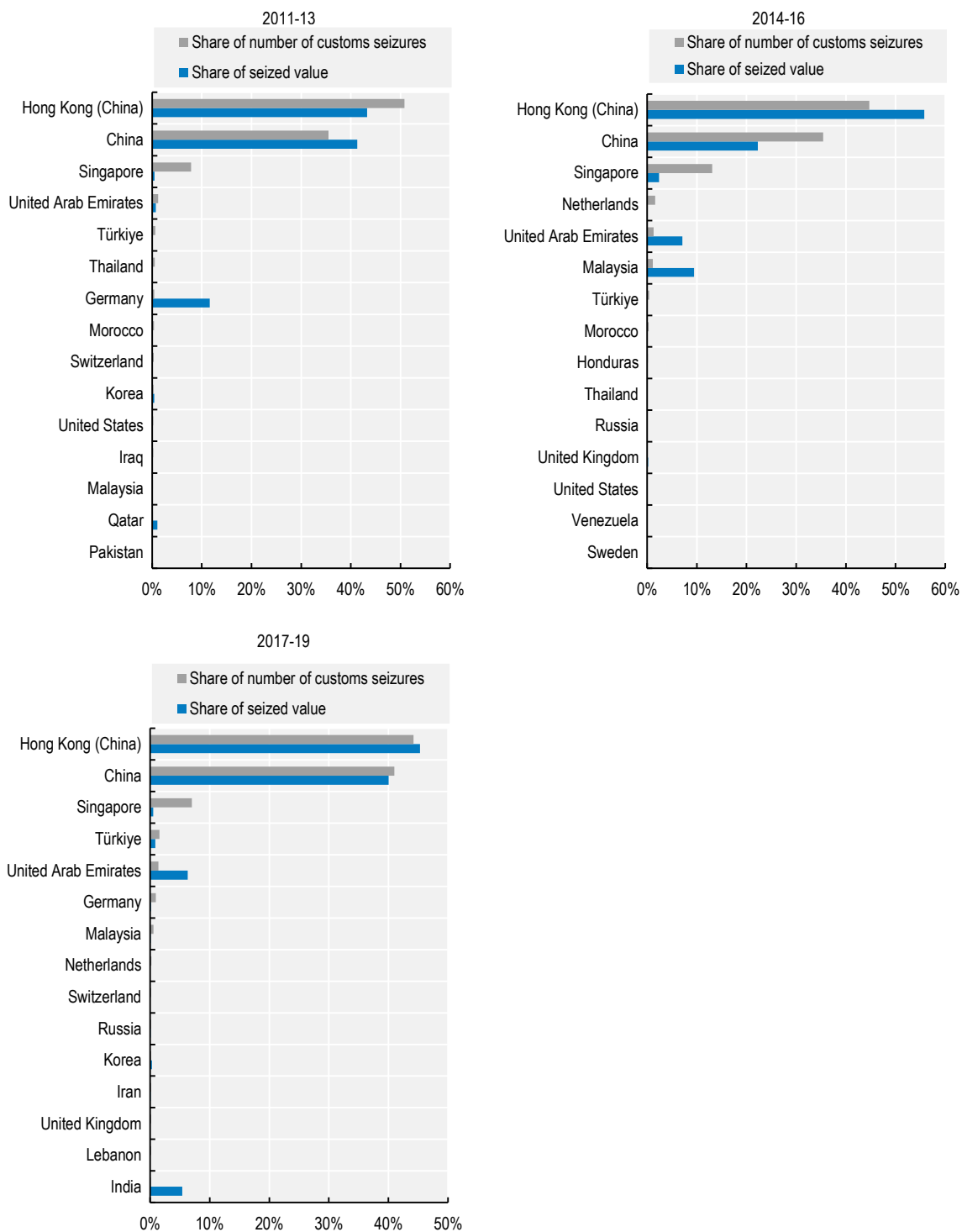
Figure 3.1. Top provenance economies for counterfeit goods that infringe on Korean IPR holders, 2011-2019



Source: OECD global customs seizures.

A more detailed analysis over time reveals cyclical trends, as in the case of Germany (Figure 3.2). During 2011-2013, Germany accounted for 12% of seized goods infringing Korean brand IPR in terms of value whereas its role was less important in other years. Also noteworthy is the case of India, which accounted for 5% of the value of goods violating Korean IPRs seized between 2017 and 2019, whereas it did not appear in the economies of origin in previous periods.

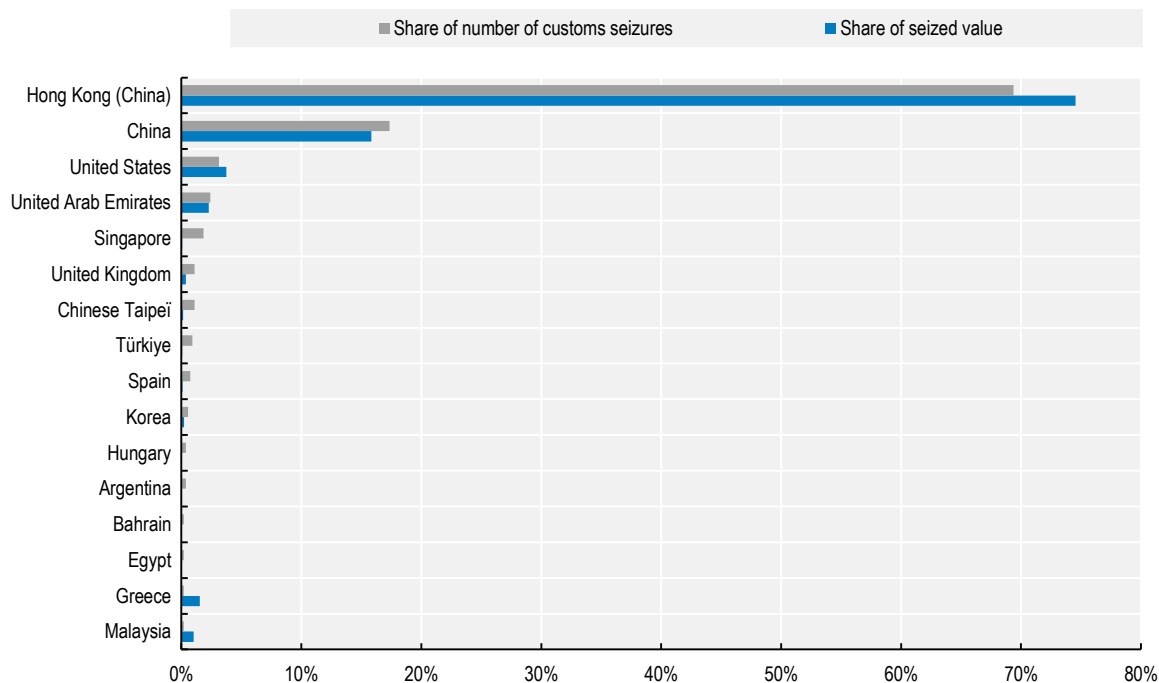
Figure 3.2. Top provenance economies for counterfeit goods that infringe on Korean IPR holders, by time period



Source: OECD global customs seizure.

Recent data from 2020-2021 reveal how economies of origin are quite stable over time. Indeed, Hong Kong (China) continued to be the largest provenance economy for seized goods infringing Korean IPRs followed by China (Figure 3.3). Hong Kong's (China) share of goods infringing Korean IPRs increased compared to the 2011-2019 period, accounting for almost three-quarters of customs seizures. China's share declined, accounting for 17% of customs seizures. The United States and the United Arab Emirates followed suit, responsible for 3% and 2% of customs seizures respectively.

Figure 3.3. Top provenance economies for seized goods that infringed on Korean IPRs, 2020-2021

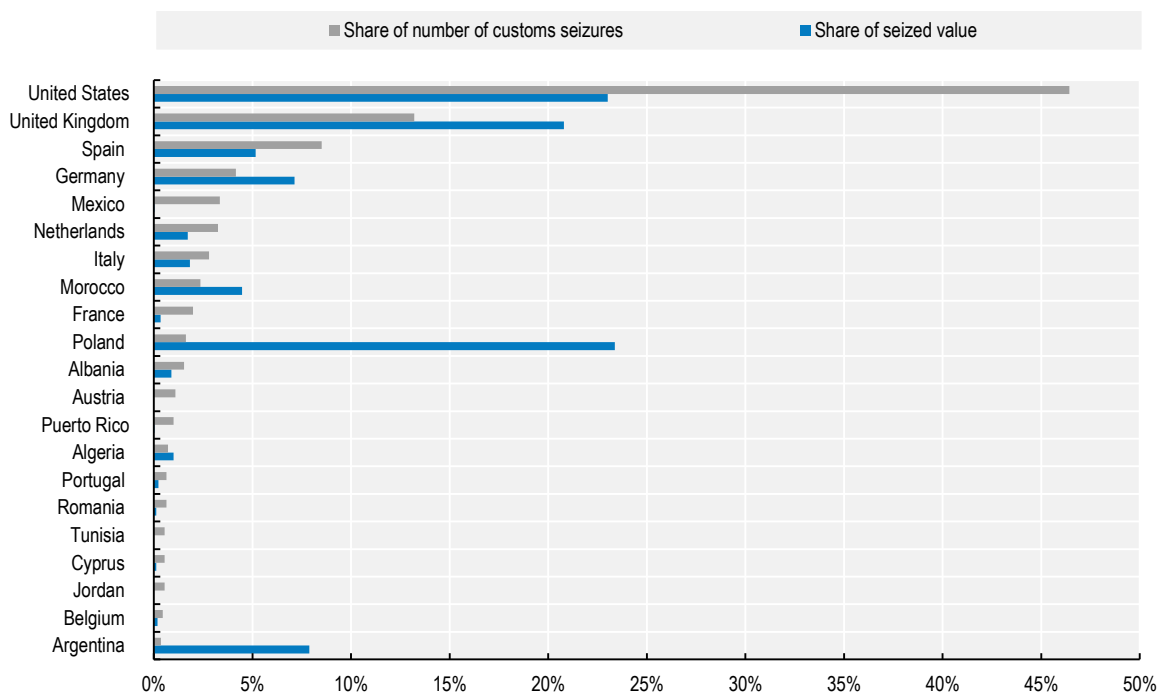


Source: OECD global customs seizures.

These products were mainly destined to the United States, which imported almost half of the global volume of seized goods infringing Korean IPRs (Figure 3.4). European countries (e.g. United Kingdom, Spain, Germany, Netherlands, Italy) were other popular destinations for Korean IPR-infringing goods, as well as Latin American countries (e.g. Mexico and Puerto Rico) and North African countries (e.g. Morocco, Algeria, and Tunisia).

In terms of seized value, the United States, Poland, the United Kingdom, and Argentina were the main destinations for goods that infringed Korean IPRs. Poland can be considered as a primary entry point as it received very large shipments of Korean IPR-infringing goods. Argentina, on the other hand, can be considered a one-off destination as its ranking is linked to a large seizure of games and toys.

Figure 3.4. Top destination economies for seized goods that infringe on Korean IPRs, 2020-2021



Source: OECD global customs seizures.

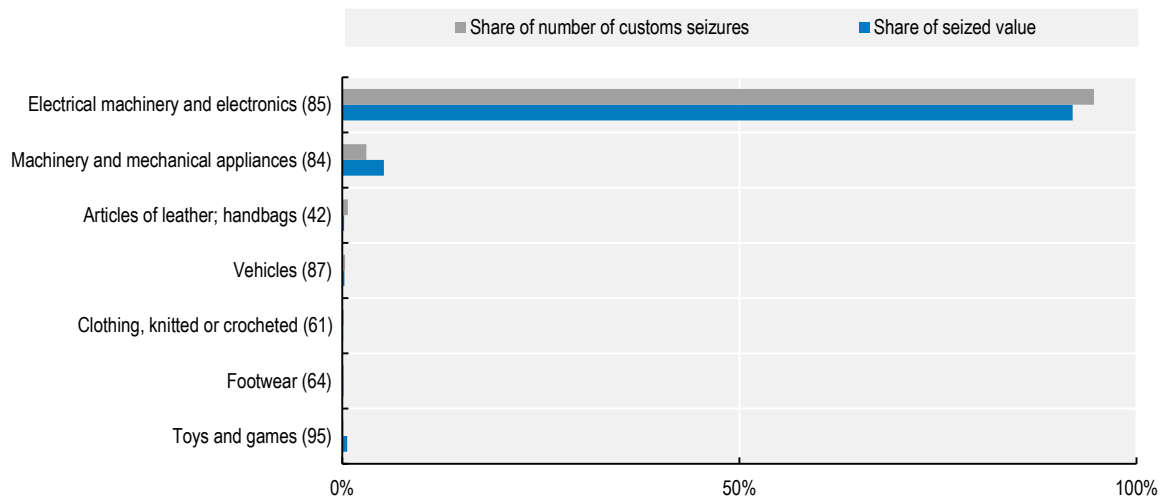
Experts in trade in counterfeits infringing Korean IPRs emphasised how China continues to dominate as the origin of counterfeit goods, followed by emerging hubs like Viet Nam, known for appropriating technologies, and potentially India, due to its cheap labour costs. Weak IP enforcement laws may also explain the emergence of these countries in the trade in counterfeits.

With regard to the production, fakes infringing Korean IPRs are often manufactured in large regular factories, making it challenging to discern excess quantities or distinguish between authentic and counterfeit products. In addition, the production of counterfeits involves numerous suppliers, creating a challenge in authenticating production. The recycling of defective products and unauthorised manufacturing by small workshops have further exacerbated the issue, alongside instances of backdoor leakages.

3.2. Which Korean products are most likely to be counterfeit or pirated?

The unified dataset on customs seizures of counterfeit and pirated goods can also be used to quantify Korean products infringing IPRs. As can be seen in Figure 3.5, over the period 2011-2019 Korean products that suffered most from counterfeiting were electrical machinery and electronics. This category – which includes mobile phones, ICT components, mobile accessories (such as chargers, earbuds, and cables) as well as electronic appliances such as TVs – represented 95% of customs seizures.

