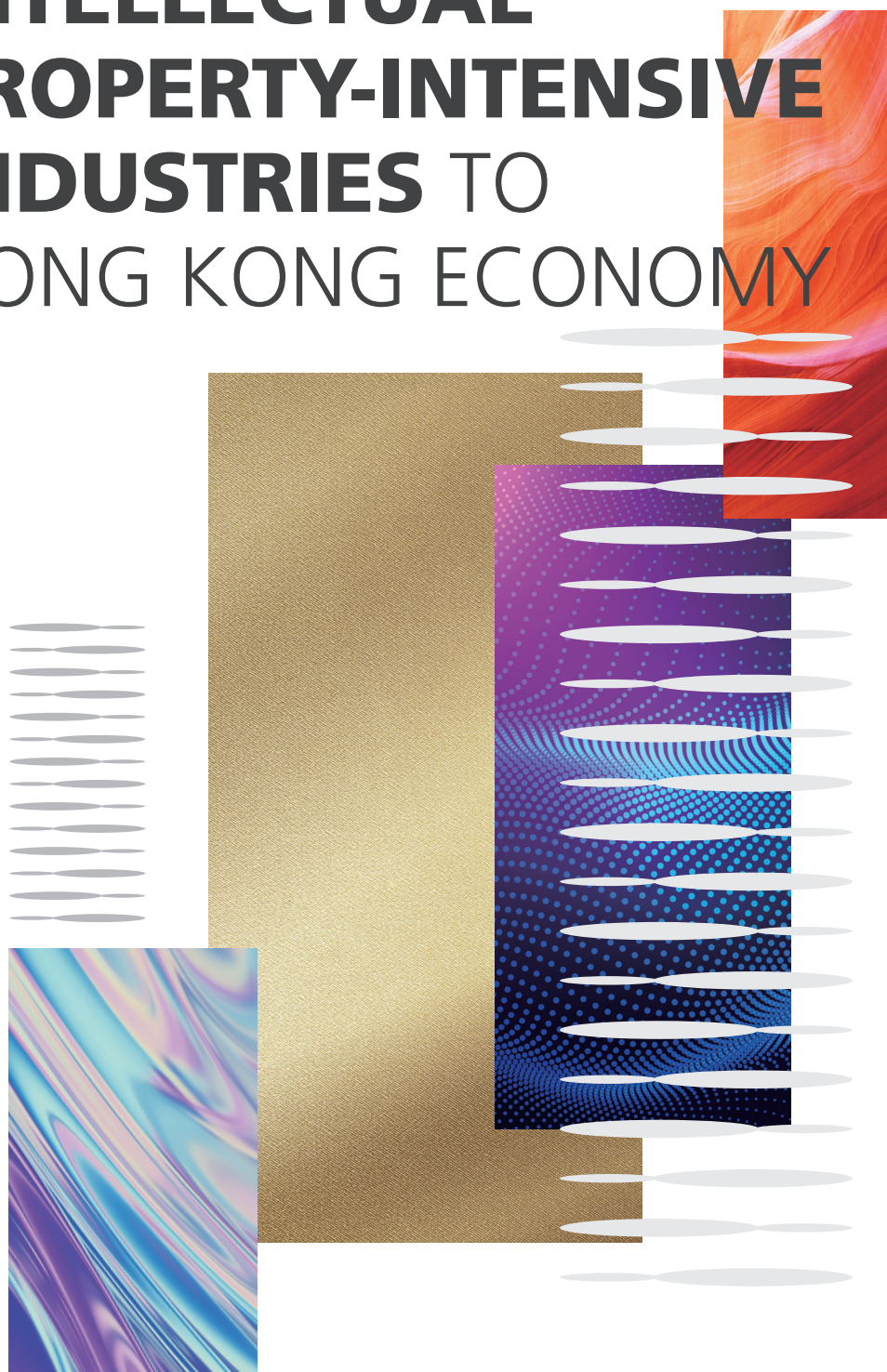


# STUDY ON CONTRIBUTION OF **INTELLECTUAL PROPERTY-INTENSIVE INDUSTRIES** TO HONG KONG ECONOMY



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# Executive Summary

The present study (“Study”) identifies industries in Hong Kong that make the most use of intellectual property (“IP”) rights (“IPRs”), with four different categories of IPRs being taken into consideration, namely: patent, trade mark, registered design and copyright. Upon identifying the IP-intensive industries, their economic contributions would then be assessed by considering the major economic indicators including gross domestic product (“GDP”), employment and wages. The Study covered IP-intensive industries identified based on the analysis of the IPR records of patents, trade marks and designs filed for registrations between 2015 and 2019, as well as the copyright-intensive industries identified according to World Intellectual Property Organization (“WIPO”)’s recommended approach.

The methodology adopted in this Study follows largely those adopted in similar reports published by major overseas IP offices (“IPOs”) such as the European Union Intellectual Property Office (“EUIPO”), the European Patent Office (“EPO”), the United States Patent and Trademark Office (“USPTO”) and the Intellectual Property Office of the United Kingdom (“UKIPO”).

The Study is industry-based. The classification of Hong Kong industries is based on the Hong Kong Standard Industrial Classification (“HSIC”) Version 2.0 depending on the nature of major economic activities undertaken by the relevant establishments. According to HSIC Version 2.0, a total of 483 industries are defined by 4-digit level<sup>1</sup> of which 339 industries were identified to have held and used IPRs, and 196 industries were considered IP-intensive.

On average over the period of 2019-2021, these IP-intensive industries contributed HK\$877.9 billion (i.e. 32.7%) to GDP at basic prices<sup>2</sup> and created 1,090,000 jobs, amounting to 29.1% of total employment in Hong Kong. The median monthly wage<sup>3</sup> of employees in the IP-intensive industries was 11% higher than that of employees in the non-IP-intensive industries. The economic contributions in relation to GDP, employment and wages by IP-intensive industries of each IPR category covered in the Study are summarised in Table 1.

**Table 1:**  
Summary of economic contributions by IP-intensive industries, 2019-2021 average

<b>IP-intensive industries</b>	<b>Share of GDP</b>	<b>Share of employment</b>	<b>Wage premium</b>
Patent-intensive	18.6%	14.6%	13%
Trade mark-intensive	28.5%	23.5%	10%
Design-intensive	21.4%	17.3%	6%
Copyright-intensive	4.9%	7.2%	4%
<b>All IP-intensive industries (consolidated)*</b>	<b>32.7%</b>	<b>29.1%</b>	<b>11%</b>

\* As certain industries are intensive in more than one IPR category, the figures for all IP-intensive industries (consolidated) are smaller than the sum of the figures for the individual IPR categories.

<sup>1</sup> HSIC Version 2.0 is the statistical classification framework on which economic units are classified into relevant industry classes under a hierarchical system, there are a total of five levels, the higher the digit level, the more refined is the classification of the industry concerned. The five levels are “industry section”, “industry division”, “industry group”, “industry class” and “industry sub-class”. Following the practices of overseas IPOs, industry classifications at the 4-digit level are adopted in this Study.

<sup>2</sup> GDP at basic prices is calculated by deducting taxes on products from GDP at current market prices.

<sup>3</sup> The definition of wage(s) published in the *Report on Annual Earnings and Hours Survey* follows the definition of “wages” as adopted in the Employment Ordinance. It covers basic wage, commission and tips not of gratuitous nature, guaranteed bonuses and allowances and overtime allowance paid to an employee in the wage period. It does not cover bonuses and allowances of gratuitous nature, end of year payment, and payments in kind (e.g. value of food and accommodation provided by the employer).

# 1

# Introduction

- 1.1 The Study seeks to identify the industries in Hong Kong with higher-than-average ownership and use of IPRs and to assess the contribution of these IP-intensive industries to the Hong Kong economy.

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## Intellectual Property

- 1.2 WIPO defines IP as the creations of the mind, such as inventions, literary and artistic works, designs, and symbols, names and images used in commerce. IP represents a group of intangible property rights including patents, trade marks, designs, copyright, plant varieties and the layout design of integrated circuits, which prevent others from using the IP without the owners' consent.
- 1.3 In this Study, we focus on the four most common categories of IPRs owned and exploited in Hong Kong –
- (a) Patent – It gives the patent owner of an invention in the form of a product, substance or process which is new, inventive and capable of industrial application an exclusive right to prevent or stop others from commercially making, importing, selling or using the invention.
  - (b) Trade mark – It is a sign capable of distinguishing the goods and services of one trader from those of others. The owner of a registered trade mark has the exclusive right to use the trade mark in relation to the goods or services for which it is registered.
  - (c) Design – It means features of shape, configuration, pattern or ornament applied to an article by an industrial process. The owner of a registered design has the right to prevent others from manufacturing, importing, selling, hiring or using the design product for the purpose of trade or business.
  - (d) Copyright – It refers to a bunch of exclusive rights granted to an author or an owner of creative works such as literary works (covering computer software and compilation of data), artistic works (such as photographs and sculptures), dramatic works and musical works. Other works protected by copyright include sound recordings, films, broadcasts and cable programmes.

- 1.4 IP trading may take different forms such as sales and acquisitions, licensing, and franchising, and includes in-house exploitation and commercialisation of IP assets. In essence, IP trading refers to the use of IPRs in business to reap the economic rewards of the creations of the mind.
- 1.5 Hong Kong has been promoting IP trading as a driver for economic growth. Following the deliberations of a Working Group on IP Trading during 2013-2015<sup>4</sup>, the Government of the Hong Kong Special Administrative Region (“the Government”) has taken forward a host of measures to enhance the IP protection regime, support IP creation and exploitation, develop IP manpower capability and promote its cause across the society and externally. Enterprises are encouraged to identify their IP assets, seek IP protection by registrations (where applicable), enforce their IPRs against infringement, actively manage the IP assets and seek opportunities of IP commercialisation to reap the economic rewards.
- 1.6 In March 2021, the “*Outline of the 14<sup>th</sup> Five-Year Plan for National Economic and Social Development of the People’s Republic of China and the Long-Range Objectives Through the Year 2035*”<sup>5</sup> (“National 14<sup>th</sup> Five-Year Plan”) was promulgated, which, among others, supported Hong Kong to develop into a regional IP trading centre. The National 14<sup>th</sup> Five-Year Plan also supported Hong Kong to develop into an international innovation and technology centre and an East-meets-West centre for international cultural exchange, which would further propel the development of IP trading in Hong Kong. Notably –
- (a) Over the years, the Government has been investing significant resources in building a vibrant ecosystem to support development of innovation and technology in Hong Kong, much more so in recent years. The output of the research and development (“R&D”) efforts is protected in the form of patents and is subject to commercialisation. The appearance and shape of manufactured goods are also protected by registered designs.
  - (b) The cultural and creative industries (“CCI”) of Hong Kong have long been a driving force of our economy and are receiving increasing support from the Government. Cultural and creative contents are protected by copyright, trade marks and registered designs. Commercialisation of such IP assets can take advantage of market forces to facilitate cultural exchange across economies.