Figure 3.5. Top product categories for counterfeit goods violating Korean IPRs, 2011-2019



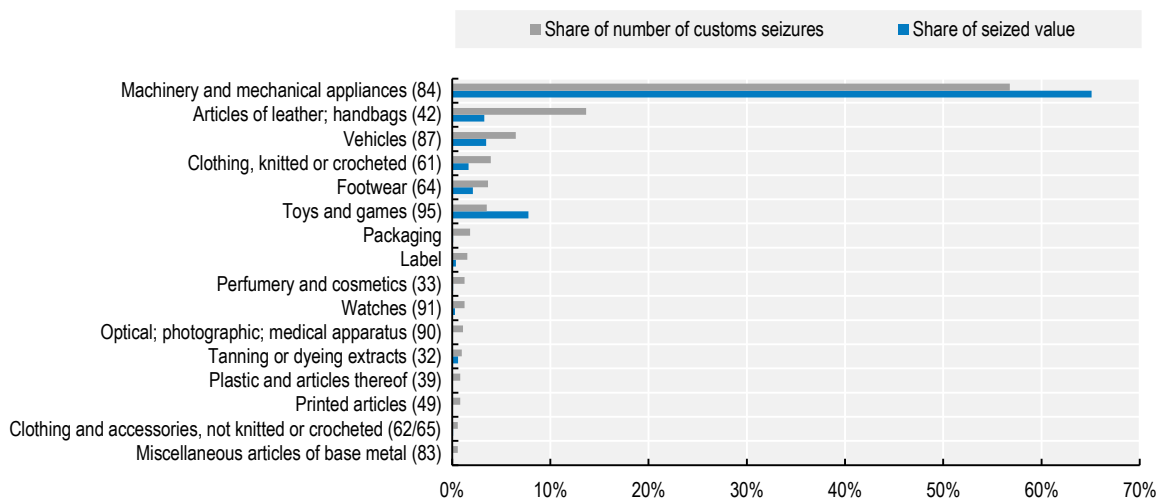
Source: OECD global customs seizures.

Apart from electrical machinery and electronics, Figure 3.6 shows that seizures of counterfeit Korean products included machinery and mechanical appliances, fashion items, leather goods, automotive spare parts toys and games, and cosmetics.

Analysis of more recent data on customs seizures infringing Korean IPRs indicates that just over half of the goods were electrical appliances from 2020 to 2021 (Figure 3.7). Customs seizures of goods violating Korean IPRs also included textiles (20% of customs seizures) and cosmetics (15%).

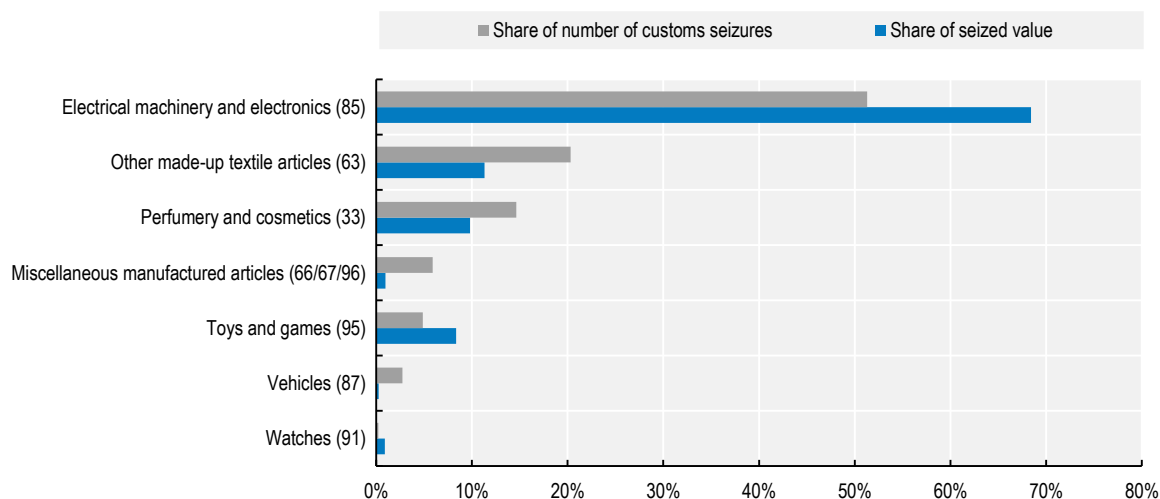
In terms of seized value, the weight of electronic products is considerable, representing over two-thirds of total customs seizures. This was followed by textiles and cosmetics.

Figure 3.6. Top product categories for counterfeit goods violating Korean IPRs, excluding seizures of electronics appliances, 2011-2019



Source: OECD global customs seizures.

Figure 3.7. Top product categories for counterfeit goods that violate Korean IPRs, 2020-2021



Source: OECD global customs seizures.

Customs data show that the seizures of machinery include counterfeit products such as LCD screens, water and air filters, while the seizures of leather goods mainly refer to leather phone cases and tablet covers. With regard to spare parts, counterfeit products such as smart keys, seat belts, windshields, and electric relay were the most frequently seized.

As for cosmetics, an interview with representatives of this sector revealed that counterfeiters typically target popular products within the Fast-Moving Consumer Goods (FMCG) sectors. The analysis indicates that counterfeiters study the market meticulously, targeting products with growing popularity. Targeting is not limited to high-end products; even everyday items like toothbrushes are counterfeited, highlighting the pervasiveness of the problem.

Although they are not among the main Korean IPR-infringing goods seized by customs, food products are also targeted. Discussions with this industry's representatives indicate that counterfeiters primarily target room temperature food items such as sauces, which are easy to manufacture and store. In particular, regions like China have a strong presence in counterfeit food items, such as root ginseng. The COVID-19 pandemic has also seen a shift in counterfeiting strategies, with an increase in smaller products and a heightened presence of these goods online.

It is worth noting that trade in Korean IPR-infringing products includes a wide range of goods that can potentially endanger consumers' health and safety. As a joint OECD EUIPO report on dangerous fakes (OECD/EUIPO, 2022^[3]) shows, counterfeit goods pose risks for consumers as they are likely to escape health, security, and environmental regulations (Box 3.1).

Box 3.1. Health and safety concerns of the trade in counterfeits that violate Korean IPRs

A key point raised in the conversation with the delegates from the consumer goods industry, was the health and safety risks associated with counterfeit products in the healthcare sector. Though there haven't been confirmed cases of health problems directly linked to counterfeits, the differences in ingredients and substandard production sites underscore the potential risks. The main categories of goods that infringed upon Korean IPRs include cosmetics, Fast-Moving Consumer Goods (FMCG), and

beverages. Regulatory authorities, such as the Korean FDA, are closely monitoring this issue for potential human risks associated with these counterfeit products.

In particular, the counterfeiting of food items poses significant health and safety risks. For example, counterfeit food additives distributed in China have been found to contain higher quantities of sugar and salt. The production processes of these counterfeit goods are substandard, increasing the risk of contamination. Unlike legitimate goods, which undergo rigorous health and product certifications, counterfeit items lack these essential quality assurances.

Similarly, counterfeit fashion items are often of inferior quality. Even though they might not pose severe health or safety risks, they compromise the consumer experience and satisfaction. In addition, the production of textile goods, and in particular the production of counterfeit goods which are not subject to any standards, represent a real threat to the environment by wasting natural resources and potentially increasing pollution.

ICT counterfeit products also pose substantial safety risks due to their potentially significantly lower quality, leading to health hazards. Essential electronic devices like batteries and chargers, which are often of subpar quality, have reported cases of explosions and other malfunctions.

3.3. How are counterfeit products that infringe on Korean IPRs distributed?

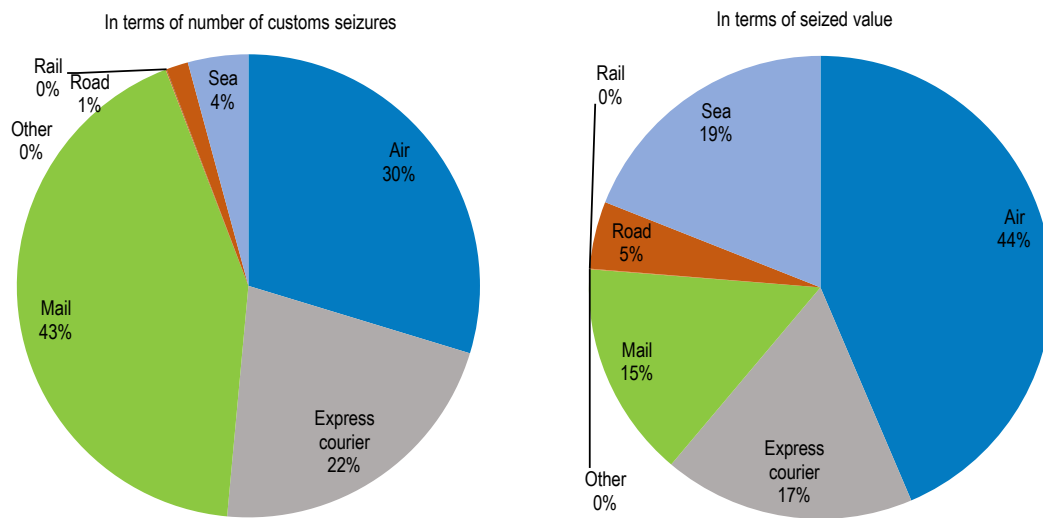
3.3.1. What are the conveyance methods used to ship counterfeit Korean goods in illicit trade?

Customs data can also be helpful to gain insights into the means of transport used to transfer counterfeit products infringing on Korean IPRs to their final destinations.

Figure 3.8 shows that postal services were the preferred transport mode for fake products violating Korean IPRs over the period 2011-2019, accounting for 43% of all seizures of Korean IPR-infringing products. It was followed by air (30%) and express courier (22%).

Figure 3.8. Conveyance methods for counterfeit products that infringe on Korean IPR holders

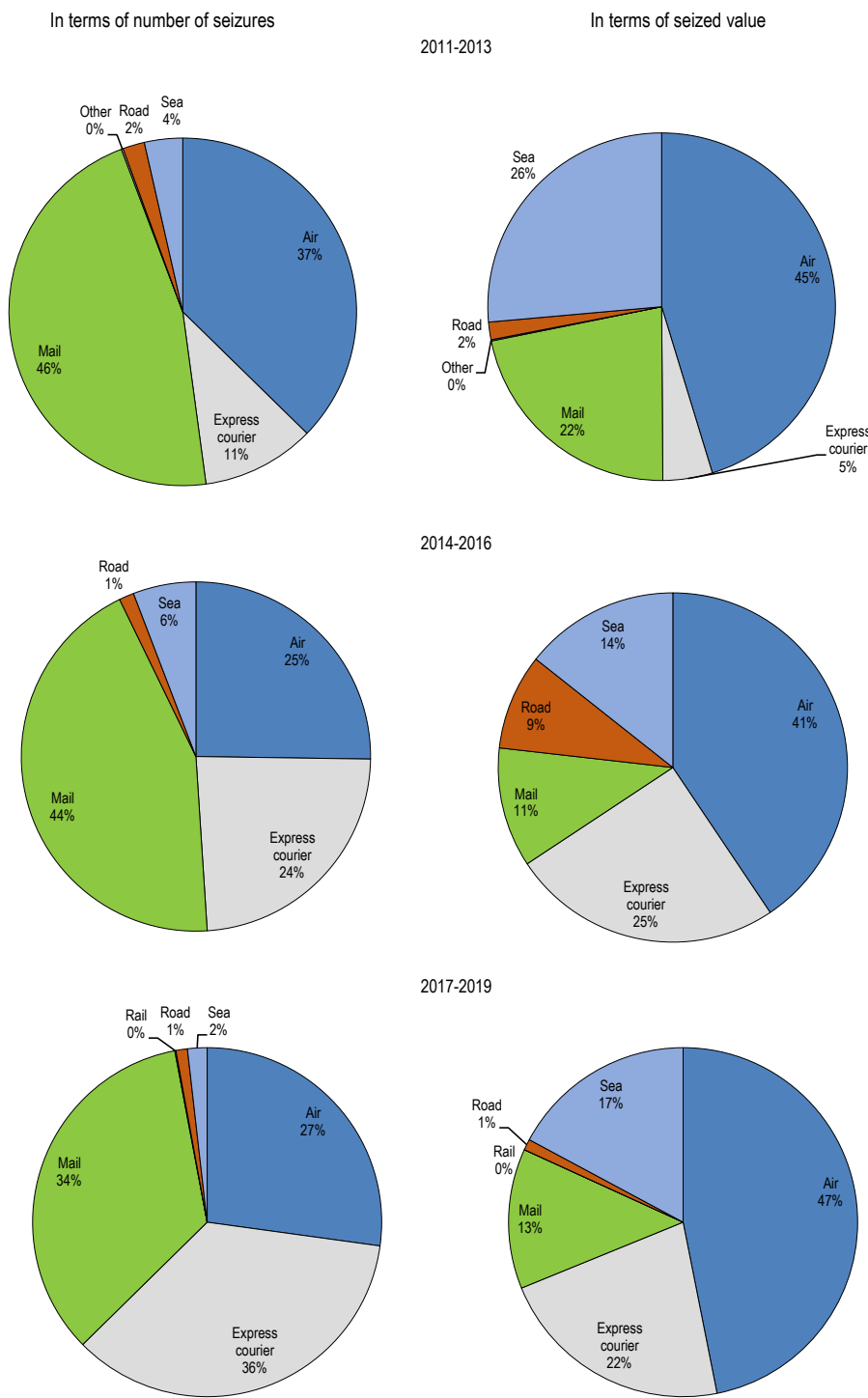
2011-19



Source: OECD global customs seizures.

An analysis over time shows that mail, air, and express couriers have remained the most frequently used means of transport in the trade of counterfeit goods infringing on Korean IPRs (Figure 3.9). However, several developments have occurred, notably the increased role of express couriers, whose share has risen from 11% in the period 2011-2013 to 36% in the period 2017-2019.

Figure 3.9. Conveyance methods for counterfeit products that infringe on Korean IPR holders, by time period



Source: OECD customs seizures.

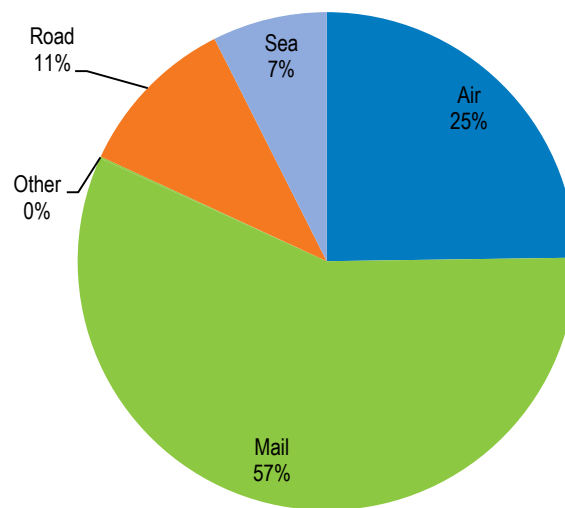
The predominance of mail and express couriers is directly linked to online sales. Just as with the purchase of genuine products, online purchases of counterfeit products are steadily increasing. The digital environment is being exploited by counterfeiters, who can easily deceive consumers. The OECD and EUIPO have worked in this field and gathered evidence of the misuse of online commerce for counterfeit products (see OECD (2021^[4]) and OECD/EUIPO (2021^[5])).