<sup>4</sup> See <https://www.ipd.gov.hk/filemanager/ipd/en/share/publications/IP-Trading-Report-e.pdf>

<sup>5</sup> See full text in Chinese at <https://www.ndrc.gov.cn/xxgk/zcfb/ghwb/202103/P020210323538797779059.pdf>

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## Need for the Study

- 1.7 Statistics and economic performance of the IP industries would be useful for the Government, industry stakeholders, academics and the public at large to appreciate the importance of IP to the local economy and the workforce. Such information can help the Government keep abreast of the development trend of the local IP industries and timely review relevant policies and supporting measures.
- 1.8 Apart from available records of IPR registrations and some international trade statistics on royalty receipts and payments across borders, it is difficult to measure the use of IPRs, given its intangible nature. Many IP trading transactions, which can be executed in multiple forms, are embedded in, and inseparable from, conventional statistics on goods and services. There is little incentive for enterprises to separately identify, collate and disclose business receipts relating to IP<sup>6</sup>.
- 1.9 Instead of trying to measure the exact extent of the use of IPRs in business, many advanced economies, emphasising IP as a driver for economic development, would focus on identifying specific industries in which the use of IPRs are intensive and assess their economic contributions (as compared with other industries) and track the changes periodically. This proxy approach makes pragmatic sense and this Study is proceeded in a like manner. The results obtained present a snapshot of the current state of the use of IPRs by local industries, facilitate cross-reference to similar studies by other economies and provide a basis for update over time for trend analysis.

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<sup>6</sup> Intellectual Property Department launched a survey on IP trading activities in Hong Kong in 2014 covering both IP-related industry sectors (including creators, owners and users) and intermediary services sectors. The 2014 survey covered establishments in nine selected industry sectors in which IP-related businesses were likely to be prevalent. It sought information from the stakeholders on their involvement in IP work, the categories of IPRs handled, the number of persons engaged, and the revenue (or proportion thereof) generated. In that survey, we encountered much difficulty in soliciting responses from the sampled establishments on the last issue, namely, information concerning business receipts of the establishments.



## 2 Methodology of the Study

### Overseas experiences

- 2.1 In devising the methodology of this Study, we made reference to the following studies conducted by EUIPO/EPO, USPTO and UKIPO which sought to identify the industries with a substantial use of IPRs including patents, trade marks, designs and copyright and assess their contributions to the domestic economy in terms of GDP, employment and trade –
- (a) “*IPR-intensive industries and economic performance in the European Union*” by the EUIPO and the EPO<sup>7</sup>;
  - (b) “*Intellectual Property and the U.S. economy*” by the USPTO<sup>8</sup>; and
  - (c) “*Use of Intellectual Property rights across UK industries*” by the UKIPO<sup>9</sup>.
- 2.2 Although the IPRs covered in the above studies may not be entirely the same, each of the IPOs applied a fairly similar methodology in collecting and compiling the data. This Study employed a similar methodology, for example, in data matching and measuring IP-intensity of the relevant industries. On the economic contribution of the IP-intensive industries identified, the commonly used parameters of GDP, employment and wages were similarly adopted.

<sup>7</sup> See [https://euiipo.europa.eu/tunnel-web/secure/webdav/guest/document\\_library/observatory/documents/reports/IPR-intensive\\_industries\\_and\\_economic\\_in\\_EU\\_2022/2022\\_IPR\\_Intensive\\_Industries\\_FullR\\_en.pdf](https://euiipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/reports/IPR-intensive_industries_and_economic_in_EU_2022/2022_IPR_Intensive_Industries_FullR_en.pdf)

<sup>8</sup> See <https://www.uspto.gov/sites/default/files/documents/uspto-ip-us-economy-third-edition.pdf>

<sup>9</sup> See <https://www.gov.uk/government/publications/use-of-intellectual-property-rights-across-uk-industries/use-of-intellectual-property-rights-across-uk-industries-2017-to-2019>

## Identification of patent-, trade mark- and design-intensive industries

- 2.3 This Study seeks to identify industries that held higher-than-average registration records of patents, trade marks and designs in Hong Kong. Since the Intellectual Property Department (“IPD”) also operates the registries for these IPRs, the registration records extracted from the relevant registries formed the primary source of information in the identification of industries that are more actively engaged in holding and using IPRs. On the economic performances of these industries, IPD sought assistance from the Census and Statistics Department (“C&SD”) for the provision of relevant data and information to facilitate the evaluation of the economic contribution of the industries concerned.
- 2.4 When compiling the data for this Study, only those applications filed between 1 January 2015 and 31 December 2019 which were later granted or registered<sup>10</sup> and remained in force as in March 2022 were counted. As this Study was carried out on industry level, only records of non-individual IPR owners with Hong Kong addresses were extracted and matched with the data retained by the Government. The methodology applied for data extraction, data matching and calculation of IP-intensity value is discussed in **Annex 1**.
- 2.5 While it was intended that the local registration records should form the basis of this Study, it was noted that a majority of the patent applications filed by Hong Kong business establishments in 2015-2019 were lodged with and subsequently granted by IPOs outside Hong Kong. This Study thus included the number of these non-Hong Kong records (5,097) given the relatively sizable number of these records<sup>11</sup>.