Korean industry representatives confirmed this trend as counterfeit products are becoming more prevalent online. E-commerce platforms, social media, and dedicated online sales channels are becoming hotspots for counterfeit goods. The lack of quality checks online further compounds this issue, making it easier for counterfeit goods to flood the market.

The most recent customs data seizures indicate that mail remained the most frequently used transport mode to ship Korean IPR-violating goods to their final destinations (Figure 3.10). Indeed, during 2020-2021, 57% of seized goods infringing Korean IPRs were sent by mail. Air and sea were the two following preferred transport modes, representing respectively 25% and 7% of Korean IPR-infringing customs seizures.

Figure 3.10. Conveyance methods of seized goods that infringe on Korean IPRs, 2020-2021

In terms of number of customs seizures



Note: A change in seizure data collection in 2020-2021 does not allow for distinguishing express courier.

Source: OECD global customs seizures.

The proliferation of e-commerce, especially amid the COVID-19 pandemic, has amplified the availability and purchase of counterfeit goods online, demonstrating a discernible shift in consumer behaviour and sales channels.

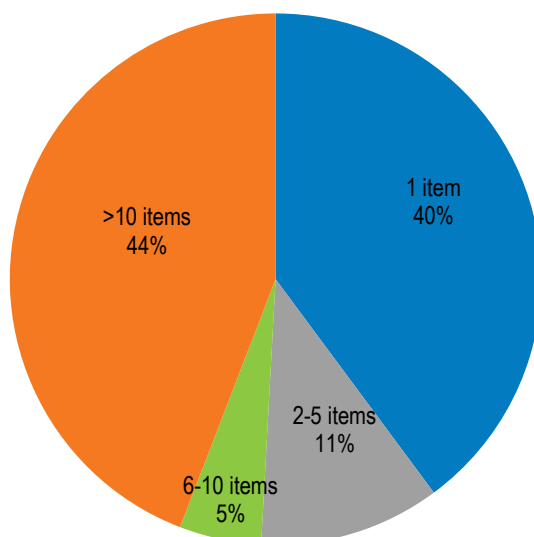
E-commerce plays a pivotal role in the spread of counterfeit food products. A Korean industry representative indicated that online sales accelerated during COVID-19, with online counterfeit sales dominating over offline, reflecting a change from a previous 70/30 to 90/10 ratio.

3.3.2. What is the size of shipment of seized products violating Korean IP brand owners?

Customs data indicate that goods infringing Korean IPRs were mostly shipped through small packages. As can be seen in Figure 3.11, 56% of seizures violating Korean IPRs contained less than ten items over 2011-2019. As for the larger shipments, the customs data indicate that they contained on average 1 235 fake items.

Figure 3.11. Size of seized shipments of products that infringe on Korean IPRs, 2011-2019

In terms of number of customs seizures

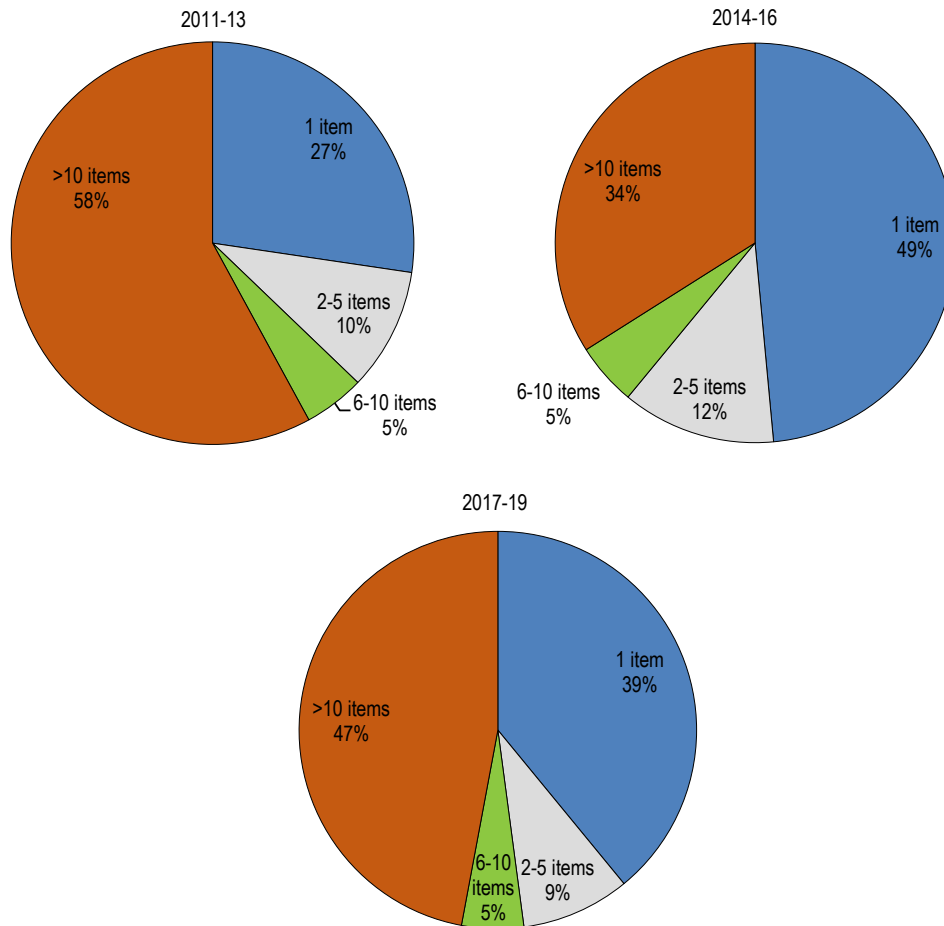


Source: OECD customs seizures data.

A time-based analysis reveals that the size of shipments of goods infringing Korean IPRs has tended to shrink over time. Large shipments were predominant during the period 2011-2013, representing 58% of seizures (Figure 3.12). This figure declined in the 2014-16 and 2017-19 period, representing respectively 34% and 47%. This trend is in line with the shift towards an increasingly online nature of both licit and illicit trade as highlighted by the joint report by the OECD and the EUIPO (2021^[5]).

Figure 3.12. Size of seized shipments of products that infringe on Korean IPRs, by time period

2011-2019



Source: OECD global customs seizures.

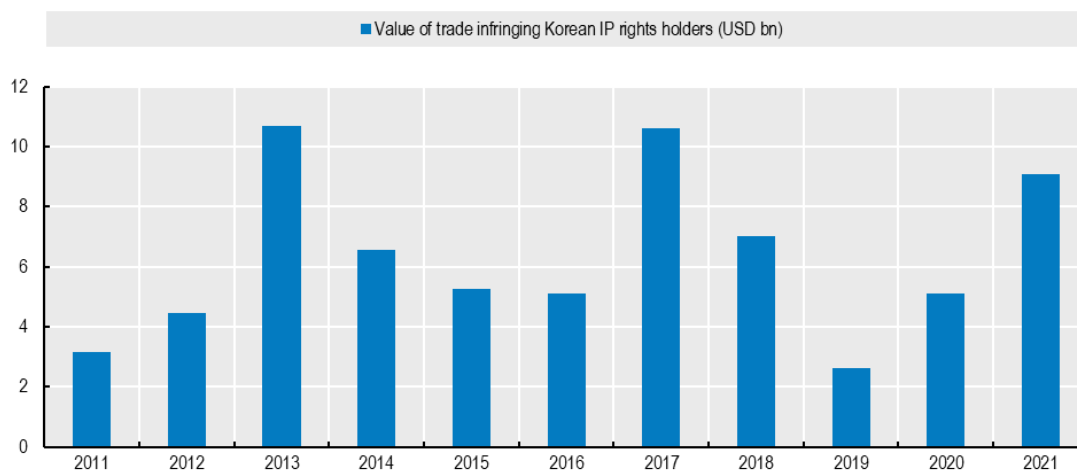
3.4. What is the magnitude of counterfeit products infringing Korean IPR holders?

3.4.1. What is the total value of counterfeit products infringing Korean IPR holders?

The estimated values of fakes infringing Korean IPRs have varied over time (Figure 3.13). Two peaks were reached in 2013 and 2017 at USD 10.7 billion and USD 10.6 billion, both of which were followed by a period of decline.

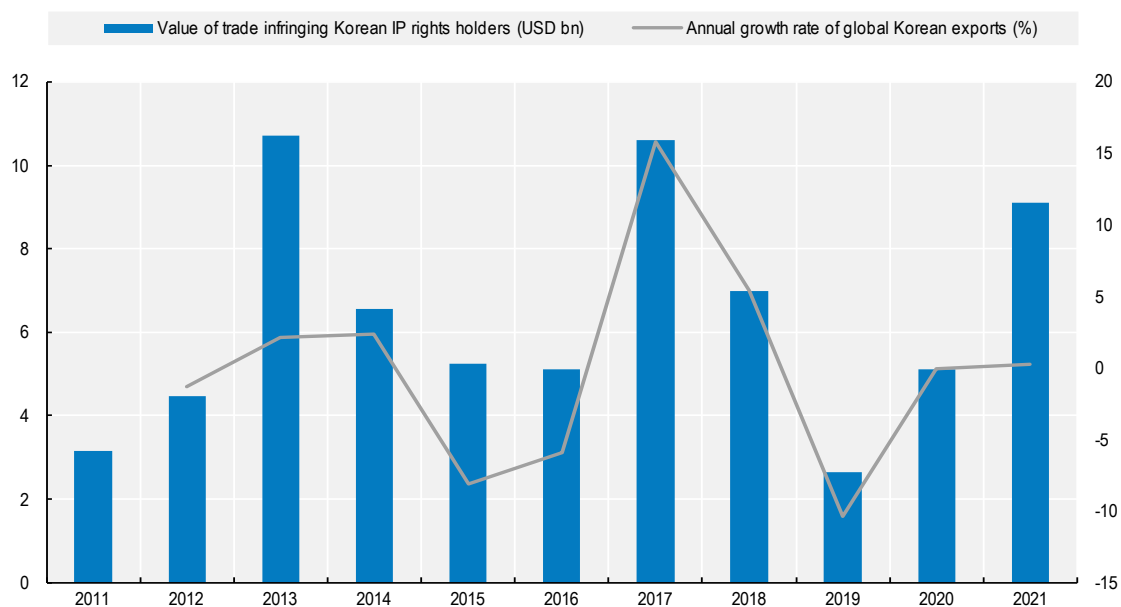
Figure 3.14 shows that since 2014, trade in Korean IPR-infringing goods and global Korean exports have followed a similar trend although at different paces. This link between licit and illicit trade may be due to the misuse of trade facilities by illegitimate actors. The OECD and EUIPO have already raised this issue of counterfeiters taking advantage of trade facilities to strengthen (licit) international trade flows in different studies such as OECD/EUIPO (2018^[6]), OECD/EUIPO (2021^[7]) and OECD/EUIPO (2021^[5]).

Figure 3.13. Value of trade violating Korean IPR holders by year, USD billion



Source: OECD calculations.

Figure 3.14. Value of trade in counterfeit Korean goods (USD bn) and annual growth rate of global Korean exports, 2011-2021



Source: OECD calculations

When examining Korean IPR-infringing goods consumed both domestically and abroad, the total value of this trade amounted to almost USD 9.7 billion dollars in 2021, which represented 0.96% of total sales (domestic sales plus exports) (Table 3.1). This table also indicates that the volume of trade in goods violating Korean IPRs represented 1.5% of total Korean exports in 2021. When considering only the exports of industries affected by counterfeiting, this share amounted to 3.2%.

This table also highlights how the share of trade in counterfeits violating Korean IPRs has changed over time. This trade represented up to 2% of Korean exports in 2013.

Table 3.1. Total volume of trade in goods violating Korean IPRs (domestic sales plus exports) in absolute and relative terms, by year

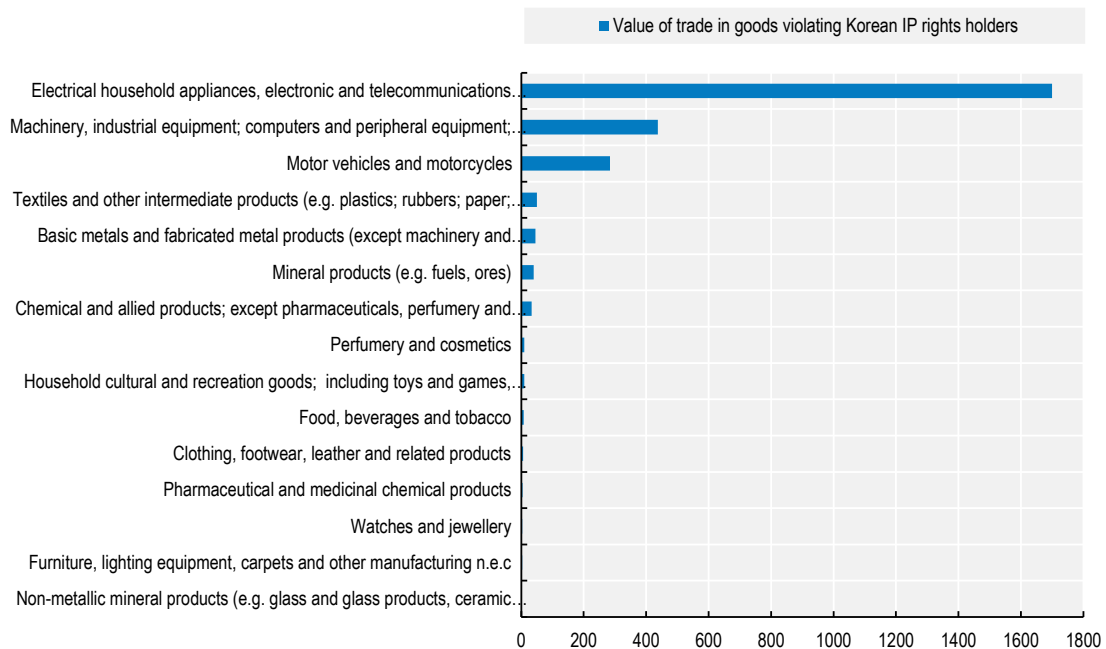
Year	Value of fakes (exports plus domestic sales) in USD million	Share of totals sales	Share of total exports
2011	3 801	0.3%	0.7%
2012	5 096	0.4%	0.9%
2013	11 315	0.9%	2.0%
2014	7 233	0.6%	1.3%
2015	6 101	0.4%	1.2%
2016	5 733	0.5%	1.2%
2017	11 097	1.3%	1.9%
2018	7 483	0.8%	1.2%
2019	2 591	0.29%	0.5%
2020	5 588	0.66%	1.1%
2021	9 691	0.96%	1.5%

Source: OECD global customs seizures and OECD Structural and Demographic Business Statistics (SDBS) database.

3.4.2. Which sectors are most affected by counterfeit trade?

Figure 3.15 shows for all sectors suffering from IP infringement the value of fake trade in 2019. Unsurprisingly, trademarks and patents of Korean residents related to electrical household appliances, electronic and telecommunications equipment were particularly targeted by counterfeiters in global trade. This sector represented 64% of the global value of trade infringing Korean IPR holders, equivalent to USD 1.7 billion in 2019.

Figure 3.15. Total value of goods that violate Korean IPR holders by sector, 2019

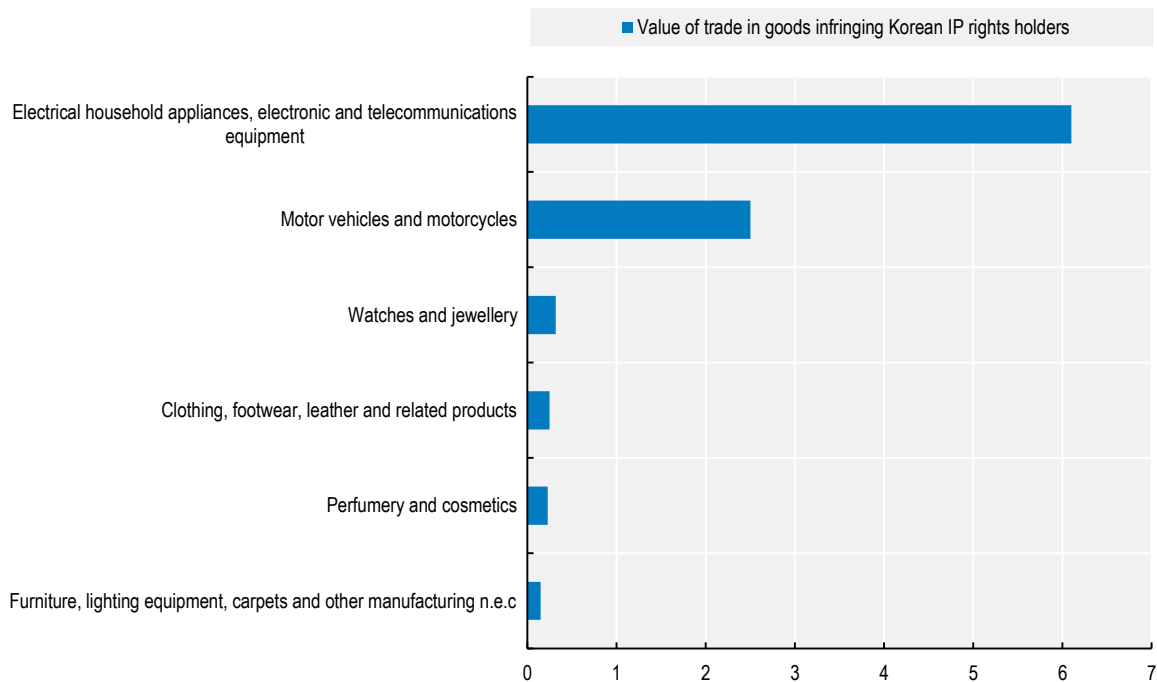


Source: OECD calculations.

Figure 3.16 illustrates the value of fake trade in 2021 for key sectors suffering from IP infringement. Unsurprisingly, Korean IPRs related to electrical household appliances, electronic and telecommunications equipment were particularly targeted by counterfeiters in global trade. This sector represented 62% of the global value of trade infringing Korean IPR holders, equivalent to USD 6.1 billion in 2021. The Korean automotive industry was also targeted by counterfeiting with a volume of fakes reaching USD 2.5 billion in 2021.

Figure 3.16. Value of trade in Korean IPR-infringing goods by sector, 2021

In USD billion



Source: OECD calculations.

4 What are the impacts of global infringements of Korean IPRs on the Korean economy?

4.1. Are consumers knowingly buying fakes that infringe on Korean IP?

The next step consists of comparing the share of Korean IPR-infringing fakes that are sold on primary markets worldwide with those that are sold on secondary markets. This is done using the methodology described in Annex B.

Table 4.1 indicates that more than 59% of the goods traded worldwide that infringed Korean IPRs were offered on secondary markets, i.e. they were bought by consumers who knew they were fakes.

This share varies among product categories, ranging from 8.2% for recreation goods (e.g. toys and games) to almost 74% for clothes.

It can be noted that the share of the secondary market is lower for counterfeit products that have direct health and safety impacts such as toys and games, and cosmetics. However, it is important to recall that substandard products with negative impacts on consumers' health and security are included in all product categories. Despite proven risks, this report does not provide precise estimates of these risks as they cannot be precisely quantified.

Table 4.1. Share of secondary markets for top counterfeit products that infringe on Korean IPRs, 2020-21

Sector	Share of secondary market (bought knowingly)
Household cultural and recreation goods	8.2%
Perfumery and cosmetics	33.3%
Motor vehicles and motorcycles	43.2%
Watches and jewellery	46.0%
Electrical household appliances, electronic and telecommunications equipment	59.7%
Furniture, lighting equipment, carpets and other manufacturing n.e.c	61.3%
Clothing, footwear, leather and related products	73.8%
Total	59.5%

Source: OECD calculations.

The existence of an unintended demand for counterfeit goods leads to a drop in consumer surplus, as consumers who are concerned about their health and well-being receive a counterfeit product, often of inferior quality, instead of a genuine product. Counterfeiters invest substantial effort in making the fake products appear as authentic as possible to mislead consumers effectively. The case of recycled old phones is a great illustration. Indeed, ICT representatives indicated that a common practice is to refurbish and reintroduce old phones to the market as new ones. Such counterfeit practices involve using low-quality fake chips, whilst updating the case and screen to deceive consumers.

E-commerce is a preferred distribution channel for counterfeiters as it facilitates consumer deception. For example, fake fashion products are primarily distributed online utilizing stolen seller identities, often mingling genuine and counterfeit goods.

Unintentional purchases of counterfeit goods are often linked to a lack of consumer awareness which is a key element in limiting the trade in counterfeit goods. Interviews with Korean brand representatives have shown that consumer knowledge varies across regions. While quality improvements in counterfeits have misled consumers in regions like the European Union, the United States and Korea, in Southeast Asia and Latin America, the primary incentive remains the price, underlining a significant lack of consumer awareness.

4.2. What is the impact on Korean firms' sales in the manufacturing sector?

As can be seen in Table 4.2, the volume of forgone sales due to IP infringement varies across years and reached over USD 8 billion in 2013 and 2017. In relative terms, the impact of Korean IPR violations on total Korean manufacturing sales ranges from 0.14% to 1.05%.

Table 4.2. Volume of Korean companies' forgone sales due to infringement of their IPRs, by year

Year	Sales losses in USD million	Share of sales
2011	2 879	0.24%
2012	4 004	0.34%
2013	8 628	0.72%
2014	5 647	0.45%
2015	4 707	0.35%
2016	4 375	0.39%
2017	9 042	1.05%
2018	6 026	0.67%
2019	1 231	0.14%
2020	3 425	0.40%
2021	6 097	0.60%

Source: OECD calculations.

In 2018, the total volume of Korean companies' forgone sales due to infringement of their IPRs in global trade amounted to USD 6 billion, or 0.7% of total sales of Korean companies in that year (domestic plus exports).

Out of these sales, the manufacturing industry for electrical household appliances, electronics and telecommunications equipment was by far the most hit by counterfeiting (Table 4.3). It incurred sales losses of USD 4.7 billion, i.e. almost 80% of the global value of sales losses due to infringement of Korean IPRs. It was followed by machinery and industrial equipment (USD 546 million) and automotive spare parts (USD 296 million). These results highlight the importance of analysis data at the sector level as significant disparities between industries exist.

In terms of the share of sales, the electrical household appliances, electronics, and telecommunications equipment industry lost over 19.4% of its sales in 2018. It was followed by the watches and jewellery and machinery industries with losses representing respectively 0.59% and 0.36% of their sales.

Table 4.3. Volume of Korean companies' forgone sales due to infringement of their IPRs in 2018, by sector

Sector	Sales losses in USD million	Share of sales
Watches and jewellery	5.9	0.59%
Clothing, footwear, leather and related products	47.4	0.25%
Food, beverages and tobacco	56.3	0.08%
Textiles and other intermediate products (e.g. plastics; rubbers; paper; wood)	67.2	0.07%
Chemical and allied products; except pharmaceuticals, perfumery and cosmetics	142.0	0.10%
Basic metals and fabricated metal products (except machinery and equipment)	144.0	0.07%
Motor vehicles and motorcycles	296.0	0.18%
Machinery, industrial equipment; computers and peripheral equipment; ships and aircrafts	546.0	0.36%
Electrical household appliances, electronic and telecommunications equipment	4720.0	19.42%

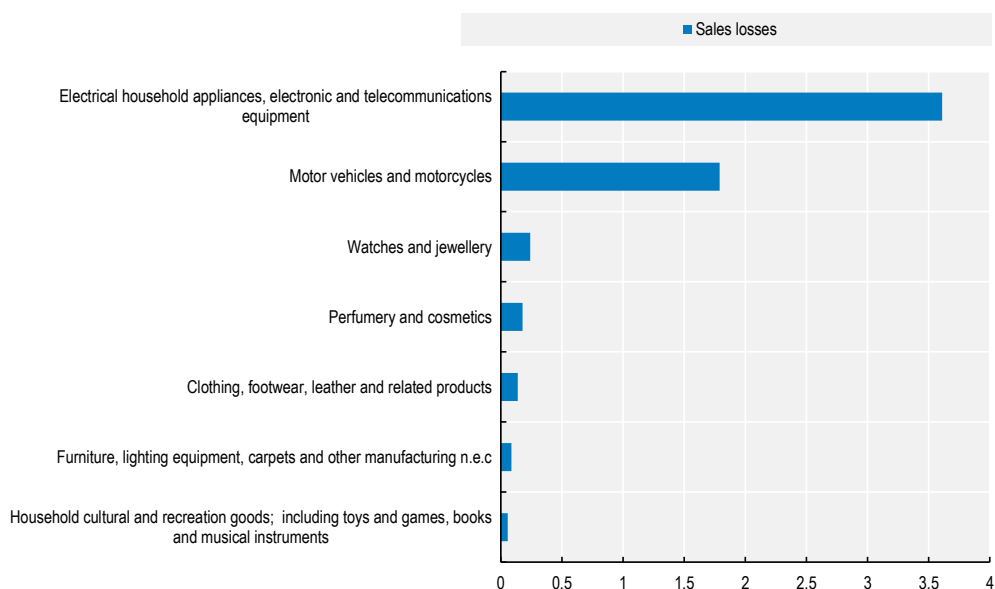
Source: OECD calculations and OECD SDBS database.

In 2021, the sales losses for the Korean manufacturing industry due to IPR infringement amounted to USD 6.1 billion. This represents 0.6% of total Korean manufacturing sales of that year. When considering only the sales of the sectors affected by counterfeiting, this share amounted to 2.4%.

As can be seen in Figure 4.1, the ICT sector was the hardest hit by counterfeiting with sales losses amounting to USD 3.6 billion in 2021. This is equivalent to 13.4% of the sector's sales and almost 60% of total sales losses of the global trade in Korean IPR-infringing goods. In absolute terms, the automotive sector also experienced high losses at almost USD 1.8 billion. In relative terms, the impact is less pronounced with a share of sales losses representing 1% of total automotive sales in 2021.

Figure 4.1. Top Korean manufacturing industries impacted by IPR infringement in terms of loss of sales, 2021

In USD billion



Source: OECD calculations.

4.3. What is the impact on jobs in the Korean manufacturing sector?

In addition to its impact on the sales of brands holding intellectual property rights, counterfeiting also has an impact on employment. Table 4.4 shows the job losses in Korean manufacturing due to infringement of Korean IPR holders from 2011 to 2021. The Korean manufacturing sector losses amounted to over 13 500 jobs in 2021 due to IP infringement.

As can be seen in Figure 4.2, the manufacturing sector of electrical household appliances, electronic and telecommunications equipment experienced the highest losses with more than 7 000 lost jobs in 2018.

In 2021, the impact of counterfeiting on the Korean manufacturing employment resulted in over 13 500 lost jobs. In relative terms, this represents 0.7% of total manufacturing employment. However, this share is higher, at 3%, when only sectors affected by IPR infringement are considered.