Table 2:  
Summary of IPR records matching

Matching of IPR records	Patents	Trade marks	Designs
No. of IPR records for matching	6,897*	51,850	4,379
No. of records matched	4,123	28,033	2,887

\* The number represents the combined total of registration records extracted from the Patents Registry (1,800) and the registration records outside Hong Kong extracted from the database of Derwent Innovation (5,097).

<sup>10</sup> The applications were filed during the 2015-2019 period, but the corresponding IPRs could have been granted or registered at any time up to the time of extraction (i.e. March 2022).

<sup>11</sup> The patent registrations outside Hong Kong were extracted from the database of Derwent Innovation, which is under Clarivate.

## Identification of copyright-intensive industries

2.6 Unlike the three IPRs discussed above, the protection of copyright does not depend on registration and a different methodology was therefore applied to identify copyright-intensive industries. The methodology basically followed WIPO's "*Guide on Surveying the Economic Contribution of the Copyright Industries*"<sup>12</sup> which proposed a common framework for conducting research on copyright industries. WIPO suggested that IPOs, when conducting a study on the economic performance of copyright industries, should assign a copyright factor to each industry based on their activities contributable to copyright-related activities. EUIPO/EPO and UKIPO adopted a principle of which industries having at least 20% of their activities contributable to copyright-related activities were regarded as copyright-intensive industries. Applying the same principle as EUIPO/EPO and UKIPO, a total of 74 industries were identified as copyright-intensive industries in Hong Kong.

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<sup>12</sup> See [https://www.wipo.int/edocs/pubdocs/en/copyright/893/wipo\\_pub\\_893.pdf](https://www.wipo.int/edocs/pubdocs/en/copyright/893/wipo_pub_893.pdf)

## 3 Economic data and parameters

- 3.1 The parameters used by various overseas IPOs in assessing economic contribution commonly include GDP and employment. In this Study, the indicators employed to evaluate the economic performances of the IP-intensive industries include GDP, employment and wage statistics, which are compiled by C&SD.
- 3.2 It takes time for the outcome of R&D and innovation to be commercialised and the corresponding products and services using the IPRs to be put on the market. Studies conducted by EUIPO/EPO, USPTO and UKIPO used different time periods to collect the registration records of the IPRs and the economic benefits resulting from the exploitation of such IPRs. IPD adopted a similar approach by using the economic indicators of 2019-2021 to evaluate the economic performances of the relevant IP-intensive industries identified during the designated five-year period (i.e. 2015-2019).

## 4 IP-intensive industries identified

- 4.1 Following the approach of EUIPO/EPO, USPTO and UKIPO, the IP-intensity value of each individual industry is calculated by dividing the number of IPR registration records in each industry filed during the 2015-2019 time span by the average number of persons engaged in the industry over the same time period. IP-intensive industries of any IPR category are defined as those having an IP-intensity value higher than the average IP-intensity value across all the industries. Some industries were noted to have more than one category of IPRs and a number of them were also found to be IP-intensive in different IPR categories. Such industries which repeatedly appeared in different IPR categories were consolidated to ensure no over-counting of IP-intensive industries. Against a total of 483 industries defined by the HSIC 4-digit level in Hong Kong, 339 were identified with registrations of IPRs, among which a total of 196 industries were identified as IP-intensive.
- 4.2 The distribution of IP-intensive industries under individual IPR categories is as follows:
- (a) 56 patent-intensive industries;
  - (b) 139 trade mark-intensive industries;
  - (c) 54 design-intensive industries; and
  - (d) 74 copyright-intensive industries.
- 4.3 The distribution of industries identified as IP-intensive industries under individual IPR categories is summarised in the following table:

Table 3:  
Summary of IP and IP-intensive industries in Hong Kong

Industries with IPRs	Patent	Trade mark	Design	Copyright	Consolidated
No. of industries identified with registrations of IPRs	139	327	98	N/A	339
No. of industries identified as IP-intensive	56	139	54	74	196

4.4 The full list of IP-intensive industries on patent, trade mark, design and copyright in Hong Kong is shown in **Annex 2**. Eight industries were identified as IP-intensive in all four IPR categories covered in this Study. Half of them were related to professional and business services with emphasis on design services and the remaining industries were related to information and communications and manufacturing. The eight industries are:

- (a) HSIC 3211 - Manufacture of jewellery and related articles;
- (b) HSIC 5829 - Publishing of other softwares (e.g. operating systems, business and other applications);
- (c) HSIC 5914 - Motion picture projection activities;
- (d) HSIC 6201 - Computer programming activities;
- (e) HSIC 7513 - Fashion design services (incl. accessories);
- (f) HSIC 7514 - Industrial design services (e.g. mould, photo-engraving, product, toy, watches and clocks designing);
- (g) HSIC 7519 - Specialised design activities n.e.c. (e.g. package, window display design and brand design consultancy); and
- (h) HSIC 7729 - Renting and leasing of other personal and household goods (e.g. furniture, pottery and glass, kitchen and tableware, electrical appliances).