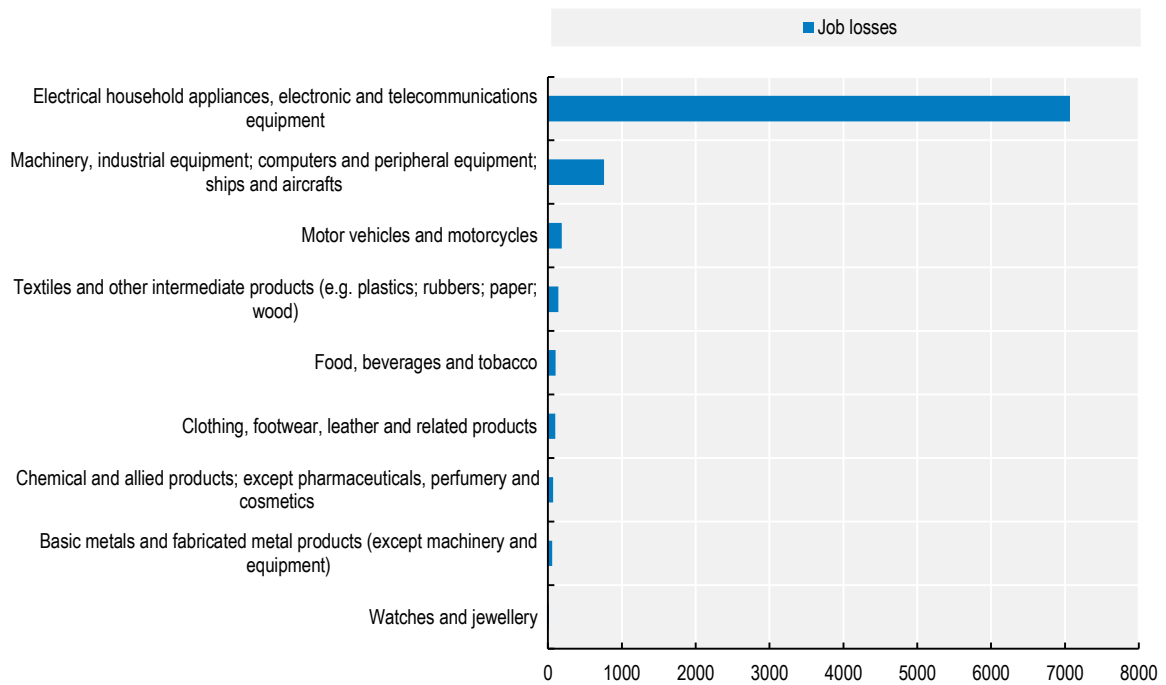
Figure 4.3, which presents the breakdown of jobs losses by sector, shows that the ICT sector experienced the highest job losses (more than 9 500), followed by the automotive industry which lost more than 2,000 jobs. In relative terms, the watches and jewellery, and the ICT industries experienced the highest jobs losses. The share of job losses represented respectively 25% and 16% of employed in these two industries.

Table 4.4. Job losses in Korean manufacturing sectors, by year

Year	Job losses	Share of employees
2011	3 134	0.12%
2012	4 522	0.18%
2013	9 657	0.37%
2014	6 114	0.23%
2015	5 604	0.16%
2016	5 069	0.19%
2017	13 442	0.66%
2018	8 487	0.42%
2019	3 423	0.17%
2020	9 200	0.46%
2021	13 855	0.69%

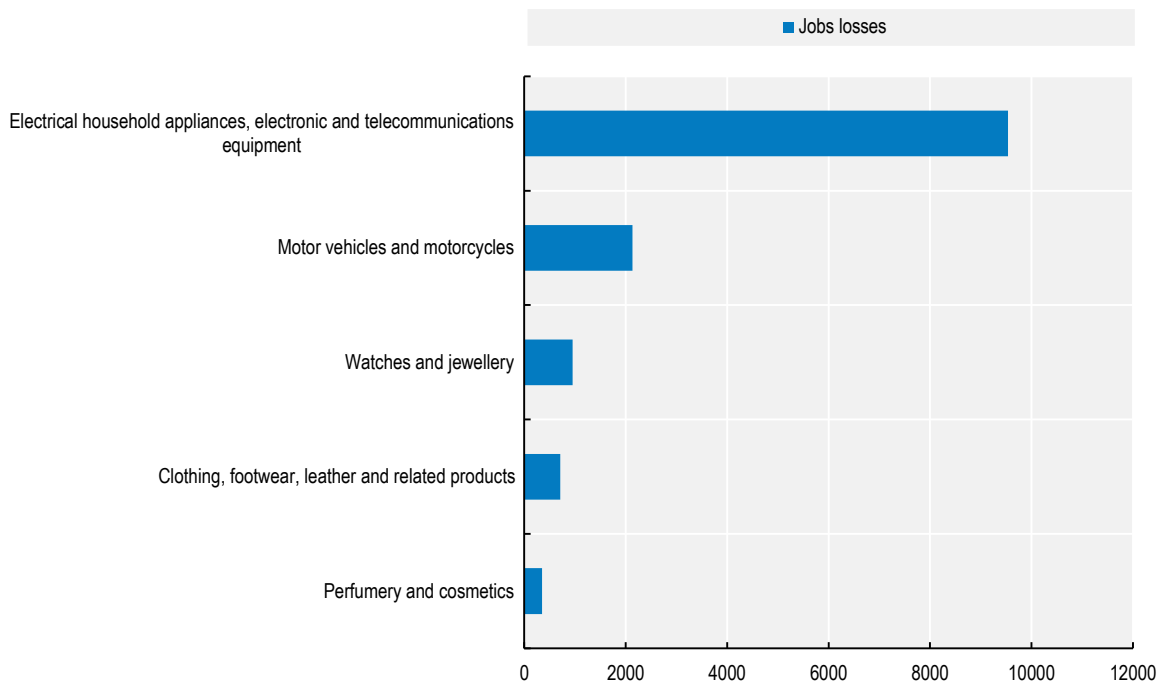
Source: OECD calculations and OECD Structural and Demographic Business Statistics (SDBS) database.

Figure 4.2. Top Korean manufacturing industries impacted by IPR infringement in terms of absolute job numbers, 2018



Source: OECD global customs seizures.

Figure 4.3. Top Korean manufacturing industries impacted by IPR infringement in terms of job losses, 2021



4.4. What is the impact on Korean government revenue?

Lower sales and lower profits for Korean rights holders mean they pay lower corporate income tax to the government. Moreover, fewer employees mean lower personal income tax revenues and lower social security contributions collected by the Korean government. In 2018, this forgone tax revenue amounted to USD 925 million, equivalent to 0.45% of total Korean revenues collected on these two taxes. In 2021, this figure reached USD 1.5 billion, with USD 937 million lost in income taxes and social security contributions, and USD 633 million lost in corporate tax (Table 4.5).

Table 4.5. Public revenue losses due to infringements of Korean IPRs in global trade, 2018 and 2021

Type of tax	2018		2021	
	Value in USD million	Share	Value in USD million	Share
Personal income tax and employees' social security contributions	583.16	0.43%	937.02	0.55%
Corporate income tax	342.21	0.47%	633.12	0.91%
Total	925.37	0.45%	1 570.14	0.65%

Source: OECD calculations and OECD (2020^[8]).

4.5. What are the main challenges and strategies to limit the impacts of trade in counterfeits violating Korean IPR?

4.5.1. Challenges faced to fight against counterfeiting

Korean industry representatives as well as members of the Korean Intellectual Property Office have also raised, during interviews, the issues and challenges in limiting the impacts of trade in counterfeit goods. The challenges faced by rights holders and law enforcement are multiple and concern different areas.

Low penalties

There is a range of sanctions imposed on counterfeit activities. While some regions like Korea have relatively low civil penalties, The People's Republic of China (hereafter "China") enforces harsher sanctions, particularly against repeat offenses. Despite these efforts, the penalties remain lower compared to those for health and safety risk-related crimes.

Raising penalties for counterfeiting activities to levels that discourage such counterfeiting is a key element in the fight against illicit trade activities.

Lack of co-operation

International co-operation within industries is limited, primarily occurring in enforcement raids, with no pre-arranged co-ordination or substantial collaborative actions in place. Indeed, cases that involve third countries can be accompanied by legal complexities and high costs, requiring the involvement of various agencies, and incurring substantial fees, further complicating efforts to combat counterfeiting. In this regard, it is worth noting that KIPO in collaboration with other agencies like Korea Trade Investment Agency (KOTRA) and the Korean Intellectual Property Protection Agency (KOIPA) provides support to Korean companies expanding overseas (Box 4.1). This includes guidance, counselling, and monitoring to companies to identify ways to enhance their defence against intellectual property infringement abroad.

The need for co-operation between e-commerce platform operators and legal systems has also been indicated as an area for improvement for anti-counterfeiting mechanisms.

Box 4.1. The Korean Intellectual Property Protection Agency (KOIPA)

KOIPA is a public agency under the Korean Intellectual Property Office (KIPO) which is committed to enhancing the competitiveness of Korean companies, protecting IP values, and promoting national economic development.

KOIPA is involved in providing both international and domestic IP protection support.

At the international level, KOIPA seeks to improve IPR protection of overseas exporting companies and enhance Korean brand protection. It also plays a key role in strengthening IP dispute resolution. In these fields, the KOIPA's main activities are to provide:

- Strategic planning for dealing with IP dispute.
- Support for patent dispute risk.
- Aid for investigating and responding to fake goods and trademark squatting.
- A foundation for IP dispute resolution.
- A collaboration with overseas e-commerce platforms in order to combat fake goods.

At the national level, KOIPA's role is to improve legal support for IP protection and to promote a culture that respects IP rights. It is also involved in combating pirated goods and boosting trade secret protection.

High costs

The fight against counterfeiting represents a burden for IPR holders. In addition to the erosion of their brand image, the cost of taking criminal actions against manufacturers of counterfeit goods remains very high and can be discouraging.

Companies must also dedicate resources to monitoring the presence of counterfeit products on the market, authenticating and destroying them in the event of proven counterfeiting. This can represent significant costs for companies.

Small parcels

Addressing counterfeiting transported in small parcels presents a challenge due to difficulties in immediate assessment and incomplete and/or inaccurate information in customs documents. The work of customs officers is often hampered by inconsistencies and false information in the details of the consignment. There is a need for strengthening co-operation with small parcel companies and regular delivery services to address challenges.

4.5.2. Strategies to counter the trade of Korean IPR-violating goods

Discussions with Korean experts on counterfeit trade also focused on strategies for limiting the scale of this activity. Although there are many areas in which action can be taken, Korean experts indicated that only global and combined action would enable them to combat this phenomenon effectively.

Consumer and company awareness

Awareness campaigns are needed to emphasize that counterfeiting is a criminal activity that poses health and safety risks. It is important to make consumers aware of the practices of counterfeiters, particularly regarding the preferred distribution channels for fake products so that they can exercise discernment and limit their deception.

Raising awareness among companies regarding counterfeiting is also key for fighting against this illicit practice. The Korean Intellectual Property Office (KIPO) is involved in building awareness campaigns aimed at businesses, with particular attention to Small and Medium-sized Enterprises (SMEs), which often lack the level of awareness of larger companies which have greater capacity to combat counterfeiting.

Prevention strategies

It is essential to develop and maintain a proactive stance against counterfeit products. The consensus is that complete elimination of counterfeits is challenging, but constant monitoring, prevention strategies, and adoption of a pro-brand mindset are crucial in mitigating the issue and protecting consumers.

Enforcement

Globally, utilising customs approaches, like customs-issued applications for actions,¹ have proven to be efficient and relatively inexpensive methods in addressing counterfeiting. However, there is still a need to bolster judicial police resources.

Prioritising crackdowns at customs and enhancing training are pivotal. Strengthening the capacities of customs officers and raising inspection rates at borders are essential to enhance anti-counterfeiting efforts, necessitating more resources and a strategic focus on relationship building and raising interest among enforcement officers.

Both online and offline measures, including cracking down on production sites, are crucial in combating the spread of counterfeit products in the market. It is worth noting that in this area KIPO's role is important. It conducts meticulous online and offline investigations to counteract infringement. Online investigations often involve detecting infringements or receiving reports from owners and platform operators, followed by detailed procedures to identify sellers of the counterfeits and initiate prosecution. Offline investigations focus on on-site confirmations and further legal procedures, with a view towards achieving comprehensive enforcement actions.

Co-operation

The cost and lack of sufficient co-operation from e-commerce platforms present significant challenges in combating counterfeiting. Various enforcement agencies are willing to cooperate, but challenges remain, particularly with uncooperative trading partners.

As for collaboration between IP offices and enforcement, partnerships already exist but some need to be consolidated. Indeed, partnerships between various IP offices, including the Chinese State Intellectual Property office (SIPO) have been already established to strengthen enforcement mechanisms, especially in significant markets like China.

Note

¹ Application for Action (AFA) is a preventive measure that can be taken to protect IPR holders from counterfeit goods, even if they are unaware that their IPRs may have been violated. It allows customs authorities to temporarily impound goods suspected of IPR violation, giving time to IPR holders to defend their rights.

5 Concluding remarks

This report has presented a quantitative analysis of the scale of trade in counterfeit goods infringing Korean IPRs and its negative impacts on the Korean economy, brand owners' profits, jobs, and Korean government revenues. This analysis relied on both an in-house methodology tailored to gauge the scale and impacts of trade in counterfeits infringing Korean IPRs and a global customs seizures dataset. It also relied on structured interviews with Korean IPR holders' representatives and IP experts.

The report highlights the vulnerability of the Korean economy to the risk of counterfeiting, due to its high capacity for innovation and production of IP-intensive, high value-added technological goods. Korea is thus among the countries most affected by the infringement of its IPRs.

The results of the report show that global trade in products that infringe Korean IPRs accounted for almost USD 9.7 billion in 2021. This represents almost 1% of total Korean production of that year. As for the direct economic effects, the best available estimates, based on customs data, indicate that trade in counterfeit goods that infringe Korean IPRs resulted in USD 6.1 billion sales losses and over 13 500 jobs losses. In addition, foregone taxes for the Korean government amounted to more than USD 1.5 billion.

The magnitude of the issue, and the scale of its impacts, should be of concern to both policy makers and the private sector. It has significant implications for the future, including on Korea's highest value-added activities and innovation potential, both of which are sources of long-term economic growth.

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Annex A. Construction of the GTRIC for products infringing Korean IPRs

Construction of GTRIC-p

Korean GTRIC-p is constructed in three steps.

- For each product category, the seizure percentages for sensitive goods are formed.
- From these, a counterfeit source factor is established for each industry, based on the industries' weight in terms of total trade.
- Based on these factors, the GTRIC-p is formed.

Step 1: Measuring product seizure frequencies

w_q is the seized value of product type q infringing Korean residents' IPR from *any* provenance economy in a given year. The relative seizure frequency (seizure percentages) of good q , denoted below as η_q , is then defined by:

$$\eta_q = \frac{w_q}{\sum_q w_q}, \text{ such that } \sum_q \eta_q = 1$$

Step 2: Measuring product-specific counterfeiting factors

e_q is the global sales value (exports plus domestic sales) of all Korean branded products of type q , so that $E = \sum_q e_q$ is defined as the global registered sales by Korean manufacturing industries of *all* sensitive goods.

The share of good q in Korean total sales, denoted by ζ_q , is therefore given by:

$$\zeta_q = \frac{e_q}{E}, \text{ such that } \sum_q \zeta_q = 1$$

The counterfeiting factor of product category q , denoted C_q , is then determined as the following.

$$C_q = \frac{\eta_q}{\zeta_q}$$

The counterfeiting factor reflects the sensitivity of infringements of Korean trademarks and patents occurring in a particular product category, relative to its share in Korean global sales. These constitute the foundation for forming GTRIC-p.