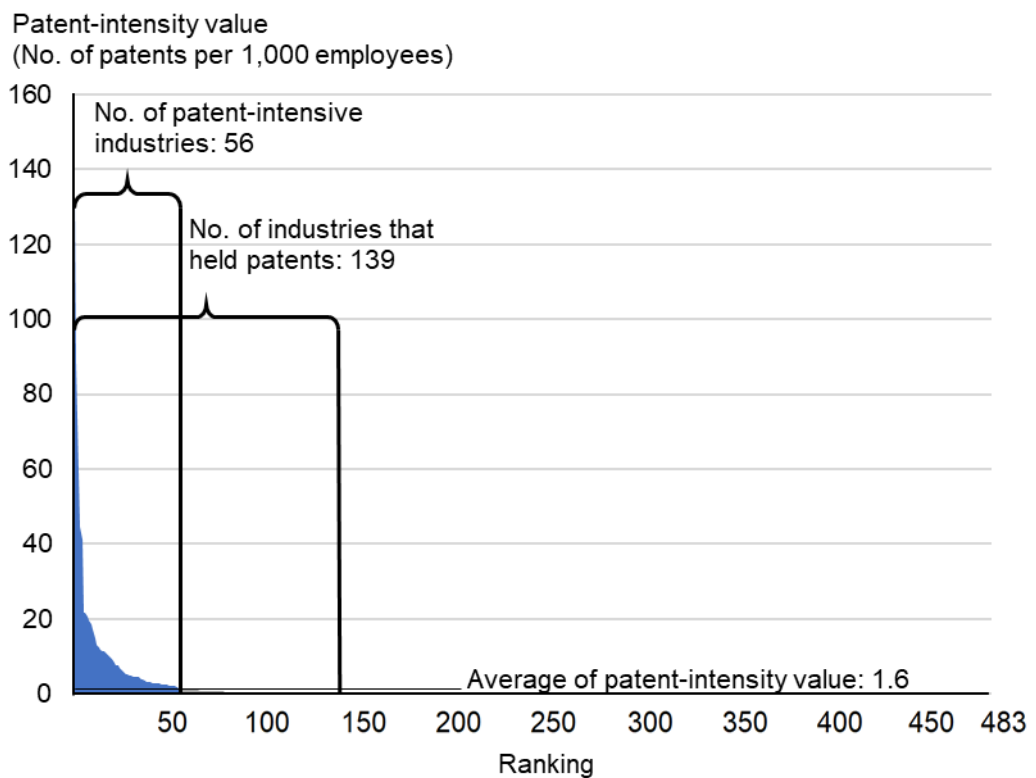
4.5 Other examples of IP-intensive industries associated with different IPR categories included the “Research and development on natural sciences and engineering” industry (HSIC 7210), which was identified as patent-, trade mark-, and design-intensive; the “Medical and X-ray laboratories” industry (HSIC 8691), which was identified as both patent- and trade mark-intensive; and the “Manufacture of luggage and handbags (excl. plastic shopping bags)” (HSIC 1512), which was identified as both trade mark- and design-intensive. In total, 22 industries were identified as IP-intensive in three IPR categories, and 59 industries were identified as IP-intensive in two IPR categories.

# Patent-intensive industries

4.6 Among the 139 industries which were found to hold patents, 56 industries had patent-intensity values above the average patent-intensity value (1.6) across all industries<sup>13</sup> and were identified as “patent-intensive industries”. Chart 1 shows the distribution of patent-intensive industries.

4.7 Six of the top 10 patent-intensive industries were related to professional and business services. Three were manufacture-related industries and the remaining one was financial services-related.

Chart 1:  
Distribution of patent-intensive industries



<sup>13</sup> See paragraph 13 of Annex 1 for calculation of patent-intensity value.

4.8 Table 4 provides the list of the top 10 patent-intensive industries and the corresponding patent-intensity values.

4.9 For easy identification, a colour scheme is adopted to highlight the six groups of industries repeatedly identified as IP-intensive in the categories of patents, trade marks and designs. The six industry groups are related to: a) manufacturing; b) wholesale and retail trades; c) information and communications; d) financial services; e) professional and business services; and f) social and personal services.

Table 4:  
Top 10 patent-intensive industries

Rank	HSIC	Industry	Patent-intensity value
1	2660	Manufacture of irradiation, electromedical and electrotherapeutic equipment	131.6
2	7210	Research and development on natural sciences and engineering	88.2
3	7514	Industrial design services	59.1
4	8020	Security system operation services	44.4
5	7220	Research and development on social sciences and humanities	41.3
6	3211	Manufacture of jewellery and related articles	21.8
7	7730	Leasing of intellectual property and similar non-financial intangible assets (except copyrighted works)	21.6
8	6420	Investment and holding companies	20.6
9	7519	Specialised design activities n.e.c.	19.6
10	3320	Installation of industrial machinery and equipment	18.5

Note:

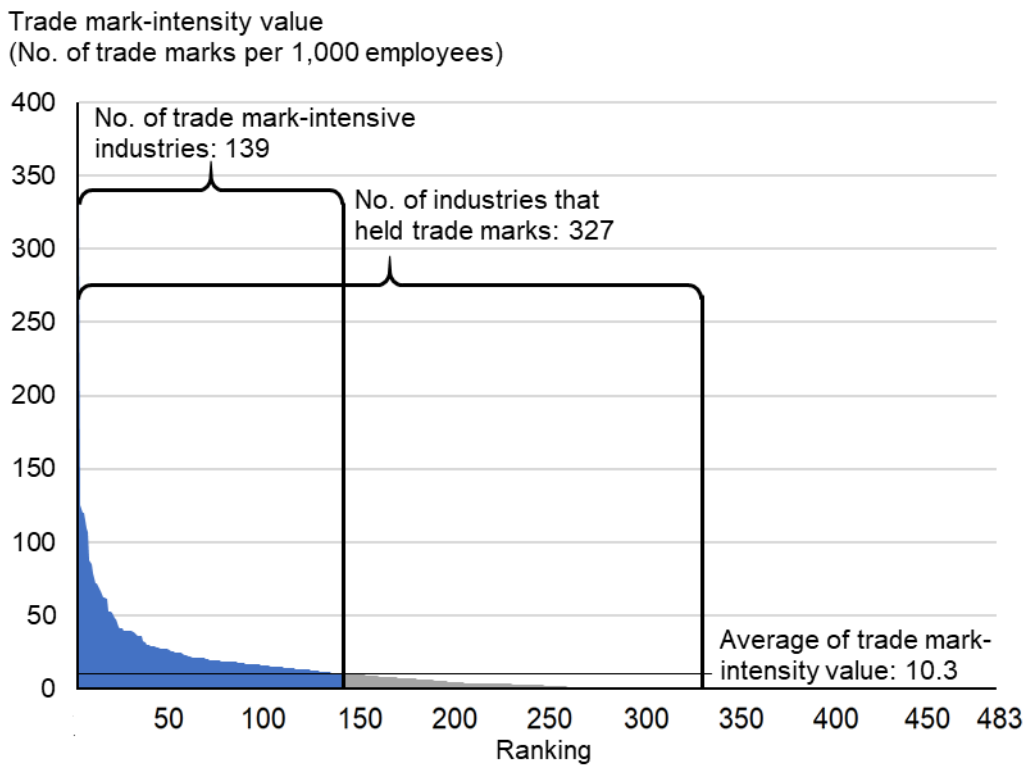
	Manufacture-related industries
	Wholesale and retail trades-related industries
	Information and communications-related industries
	Financial services-related industries
	Professional and business services-related industries (including designs and R&D)
	Social and personal services-related industries



## Trade mark-intensive industries

4.10 Among the 327 industries which were found to have trade mark registrations, 139 industries had trade mark-intensity values above the average trade mark-intensity value (10.3) across all industries<sup>14</sup> and were identified as “trade mark-intensive industries”. Chart 2 shows the distribution of trade mark-intensive industries.

Chart 2:  
Distribution of trade mark-intensive industries



<sup>14</sup> See paragraph 13 of Annex 1 for calculation of trade mark-intensity value.

4.11 Four of the 10 most trade mark-intensive industries were manufacture-related. The other trade mark-intensive industries were related to professional and business services, information and communications and wholesale and retail trade. Table 5 provides details of the top 10 trade mark-intensive industries.

Table 5:  
Top 10 trade mark-intensive industries

Rank	HSIC	Industry	Trade mark-intensity value
1	1080	Manufacture of prepared animal feeds	333.3
2	1102	Manufacture of alcoholic beverage other than beer	125.0
3	1512	Manufacture of luggage and handbags (excl. plastic shopping bags)	120.0
4	7729	Renting and leasing of other personal and household goods	119.9
5	4782	Retail trade not via stores and mobile stalls	109.4
6	7210	Research and development on natural sciences and engineering	107.0
7	7514	Industrial design services	87.8
8	2111	Manufacture of Chinese herbal and drug medicine	85.0
9	5821	Publishing of computer games	78.6
10	5914	Motion picture projection activities	71.7