Step 3: Establishing Korean GTRIC-p

GTRIC-p is constructed from a transformation of the counterfeiting factor; it measures the relative proneness with which Korean trademarks and patents in different types of product categories are subject

to counterfeiting and piracy. The transformation of the counterfeiting factor is based on two main assumptions, described in OECD/EUIPO (2016^[2]):

- The first (A1) is that the counterfeiting factor for goods infringing Korean IPRs of a particular product category is positively correlated with the actual degree of trade in counterfeit and pirated goods covered by that chapter. The counterfeiting factors must thus reflect the real intensity of actual counterfeit trade for products infringing Korean IPRs in the given product categories.
- The second (A2) acknowledges that the assumption A1 may not be entirely correct. For instance, the fact Korean IPR infringing goods are detected more frequently in certain categories could imply that differences in counterfeiting factors across products merely reflect that some goods infringing Korean IPRs are easier to detect than others, or that some of these goods, for one reason or another, have been specially targeted by customs worldwide. The counterfeiting factors of product categories with lower counterfeiting factors could therefore underestimate actual counterfeiting and piracy intensities in these cases.

In accordance with assumptions A1 and A2, GTRIC-p for products infringing Korean IPRs traded worldwide is established by applying a positive monotonic transformation of the counterfeiting factor index using natural logarithms. This standard technique of linearisation of a non-linear relationship – in the case of this study between counterfeiting factors and actual infringement activities – allows the index to be flattened and gives a higher relative weight to lower counterfeiting factors (Verbeek, 2008^[9]).

In addition, in order to address the possibility of outliers at both ends of the counterfeiting factor index – i.e. some categories may be measured as particularly susceptible to infringement even though they are not, whereas others may be measured as unsusceptible although they are – it is assumed that GTRIC-p follows a left-truncated normal distribution, with GTRIC-p only taking values of zero or above.

The transformed counterfeiting factor is defined as:

$$c_q = \ln(C_q + 1)$$

Assuming that the transformed counterfeiting factor can be described by a left-truncated normal distribution with $c_k \geq 0$; then, following Hald (1952), the density function of GTRIC-p is given by:

$$h_{LTN}(c_q) = \begin{cases} 0 & \text{if } c_q \leq 0 \\ \frac{h(c_q)}{\int_0^{\infty} h(c_q) dc_q} & \text{if } c_q \geq 0 \end{cases}$$

where $h(c_q)$ is the non-truncated normal distribution for c_k , specified as:

$$h(c_q) = \frac{1}{\sqrt{2\pi\sigma_q^2}} \exp\left(-\frac{1}{2}\left(\frac{c_q - \mu_q}{\sigma_q}\right)^2\right)$$

The mean and variance of the normal distribution, here denoted by μ_q and σ_q^2 , are estimated over the transformed counterfeiting factor index, c_q , and given by $\hat{\mu}_q$ and $\hat{\sigma}_q^2$. This enables calculation of the counterfeit propensity index (GTRIC-p) across HS chapters, corresponding to the cumulative distribution function of c_q .

Construction of GTRIC-e

GTRIC-e is constructed in three steps.

- For each destination economy, the seizure percentages are calculated.

- From these, each destination economy's counterfeit source factor is established, based on the destination economies' weight in terms of Korean total sales.
- Based on these factors, the GTRIC-e is formed.

Step 1: Measuring seizure intensities for each destination economy

w_d is the registered seized value of all types of goods infringing Korean residents' IPR exported to destination economy d from any provenance economy at a given year. η_d is the relative seizure intensity (seizure percentage) of all products infringing Korean trademarks and patents that are shipped to country d , in a given year:

$$\eta_d = \frac{w_d}{\sum_d w_d}, \text{ such that } \sum_d \eta_d = 1$$

Step 2: Measuring destination-specific counterfeiting factors

e_d is defined as the global registered sales value of Korean branded or patented products (exports plus domestic manufacturing sales) shipped to d (including Korea) and $E = \sum_d e_d$ is the global value of Korean sales of sensitive goods to all destination economies.

The share of sales to destination economy d in Korean global sales of sensitive goods, denoted ζ_d , is then given by:

$$\zeta_d = \frac{e_d}{E}, \text{ such that } \sum_d \zeta_d = 1$$

From this, the economy-specific counterfeiting factor is established by dividing the seizure intensity for economy d by the share of total sales of sensitive goods to d :

$$C_d = \frac{\eta_d}{\zeta_d}$$

Step 3: Establishing GTRIC-e

GTRIC-e is constructed from a transformation of the counterfeiting factor; it measures the relative proneness with which counterfeit products infringing Korean trademarks and patents are shipped to a given destination economy. The transformation of the counterfeiting factor is based on two main assumptions, described in (OECD/EUIPO, 2016[2]):

- The first assumption (A3) is that the frequency with which any counterfeit Korean branded or patented article shipped to a particular destination economy is detected and seized by customs is positively correlated with the actual amount of counterfeit and pirated Korean products exported to that location; and
- The second assumption (A4) acknowledges that assumption A3 may not be entirely correct. For instance, a high seizure intensity of products infringing Korean IPRs in a particular destination economy could be an indication that the destination economy implements a particular customs profiling scheme, or that these products are specially targeted for investigation by customs in that locale. The role some destination economies with low seizure intensities of Korean IPR infringing products play regarding actual counterfeiting and piracy activity could therefore be underrepresented by the index and lead to an underestimation of the scale of counterfeiting activities and piracy targeting Korean branded or patented products there.

Following assumptions A3 and A4, GTRIC-e for products infringing Korean IPRs is established by applying a positive monotonic transformation of the counterfeiting factor index using natural logarithms. This

standard technique of linearisation of a non-linear relationship (in the case of this study, between counterfeiting factors and actual infringement activities) allows the index to be flattened and gives a higher relative weight to lower counterfeiting factors (Verbeek, 2008^[9]).

In addition, in order to address the possibility of outliers at both ends of the counterfeiting factor index – i.e. some destination economies may be measured as particularly susceptible to infringement even though they are not, whereas others may be measured as unsusceptible although they are – it is assumed GTRIC-e follows a left-truncated normal distribution, with GTRIC-e only taking values of zero or above.

The transformed general counterfeiting factor across destination economies on which GTRIC-e is based is therefore given by applying logarithms onto economy-specific general counterfeit factors (Verbeek, 2008^[9]):

$$c_d = \ln (C_d + 1)$$

In addition, following GTRIC-p it is assumed that GTRIC-e follows a truncated normal distribution with $c_d \geq 0$ for all d . Following Hald (1952^[10]), the density function of the left-truncated normal distribution for c_d is given by:

$$i_{LTN}(c_d) = \begin{cases} 0 & \text{if } c_d \leq 0 \\ \frac{i(c_d)}{\int_0^{\infty} i(c_d) dc_d} & \text{if } c_d \geq 0 \end{cases}$$

where $i(c_d)$ is the non-truncated normal distribution for c_d specified as:

$$i(c_d) = \frac{1}{\sqrt{2\pi\sigma_d^2}} \exp\left(-\frac{1}{2}\left(\frac{c_d - \mu_d}{\sigma_d}\right)^2\right)$$

The mean and variance of the normal distribution, here denoted by μ_d and σ_d^2 , are estimated over the transformed counterfeiting factor index, c_d , and given by $\hat{\mu}_d$ and $\hat{\sigma}_d^2$. This enables the calculation of the counterfeit propensity index (GTRIC-e) across destination economies, corresponding to the cumulative distribution function of c_d .

Construction of GTRIC

The combined index of GTRIC-e and GTRIC-p, denoted GTRIC, is an index that approximates the relative proneness for goods associated with Korean residents' IPR in a given product category and a given destination economy to be counterfeited and/or pirated.

Step 1: Establishing proneness for products and destination economies

The general proneness of Korean trademarks and patents to be counterfeited or pirated in product category q , is denoted by P_q , and is given by GTRIC-p, so that:

$$P_q = H_{LTN}(c_q)$$

where $H_{LTN}(c_q)$ is the cumulative probability function of $h_{LTN}(c_q)$.

Furthermore, the general proneness of all Korean trademarks and patents to be infringed and shipped to economy d is denoted by P_d , and is given by GTRIC-e, so that:

$$P_d = I_{LTN}(c_d)$$

where $I_{LTN}(c_d)$ is the cumulative probability function of $i_{LTN}(c_d)$.

The general proneness of Korean residents' IPR to be counterfeit or pirated in a given product category q and to be shipped to a given destination d from any provenance economy is then denoted by P_{kd} and approximated by:

$$P_{qd} = P_q \times P_d$$

Therefore, $P_{qd} \in [\varepsilon_q \varepsilon_d ; 1]$, $\forall k, d$, with $\varepsilon_q \varepsilon_d$ denoting the minimum average counterfeit export rate for each sensitive product category and each destination economy. It is assumed that $\varepsilon_q = \varepsilon_d = 0.05$.

Step 2: Calculating the absolute value

β is the fixed point, i.e. the maximum average counterfeit rate of Korean trademarks and patents for a given product type q , shipped to a given trading partner, d . β can therefore be applied onto the proneness of Korean-related IPRs of type q to be counterfeit and shipped to destination partner d ($\beta \times P_{qd}$).

As a result, a matrix of counterfeit import propensities Λ is obtained.

$$\Lambda = \begin{pmatrix} \beta P_{11} & \beta P_{12} & & \beta P_{1Q} \\ \beta P_{21} & \ddots & & \\ & & \beta P_{dq} & \\ & & & \ddots \\ \beta P_{D1} & & & \beta P_{DQ} \end{pmatrix} \text{ with dimension } D \times Q$$

The matrix of Korean global sales is denoted by E . Applying Λ on E yields the absolute volume of counterfeit and pirated trade in products that infringe Korean residents' IPR. In particular, the sales matrix E is given by:

$$E = \begin{pmatrix} e_{11} & e_{12} & & e_{1Q} \\ e_{21} & \ddots & & \\ & & e_{dq} & \\ & & & \ddots \\ e_{D1} & & & e_{DQ} \end{pmatrix} \text{ with dimension } D \times Q$$

Hence, the element e_{dq} denotes Korean sales of products in category q to destination d , including the Korean, with $d = [1, \dots, D]$ and $q = [1, \dots, Q]$.

Denoted by Z , the product-by-economy percentage of counterfeit and pirated imports can be determined as the following:

$$Z = \Lambda'E \div E$$

Total trade in counterfeit and pirated goods that infringe Korean trademarks and patents, denoted by the scalar $T\Lambda$, is then given by:

$$T\Lambda = I_1'ZI_2$$

where I_1 is an identity matrix with dimension $D \times 1$, and I_2 is an identity matrix with dimension $Q \times 1$.

Then, by denoting global Korean sales by the scalar $T\bar{E} = I_1'ZE_2$, the share of counterfeit and pirated products infringing Korean residents' IPR in Korean global manufacturing sales, $\zeta_{T\Lambda}$, is determined by:

$$\zeta_{T\Lambda} = \frac{T\Lambda}{T\bar{E}}$$

Annex B. Primary and secondary markets

In order to distinguish fake products for sale by counterfeiters on the primary market from those intended for sale on the secondary market, the price difference between both types of counterfeits is calculated. For each seizure entered into the WCO and DG TAXUD databases, customs authorities report the infringed trademark, the declared value of goods, the quantity seized and the product's harmonised system (HS) code. This allows the unit value of each seized “product type-brand” pair to be determined (“brand” includes the associated trademark or patent). These unit values can then serve as a proxy for the retail prices of fake goods.

For each type of product associated with a given trademark or patent, the prices of seized goods are used to estimate a confidence interval that contains the actual retail price of the corresponding genuine item. Counterfeit items whose unit price, calculated as described above, is higher than or included in this interval are then classified as intended for sale on the primary market. Those whose price is below this interval are classified as targeting the secondary market.

Formally, let s_c and \bar{s}_c denote, respectively, the import value and quantity of any custom seizure of counterfeit products, with $c \in \{1, \dots, N\}$ the range of customs seizures and N their total number. $p_c = s_c/\bar{s}_c$ then refers to the unit value of each custom seizure and can serve as a proxy for their unit price. Let $p_{bp} = (\sum_{c \in \{bp\}} p_c)/N_{bp}$ defines the (unweighted) price average of any type of product p associated with the brand or patent b , with N_{bp} the total number of custom seizures reported for this “product category-brand” combination. The standard deviation of this price is denoted σ_{bp} .

X_c is defined as a dichotomous (binary) variable that takes the value of 0 if the fake goods included in the seized shipment were intended to be sold on the primary market, or 1 if they were intended to be sold on the secondary market. In accordance with the arguments mentioned in the main text, X_c is assumed to be defined as follows:

$$X_c = \begin{cases} = 0 & \text{if } p_c \in \left[p_{bp} - \frac{1.96 \times \sigma_{bp}}{\sqrt{N_{bp}}}; \max_{c \in \{bp\}} p_c \right] \\ = 1 & \text{if } p_c \in \left[\min_{c \in \{bp\}} p_c; p_{bp} - \frac{1.96 \times \sigma_{bp}}{\sqrt{N_{bp}}} \right] \end{cases}; \quad \forall c \in \{bp\}$$

It follows that the share of products sold on the primary market can be calculated by product category, τ_p^1 , and/or for the entire mass of fake imports, and is given by:

$$\tau_p^1 = (\sum_b \sum_c X_c s_c) / (\sum_b \sum_c s_c), \quad \forall c \in \{bp\}$$

Annex C. Additional tables

Table A C.1. Propensity of economies to import fake goods infringing Korean IPR, 2011-2013

GTRIC-e Korea

Year	2011	2012	2013
Algeria	0.969	0.973	0.000
Angola	0.000	0.895	0.000
Australia	0.000	1.000	0.000
Austria	0.000	0.000	0.874
Belgium	0.491	0.515	0.737
Bolivia	0.000	0.000	0.999
Brazil	0.000	0.000	0.532
Bulgaria	0.976	0.979	0.996
Chile	0.000	0.996	0.000
Colombia	0.366	0.388	0.623
Congo	0.858	0.000	0.000
Costa Rica	0.000	0.000	0.713
Croatia	0.000	0.000	0.999
Cyprus	0.000	0.901	0.970
Czech Republic	0.674	0.695	0.866
Denmark	0.737	0.755	0.901
Dominican Republic	0.859	0.000	0.000
El Salvador	0.000	0.000	0.999
Estonia	0.829	0.000	0.946
Finland	0.960	0.000	0.992
France	0.856	0.869	0.957
Gabon	0.634	0.000	0.000
Georgia	0.000	0.000	1.000
Germany	0.737	0.756	0.901
Guatemala	0.000	0.000	0.880
Guinea	0.000	0.000	1.000
Honduras	0.000	0.000	0.763
Hong Kong (China)	0.000	0.000	0.391
Hungary	0.668	0.689	0.862
Ireland	0.000	0.886	0.964
Italy	0.700	0.720	0.881
Jordan	0.000	0.000	0.901
Kuwait	0.000	0.658	0.842
Lao People's Democratic Republic	0.999	0.000	0.000
Lebanon	0.000	0.000	0.928
Lithuania	0.000	0.837	0.943
Luxembourg	0.000	0.967	0.993
Mali	1.000	0.000	0.000
Malta	0.000	0.856	0.952
Mexico	0.000	0.592	0.796

Year	2011	2012	2013
Morocco	0.000	0.000	0.983
Netherlands	0.563	0.586	0.792
Nicaragua	0.000	0.000	0.927
Nigeria	0.779	0.000	0.000
Panama	0.000	0.000	0.884
Paraguay	0.995	0.996	0.999
Peru	0.000	0.776	0.912
Poland	0.626	0.000	0.000
Portugal	0.000	0.933	0.982
Qatar	0.000	0.966	0.000
Romania	0.840	0.854	0.951
Russia	0.000	0.000	0.486
Saudi Arabia	0.735	0.000	0.901
Slovak Republic	0.000	0.422	0.656
Slovenia	0.993	0.000	0.999
Spain	0.858	0.871	0.958
Sweden	0.869	0.882	0.962
Ukraine	0.000	0.000	0.987
United Arab Emirates	0.000	0.359	0.593
United Kingdom	0.715	0.735	0.890
United States	0.000	0.285	0.512
Uruguay	0.000	0.930	0.000
Venezuela	0.828	0.843	0.946
Yemen	0.000	0.000	0.955

Note: A high GTRIC-e score indicates that an economy is highly prone to be a destination market for counterfeit products infringing Korean trademarks and patents, either in absolute terms or as a share of Korean sales.