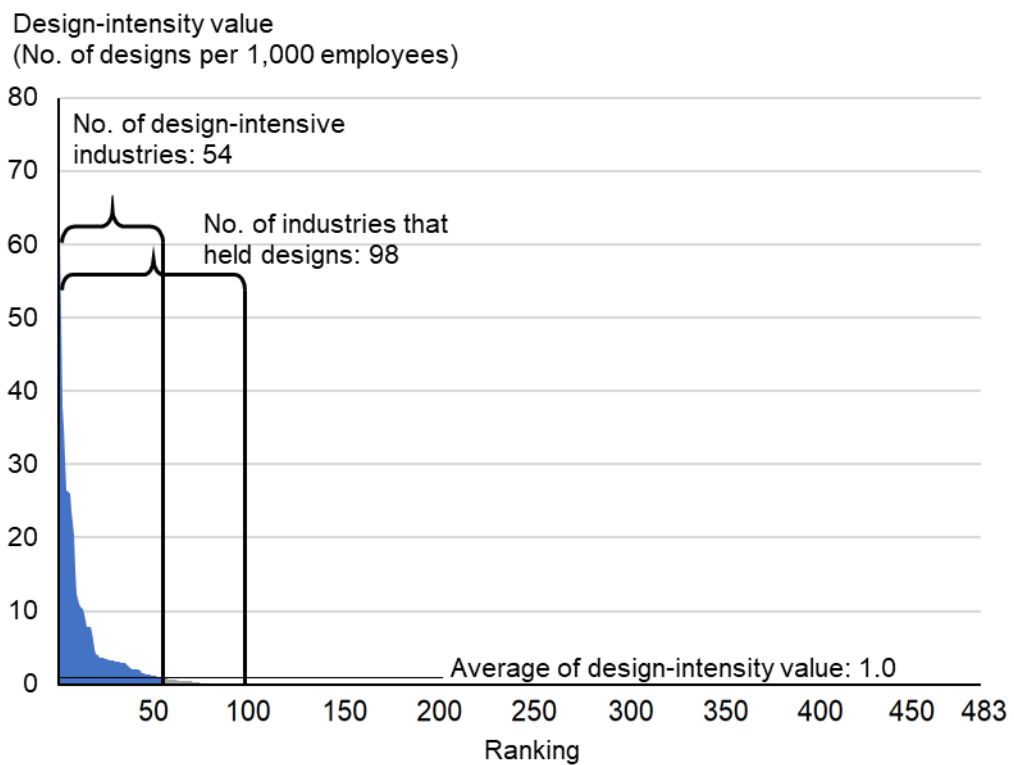
Note:

- Manufacture-related industries
- Wholesale and retail trades-related industries
- Information and communications-related industries
- Financial services-related industries
- Professional and business services-related industries (including designs and R&D)
- Social and personal services-related industries

# Design-intensive industries

4.12 Among the 98 industries found holding registered designs, 54 industries had design-intensity values above the average design-intensity value (1.0) across all industries<sup>15</sup> and were identified as “design-intensive industries”. Chart 3 shows the distribution of design-intensive industries.

Chart 3:  
Distribution of design-intensive industries



<sup>15</sup> See paragraph 13 of Annex 1 for calculation of design-intensity value.

4.13 Half of the top 10 most design-intensive industries were manufacture-related industries. Three were related to professional and business services, and the remaining two were related to information and communications and wholesale and retail trades.

Table 6:  
Top 10 design-intensive industries

Rank	HSIC	Industry	Design-intensity value
1	1512	Manufacture of luggage and handbags (excl. plastic shopping bags)	60.0
2	7514	Industrial design services	38.0
3	7729	Renting and leasing of other personal and household goods	34.9
4	2660	Manufacture of irradiation, electromedical and electrotherapeutic equipment	26.3
5	3313	Repair of electronic and optical equipment	26.3
6	2224	Manufacture of plastic cases and parts	26.0
7	5914	Motion picture projection activities	23.6
8	4781	Retail sale via mobile stalls	20.5
9	7513	Fashion design services (incl. accessories)	15.5
10	2229	Manufacture of plastics products n.e.c. (except furniture, toys, sports goods and stationery)	12.4

Note:

- Manufacture-related industries
- Wholesale and retail trades-related industries
- Information and communications-related industries
- Financial services-related industries
- Professional and business services-related industries (including designs and R&D)
- Social and personal services-related industries

## Copyright-intensive industries

4.14 With reference to the methodology adopted by EUIPO/EPO and UKIPO in identifying copyright-intensive industries, by using the threshold of the industry having at least 20% of its activities contributable to copyright-related activities, a total of 74 industries were identified as copyright-intensive industries in Hong Kong.

4.15 Table 7 provides a list of typical examples of the copyright-intensive industries. The full list of copyright-intensive industries in Hong Kong is set out in **Annex 3**.

Table 7:  
Examples of copyright-intensive industries

HSIC	Industry
5811	Publishing of books, directories and mailing lists
5821	Publishing of computer games
5911	Motion picture, video and television programme production activities
5920	Sound recording and music publishing activities
6020	Television programming and broadcasting activities
6201	Computer programming activities
7512	Multi-media, visual and graphic design activities
7513	Fashion design services (incl. accessories)
9010	Performing arts activities
9020	Creative artists, musicians and writers

Note:

- Manufacture-related industries
- Wholesale and retail trades-related industries
- Information and communications-related industries
- Financial services-related industries
- Professional and business services-related industries (including designs and R&D)
- Social and personal services-related industries

## 5 Contribution of IP-intensive industries to Hong Kong economy

5.1 In similar studies conducted by the other IPOs, the following main economic indicators, namely GDP, employment and wages were used to assess the economic performances of the IP-intensive industries. This Chapter will discuss the contribution of the IP-intensive industries to the economy of Hong Kong by reference to these indicators.

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### GDP

5.2 GDP is an aggregate measure of the total value of net output of all resident producing units. Value-added (“VA”) is the net output of individual industries and is the value of gross output less the value of intermediate consumption (i.e. the value of goods and services used up in the course of production). The sum of the VA of all economic activities (industries) in an economy equals to its GDP.

5.3 C&SD compiled the annual GDP data and VA statistics of individual industries mainly through the data collected in the *Annual Survey of Economic Activities*<sup>16</sup> (“ASEA”). ASEA aims to provide statistical information for gauging the business performance and operating characteristics of different economic sectors and for evaluating their contribution to Hong Kong’s GDP.