Source: OECD calculations.

Table A C.2. Propensity of economies to import fake goods infringing Korean right holders' IPR, 2014-2016

GTRIC-e Korea

Year	2014	2015	2016
Argentina		0.000	0.000
Austria		0.771	0.790
Belgium	0.674	0.590	0.616
Brazil	0.460	0.000	0.000
Bulgaria	0.993	0.987	0.989
Croatia	0.999	0.998	0.998
Cyprus	0.956	0.000	0.939
Czech Republic	0.822	0.758	0.778
Denmark	0.866	0.811	0.829
Dominican Republic	0.000	0.000	0.918
Estonia	0.923	0.885	0.898
Finland	0.987	0.977	0.981
France	0.938	0.906	0.916
Germany	0.866	0.812	0.829
Greece	0.857	0.800	0.818
Hungary	0.818	0.753	0.773
Ireland	0.948	0.919	0.928
Italy	0.841	0.781	0.800

Year	2014	2015	2016
Latvia	0.972	0.954	0.960
Lithuania	0.919	0.880	0.892
Luxembourg	0.988	0.979	0.982
Malta	0.930	0.895	0.000
Mexico	0.000	0.664	0.000
Morocco	0.974	0.957	0.963
Netherlands	0.736	0.658	0.682
Poland	0.787	0.716	0.738
Portugal	0.972	0.955	0.961
Romania	0.929	0.894	0.905
Saudi Arabia	0.865	0.000	0.000
Serbia	0.702	0.000	0.000
Slovak Republic	0.587	0.498	0.524
Slovenia	0.998	0.997	0.997
Spain	0.939	0.907	0.918
Suriname	0.000	0.000	1.000
Sweden	0.945	0.915	0.925
Trinidad and Tobago	0.000	0.000	0.992
Ukraine	0.980	0.000	0.000
United Kingdom	0.852	0.794	0.812
United States	0.440	0.353	0.378
Uruguay	0.971	0.952	0.959

Note: A high GTRIC-e score indicates that an economy is highly prone to be a destination market for counterfeit products infringing Korean trademarks and patents, either in absolute terms or as a share of Korean sales.

Source: OECD calculations.

Table A C.3. Propensity of economies to import fake goods infringing Korean right holders' IPR, 2017-2019

GTRIC-e Korea

Year	2017	2018	2019
Albania	1.000	0.000	0.000
Algeria	0.000	0.000	0.966
Argentina	0.957	0.000	0.000
Austria	0.000	0.838	0.678
Belgium	0.777	0.682	0.479
Brazil	0.583	0.000	0.273
Brunei Darussalam	0.571	0.000	0.000
Bulgaria	0.997	0.993	0.974
China	0.447	0.336	0.000
Colombia	0.671	0.560	0.000
Croatia	1.000	0.999	0.995
Cyprus	0.978	0.958	0.885
Czech Republic	0.892	0.828	0.663
Denmark	0.922	0.870	0.727
Estonia	0.959	0.926	0.822
Finland	0.000	0.988	0.000
Former Yugoslav Republic of Macedonia	0.000	1.000	0.000
France	0.968	0.940	0.850
Gambia	0.000	0.920	0.920
Germany	0.922	0.870	0.727

Year	2017	2018	2019
Greece	0.000	0.000	0.713
Honduras	0.801	0.710	0.000
Hungary	0.000	0.000	0.657
Ireland	0.973	0.950	0.868
Italy	0.000	0.846	0.690
Jamaica	0.743	0.000	0.000
Latvia	0.987	0.973	0.000
Lithuania	0.956	0.922	0.814
Luxembourg	0.995	0.989	0.000
Malta	0.000	0.933	0.000
Netherlands	0.827	0.743	0.551
Norway	0.000	0.000	0.477
Peru	0.931	0.000	0.000
Poland	0.866	0.793	0.615
Portugal	0.987	0.974	0.921
Romania	0.963	0.932	0.833
Serbia	0.800	0.000	0.000
Slovak Republic	0.702	0.594	0.388
South Africa	0.000	0.000	0.525
Spain	0.968	0.941	0.852
Sweden	0.000	0.000	0.863
Switzerland	0.000	0.000	0.971
Ukraine	0.991	0.981	0.981
United Kingdom	0.912	0.856	0.705

Note: A high GTRIC-e score indicates that an economy is highly prone to be a destination market for counterfeit products infringing Korean trademarks and patents, either in absolute terms or as a share of Korean sales.

Source: OECD calculations.

Table A C.4. Propensity for product categories to suffer from infringements of Korean IPRs, 2011-2013

GTRIC-p

Year	2011	2012	2013
Articles of leather; handbags (42)	0.000	0.761	0.954
Clothing	0.457	0.457	0.725
Clothing and accessories	0.000	0.000	0.521
Electrical machinery and electronics (85)	0.934	0.934	0.987
Foodstuffs (02-21)	0.000	0.000	0.000
Footwear (64)	0.792	0.792	0.000
Machinery and mechanical appliances (84)	0.347	0.347	0.623
Miscellaneous articles of base metal (83)	0.229	0.229	0.000
Optical; photographic; medical apparatus (90)	0.000	0.000	0.453
Perfumery and cosmetics (33)	0.000	0.000	0.462
Plastic and articles thereof (39)	0.000	0.000	0.420
Tanning or dyeing extracts (32)	0.000	0.000	0.500
Toys and games (95)	0.000	0.000	0.934
Vehicles (87)	0.000	0.000	0.485
Watches (91)	0.000	0.000	0.867

Source: OECD calculations.

Table A C.5. Propensity for product categories to suffer from infringements of Korean IPRs, 2014-2016

GTRIC-p

Year	2014	2015	2016
Articles of leather; handbags (42)	0.848	0.788	0.916
Clothing	0.480	0.390	0.617
Electrical machinery and electronics (85)	0.942	0.909	0.973
Footwear (64)	0.808	0.740	0.000
Jewellery (71)	0.275	0.000	0.000
Machinery and mechanical appliances (84)	0.369	0.286	0.506
Optical; photographic; medical apparatus (90)	0.221	0.159	0.000
Perfumery and cosmetics (33)	0.228	0.000	0.000
Plastic and articles thereof (39)	0.197	0.000	0.000
Tanning or dyeing extracts (32)	0.000	0.000	0.383
Toys and games (95)	0.803	0.733	0.000
Vehicles (87)	0.246	0.180	0.368
Watches (91)	0.677	0.591	0.791

Source: OECD calculations.

Table A C.6. Propensity for product categories to suffer from infringements of Korean IPRs, 2017-2019

GTRIC-p

Year	2017	2018	2019
Clothing	0.000	0.404	0.000
Electrical machinery and electronics (85)	0.925	0.915	0.903
Jewellery (71)	0.000	0.214	0.000
Knitted or crocheted fabrics (60)	0.000	0.231	0.000
Machinery and mechanical appliances (84)	0.322	0.299	0.274
Perfumery and cosmetics (33)	0.000	0.174	0.156
Toys and games (95)	0.000	0.000	0.721
Vehicles (87)	0.208	0.189	0.170

Source: OECD calculations.

Annex D. Processed data used for figures

Table A D.1. Gross domestic spending on R&D as % of GDP, 2019

Country	Gross domestic spending on R&D as % of GDP, 2020	Country	Gross domestic spending on R&D as % of GDP, 2020
Israel	5.818450065	Estonia	1.753154594
Korea	4.795714434	Portugal	1.613919079
Chinese Taipei	3.609330831	Hungary	1.593150011
Sweden	3.489603532	Greece	1.511492166
United States	3.424671539	Italy	1.506601094
Belgium	3.390186864	Spain	1.409102689
Japan	3.264575825	Poland	1.386083638
Austria	3.202780153	Türkiye	1.367479378
Germany	3.131357981	Croatia	1.239707408
Denmark	2.972581601	Ireland	1.145508756
United Kingdom	2.938829666	Lithuania	1.132608921
Finland	2.912434149	Russia	1.098029538
OECD	2.721509041	Luxembourg	1.095841972
Iceland	2.493801972	Slovak Republic	0.897785228
China	2.406660076	Bulgaria	0.84967167
Netherlands	2.321820898	Latvia	0.73438821
France	2.274637313	South Africa	0.602397462
Norway	2.244362754	Argentina	0.5415428
Singapore	2.163049792	Romania	0.465375303
Slovenia	2.141555207	Chile	0.33496348
Czechia	1.985985354	Costa Rica	0.33002157
Canada	1.934135455	Colombia	0.289402604

Source: OECD calculations.

Table A D.2. Resident patent applications per USD 100 billion GDP for the top 10 origins, 2022

Origin	2022
Korea	7827.7
China	5702.3
Japan	4199.6
Switzerland	1645.1
Germany	1374.2
Finland	1270.2
Sweden	1189.8
United States	1170
Denmark	1053.5
Netherlands	835
Austria	804.3
France	777.3
Iran (Islamic Republic of)	609.9
Luxembourg	599.8
United Kingdom	538.1
Belgium	528.9
Italy	516.4
Russia	482.1
Norway	412.9
Iceland	404.4

Source: WIPO Statistics Database and World Bank.

Table A D.3. Resident patent applications per million persons for the top 10 patent countries, 2021

Origin	2022
Korea	3559.1
Japan	1748.8
Switzerland	1168
China	1037.1
United States	757.1
Germany	736
Sweden	652.2
Finland	629.8
Denmark	629
Netherlands	489.2
Austria	452.6
France	357.7
Singapore	303
Belgium	281.2
Norway	278.5
United Kingdom	252
Italy	226.1
Israel	159.9
Russian Federation	135.2
Canada	117.2

Source: WIPO Statistics Database and World Bank.

Table A D.4. GVC participation among countries, 2019

Country	Forward participation	Backward participation	Total participation
Luxembourg	11.6667	65.4836	77.1503
Slovak Republic	18.5972	48.6451	67.2423
Hungary	16.9951	47.2498	64.2449
Czech Republic	19.5967	41.7888	61.3855
Ireland	13.0205	46.6488	59.6693
Belgium	22.9661	35.8893	58.8554
Norway	38.8523	18.0249	56.8772
Slovenia	20.5137	35.9219	56.4356
Netherlands	23.3974	32.6206	56.018
Austria	23.5872	32.302	55.8892
Estonia	20.2188	35.2401	55.4589
Lithuania	22.1244	32.4092	54.5336
Korea	21.5951	32.6929	54.288
Finland	23.0589	30.6103	53.6692
Poland	22.7317	30.0684	52.8001
Greece	14.81	36.3049	51.1149
Denmark	17.4412	33.0758	50.517
Sweden	22.6152	26.2019	48.8171
Iceland	18.7518	28.7292	47.481
Latvia	22.9621	24.3836	47.3457
Germany	23.7397	23.5861	47.3258
Portugal	16.1779	31.0265	47.2044
France	21.6946	23.7889	45.4835
Mexico	10.4916	34.8632	45.3548
Chile	28.209	15.9413	44.1503
Spain	19.0002	24.2157	43.2159
Italy	20.0958	22.8399	42.9357
United Kingdom	24.3074	17.3811	41.6885
Switzerland	18.3953	22.9378	41.3331
Türkiye	19.5001	21.0888	40.5889
Japan	26.0969	13.7333	39.8302
Canada	14.7392	24.7906	39.5298
Israel	20.1909	16.7608	36.9517
Australia	25.549	10.935	36.484
United States	26.7013	9.018	35.7193
Colombia	21.4677	12.5478	34.0155
Costa Rica	11.8131	18.039	29.8521
OECD	20.2223	8.25	28.4723
New Zealand	13.0722	14.0868	27.159

Source: OECD TiVA (Trade in Value Added) database, Principal Indicators Data extracted on 15 August 2023.

Table A D.5. Top provenance economies for counterfeit goods that infringe on Korean IPR holders, 2011-2019

Provenance	Share of seized value	Share of number of customs seizures
Iraq	0.0000923	0.0008368
Sweden	0.0000922	0.0010042
Korea	0.0021349	0.0016736
United States	0.0004601	0.0017573
Switzerland	0.0012375	0.001841
Germany	0.0446117	0.0032636
Morocco	0.0014269	0.0035146
Thailand	0.0005576	0.003682
Türkiye	0.0020806	0.0043515
Netherlands	0.000388	0.0062762
United Arab Emirates	0.0324548	0.010795
Malaysia	0.0504911	0.0268619
Singapore	0.0109065	0.1249372
China	0.3772189	0.3546444
Hong Kong (China)	0.4354143	0.4389121

Source: OECD calculations.

Table A D.6. Top provenance economies for counterfeit goods that infringe on Korean IPR holders, by time period

Provenance	Share of seized value	Share of number of customs seizures	Provenance	Share of seized value	Share of number of customs seizures	Provenance	Share of seized value	Share of number of customs seizures
2011-13			2014-16			2017-19		
Pakistan	0.0000214	0.0009643	Sweden	0.0000867	0.0010596	India	0.0539696	0.0014065
Qatar	0.0106973	0.0016072	Venezuela	0.0001537	0.0010596	Lebanon	0.0001939	0.0018753
Malaysia	0.0001865	0.0016072	United States	0.0000875	0.0010596	United Kingdom	0.0001209	0.0018753
Iraq	0.0001197	0.0019286	United Kingdom	0.0022481	0.0010596	Iran	0.0008993	0.0018753
United States	0.0002225	0.0022501	Russia	0.0001684	0.0013245	Korea	0.0030636	0.0018753
Korea	0.0041104	0.002893	Thailand	0.0001668	0.0013245	Russia	0.000744	0.0018753
Switzerland	0.0002434	0.0032144	Honduras	0.0002011	0.0018543	Switzerland	0.0001813	0.0018753
Morocco	0.0008344	0.0038573	Morocco	0.0009332	0.0031788	Netherlands	0.0002395	0.0023441
Germany	0.1158121	0.0041787	Türkiye	0.0003536	0.0042384	Malaysia	0.0009471	0.0056259
Thailand	0.0011244	0.005143	Malaysia	0.0944097	0.0116556	Germany	0.0015569	0.0098453
Türkiye	0.0013767	0.0061074	United Arab Emirates	0.0710457	0.0129801	United Arab Emirates	0.0632493	0.0140647
United Arab Emirates	0.0074169	0.0122147	Netherlands	0.0013171	0.0161589	Türkiye	0.0085727	0.01594
Singapore	0.0046949	0.0784314	Singapore	0.0240297	0.1311258	Singapore	0.0054116	0.0703235
China	0.4131294	0.3548698	China	0.2229393	0.3541722	China	0.4001252	0.4097515
Hong Kong (China)	0.4326239	0.5078753	Hong Kong (China)	0.5577698	0.4468874	Hong Kong (China)	0.4527118	0.4421003

Source: OECD calculations.

Table A D.7. Top provenance economies for counterfeit goods that infringe on Korean IPR holders, 2020-2021

Provenance	Share of seized value	Share of number of customs seizures
Malaysia	1%	0%
Greece	2%	0%
Egypt	0%	0%
Bahrain	0%	0%
Argentina	0%	0%
Hungary	0%	0%
Korea	0%	1%
Spain	0%	1%
Türkiye	0%	1%
Chinese Taipei	0%	1%
United Kingdom	0%	1%
Singapore	0%	2%
United Arab Emirates	2%	2%
United States	4%	3%
China	16%	17%
Hong Kong (China)	75%	69%

Source: OECD calculations.

Table A D.8. Top destination economies for seized goods that infringe on Korean IPRs, 2020-2021

Destination	Share of seized value	Share of number of customs seizures	Destination	Share of seized value	Share of number of customs seizures
Kosovo	0%	0%	Belgium	0%	0%
Serbia	0%	0%	Jordan	0%	1%
Belarus	0%	0%	Cyprus	0%	1%
Lithuania	0%	0%	Tunisia	0%	1%
Greece	0%	0%	Romania	0%	1%
Brazil	0%	0%	Portugal	0%	1%
El Salvador	0%	0%	Algeria	1%	1%
Denmark	0%	0%	Puerto Rico	0%	1%
South Africa	0%	0%	Austria	0%	1%
Guatemala	0%	0%	Albania	1%	2%
Slovenia	0%	0%	Poland	23%	2%
Saudi Arabia	0%	0%	France	0%	2%
Paraguay	0%	0%	Morocco	4%	2%
Hungary	0%	0%	Italy	2%	3%
Canada	0%	0%	Netherlands	2%	3%
Ireland	0%	0%	Mexico	0%	3%
Czechia	0%	0%	Germany	7%	4%
Dominican Republic	0%	0%	Spain	5%	9%
Former Yugoslav Republic of Macedonia	0%	0%	United Kingdom	21%	13%
Bulgaria	1%	0%	United States	23%	46%
Argentina	8%	0%			

Source: OECD calculations.

Table A D.9. Top product categories for counterfeit goods violating Korean IPRs, 2011-2019

Product category	Share of seized value	Share of number of customs seizures
Toys and games (95)	0.0062606	0.0018822
Footwear (64)	0.0016948	0.0019575
Clothing, knitted or crocheted (61)	0.001358	0.0021081
Vehicles (87)	0.0027823	0.0034633
Articles of leather; handbags (42)	0.0026475	0.0073031
Machinery and mechanical appliances (84)	0.0524181	0.0303418
Electrical machinery and electronics (85)	0.919493	0.9465442

Source: OECD calculations.

Table A D.10. Top product categories for counterfeit goods violating Korean IPRs, excluding seizures of electronic appliances, 2011-2019

Product category	Share of seized value	Share of number of customs seizures
Miscellaneous articles of base metal (83)	0.000726724	0.005633803
Clothing and accessories, not knitted or crocheted (62/65)	0.001027952	0.005633803
Printed articles (49)	0.000143141	0.008450704
Plastic and articles thereof (39)	0.000610194	0.008450704
Tanning or dyeing extracts (32)	0.006217683	0.009859155
Optical; photographic; medical apparatus (90)	0.000532276	0.011267606
Watches (91)	0.002830937	0.012676056
Perfumery and cosmetics (33)	0.001083082	0.012676056
Label	0.003852263	0.015492958
Packaging	0.001055542	0.018309859
Toys and games (95)	0.077764268	0.035211268
Footwear (64)	0.021051882	0.036619718
Clothing, knitted or crocheted (61)	0.016867973	0.03943662
Vehicles (87)	0.034559707	0.064788732
Articles of leather; handbags (42)	0.032885261	0.136619718
Machinery and mechanical appliances (84)	0.651100852	0.567605634

Source: OECD calculations.

Table A D.11. Top product categories for counterfeit goods that violate Korean IPRs, 2020-2021

Product category	Share of seized value	Share of number of customs seizures
Watches (91)	1%	0%
Vehicles (87)	0%	3%
Toys and games (95)	8%	5%
Miscellaneous manufactured articles (66/67/96)	1%	6%
Perfumery and cosmetics (33)	10%	15%
Other made-up textile articles (63)	11%	20%
Electrical machinery and electronics (85)	68%	51%

Source: OECD calculations.

Table A D.12. Conveyance methods for counterfeit products that infringe on Korean IPR holders, 2011-19

In terms of seize value		In terms of customs seizures	
Conveyance method	Share of counterfeit products	Conveyance method	Share of counterfeit products
Air	44%	Air	30%
Express courier	17%	Express courier	22%
Mail	15%	Mail	43%
Other	0%	Other	0%
Rail	0%	Rail	0%
Road	5%	Road	1%
Sea	19%	Sea	4%

Source: OECD calculations.

Table A D.13. Conveyance methods for counterfeit products that infringe on Korean IPR holders, by time period

In terms of number of seizures		In terms of seized value	In terms of seized value
Conveyance method	Share of counterfeit products	Conveyance method	Share of counterfeit products
2011-2013			
Air	37%	Air	45%
Express courier	11%	Express courier	5%
Mail	46%	Mail	22%
Other	0%	Other	0%
Road	2%	Road	2%
Sea	4%	Sea	26%
2014-2016			
Air	25%	Air	41%
Express courier	24%	Express courier	25%
Mail	44%	Mail	11%
Other	1%	Other	9%
Road	6%	Road	14%
Sea	25%	Sea	41%
2017-2019			
Air	27%	Air	47%
Express courier	36%	Express courier	22%
Mail	34%	Mail	13%
Other	1%	Other	1%
Road	2%	Road	17%
Sea	27%	Sea	47%

Source: OECD calculations.

Table A D.14. Conveyance methods of seized goods that infringe on Korean IPRs, 2020-2021

Conveyance Method	Share of seized goods
Air	25%
Mail	57%
Other	0%
Road	11%
Sea	7%

Source: OECD calculations.

Table A D.15. Size of seized shipments of products that infringe on Korean IPRs, 2011-19

Size of shipments	Share of counterfeit products
1 item	40%
2-5 items	11%
6-10 items	5%
>10 items	44%

Source: OECD calculations.

Table A D.16. Size of seized shipments of products that infringe on Korean IPRs, by time period

Size of shipments	Share of counterfeit products
2011-2013	
1 item	10%
2-5 items	5%
6-10 items	58%
>10 items	27%
2014-2016	
1 item	49%
2-5 items	12%
6-10 items	5%
>10 items	34%
2017-2019	
1 item	39%
2-5 items	9%
6-10 items	5%
>10 items	47%

Source: OECD calculations.

Table A D.17. Value of trade violating Korean IPR holders by year, USD billion

Year	Value of trade infringing Korean IP rights holders (USD bn)
2011	3.15
2012	4.46
2013	10.7
2014	6.55
2015	5.25
2016	5.1
2017	10.6
2018	7
2019	2.64
2020	5.111
2021	9.093

Source: OECD calculations.

Table A D.18. Value of trade in counterfeit Korean goods (USD bn) and annual growth rate of global Korean exports, 2011-2021

Year	Value of trade infringing Korean IP rights holders (USD bn)	Annual growth rate of global Korean exports (%)
2011	3.15	
2012	4.46	-1.3
2013	10.7	2.1
2014	6.55	2.4
2015	5.25	-8.1
2016	5.1	-5.9
2017	10.6	15.8
2018	7	5.4
2019	2.64	-10.4
2020	5.111	-0.1
2021	9.093	0.3

Source: OECD calculations.

Table A D.19. Total value of goods that violate Korean IPR holders by sector in 2019, USD billion

Sector	Value of trade in goods violating Korean IP rights holders	Product category	Value of trade in goods violating Korean IP rights holders
Non-metallic mineral products (e.g. glass and glass products, ceramic products)	0.002667	Chemical and allied products; except pharmaceuticals, perfumery and cosmetics	0.03307
Furniture, lighting equipment, carpets and other manufacturing n.e.c	0.002879	Mineral products (e.g. fuels, ores)	0.0399
Watches and jewellery	0.002970	Basic metals and fabricated metal products (except machinery and equipment)	0.0457
Pharmaceutical and medicinal chemical products	0.003895	Textiles and other intermediate products (e.g. plastics; rubbers; paper; wood)	0.0503
Pharmaceutical and medicinal chemical products	0.003895	Textiles and other intermediate products (e.g. plastics; rubbers; paper; wood)	0.0503
Clothing, footwear, leather and related products	0.005926	Motor vehicles and motorcycles	0.284
Food, beverages and tobacco	0.008163	Machinery, industrial equipment; computers and peripheral equipment; ships and aircrafts	0.437
Household cultural and recreation goods; including toys and games, books and musical instruments	0.009407	Electrical household appliances, electronic and telecommunications equipment	1.7

Source: OECD calculations.

Table A D.20. Value of trade in Korean IPR infringing goods by sector in 2021, USD billion

Sector	Value of trade in goods infringing Korean IP rights holders	Product category	Value of trade in goods infringing Korean IP rights holders
Non-metallic mineral products (e.g. glass and glass products, ceramic products)	0.0034	Machinery, industrial equipment; computers and peripheral equipment; ships and aircrafts	0.098
Pharmaceutical and medicinal chemical products	0.0084	Furniture, lighting equipment, carpets and other manufacturing n.e.c	0.15
Food, beverages and tobacco	0.0097	Perfumery and cosmetics	0.23
Chemical and allied products; except pharmaceuticals, perfumery and cosmetics	0.043	Clothing, footwear, leather and related products	0.25
Basic metals and fabricated metal products (except machinery and equipment)	0.055	Watches and jewellery	0.32
Textiles and other intermediate products (e.g. plastics; rubbers; paper; wood)	0.061	Motor vehicles and motorcycles	2.5
Household cultural and recreation goods; including toys and games, books and musical instruments	0.088	Electrical household appliances, electronic and telecommunications equipment	6.10

Source: OECD calculations.

Table A D.21. Top Korean manufacturing industries impacted by IPR infringement in terms of loss of sales, 2021

Sector	Sales losses
Household cultural and recreation goods; including toys and games, books and musical instruments	0.055
Furniture, lighting equipment, carpets and other manufacturing n.e.c	0.0864
Clothing, footwear, leather and related products	0.139
Perfumery and cosmetics	0.178
Watches and jewellery	0.239
Motor vehicles and motorcycles	1.79
Electrical household appliances, electronic and telecommunications equipment	3.61

Source: OECD calculations.

Table A D.22. Top Korean manufacturing industries impacted by IPR infringement in terms of absolute job numbers, 2018

Sector	Job losses
Watches and jewellery	11
Basic metals and fabricated metal products (except machinery and equipment)	56
Chemical and allied products; except pharmaceuticals, perfumery and cosmetics	68
Clothing, footwear, leather and related products	97
Food, beverages and tobacco	103
Textiles and other intermediate products (e.g. plastics; rubbers; paper; wood)	140

Sector	Job losses
Motor vehicles and motorcycles	186
Machinery, industrial equipment; computers and peripheral equipment; ships and aircrafts	761
Electrical household appliances, electronic and telecommunications equipment	7 068

Source: OECD calculations.

Table A D.23. Top Korean manufacturing industries impacted by IPR infringement in terms of job losses, 2021

Sector	Job losses
Perfumery and cosmetics	349
Clothing, footwear, leather and related products	709
Watches and jewellery	953
Motor vehicles and motorcycles	2135
Electrical household appliances, electronic and telecommunications equipment	9537

Source: OECD calculations.

Illicit Trade

Illicit Trade and the Korean Economy

The Korean economy is known for its innovation and wealth of intellectual property (IP), having one of the highest patent applications in the world. Its IP-intensive industries are deeply integrated in the global economy through their active participation in global value chains. Such integration, however, exposes Korean IP-intensive products to high counterfeiting and piracy risks. This report examines the global trade in counterfeit products that infringe on Korean intellectual property rights (IPR) and its impact on the Korean economy. Specifically, it estimates the effects in terms of sales and job losses in the Korean manufacturing sector, as well as the impact on government revenues. The report concludes that the infringement of Korean IPR poses a significant threat to the Korean economy. The magnitude and widespread impact of this issue call for the implementation of comprehensive and coordinated solutions.



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