5.4 As the VA statistics for certain individual industries were not available for various reasons (e.g. owing to small sample size), the VA data provided herein are listed according to the industry groups (instead of the HSIC 4-digit classification).

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<sup>16</sup> See [https://www.censtatd.gov.hk/en/page\\_1300.html](https://www.censtatd.gov.hk/en/page_1300.html)

5.5 The GDP at basic prices of Hong Kong for 2019-2021 was HK\$2,740.7 billion, HK\$2,560.7 billion and HK\$2,745.8 billion, respectively. On average over the period of 2019-2021, IP-intensive industries generated VA of HK\$877.9 billion to the local economy, which accounted for 32.7% of Hong Kong's GDP. Table 8 provides the share of GDP contributed by different IP-intensive industries.

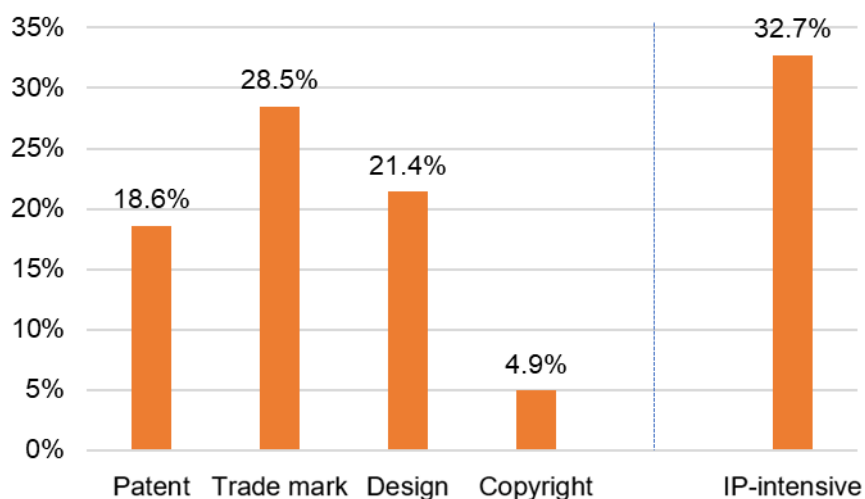
Table 8:  
Contribution of IP-intensive industries to GDP, 2019-2021 average

IP-intensive industries	VA/GDP (HK\$ billion)	Share of GDP at basic prices
Patent-intensive	499.0	18.6%
Trade mark-intensive	764.4	28.5%
Design-intensive	574.3	21.4%
Copyright-intensive	132.7	4.9%
<b>All IP-intensive industries (consolidated)*</b>	<b>877.9</b>	<b>32.7%</b>
<b>Total GDP in Hong Kong</b>	<b>2,682.4</b>	<b>100%</b>

\* As certain industries are intensive in more than one IPR category, the figures for all IP-intensive industries (consolidated) are smaller than the sum of the figures for the individual IPR categories.

5.6 Chart 4 shows the contribution to GDP by the different IP-intensive industries and the IP-intensive industries overall.

Chart 4:  
Contribution of IP-intensive industries to GDP, 2019-2021 average



## Patent-intensive industries

5.7 On average over the period of 2019-2021, patent-intensive industries contributed HK\$499.0 billion (i.e. 18.6%) to GDP. The import and export trade industries related to household goods, motor vehicles, machinery, equipment and supplies made the highest contribution with a combined total of HK\$405 billion (i.e. 15.1%) to GDP.

Table 9:  
Contribution of patent-intensive industries to GDP

Industry groups	VA (HK\$ billion)	Share of GDP at basic prices
Export trading of household goods, motor vehicles, machinery, equipment and supplies, import for wholesale of household goods and machinery, wholesale and retail sale of motor vehicles and retail trade not via stores and mobile stalls	405.0	15.1%
Publishing of other softwares, computer programming activities and data processing	18.0	0.7%
Environmental engineering services, technical testing and analysis, engineering services and research and development	7.3	0.3%
Manufacturing of food and beverages, tobacco, textiles, wearing apparel, leather products, paper products, printing, reproduction of recorded media, chemicals, rubber, plastics, non-metallic mineral products, metal products, machinery and equipment, jewellery, musical, toys and others	2.6	0.1%
Manufacturing of communication equipment, irradiation equipment, electric wire and other cables, and photo printing services	0.6	*
Others	65.5	2.4%
<b>Total</b>	<b>499.0</b>	<b>18.6%</b>

\* Less than 0.05%



## Trade mark-intensive industries

5.8 Among all four categories of IP-intensive industries, the trade mark-intensive industries made the highest contribution to GDP on average over the period of 2019-2021, amounting to HK\$764.4 billion (i.e. 28.5%). The combined total of the import and export trade of agricultural products, food, beverage and tobacco, motor vehicles and household goods constituted about 55% of the total contribution by trade mark-intensive industries to GDP, amounting to HK\$423.3 billion (i.e. 15.8%). Other trade mark-intensive industries related to financial services, real estate services, public relation services, business management and consultancy services and translation and interpretation services contributed HK\$191.5 billion (i.e. 7.1%) to GDP. The details of the individual industry groups' contribution to GDP are set out in Table 10.

Table 10:  
Contribution of trade mark-intensive industries to GDP

Industry groups	VA (HK\$ billion)	Share of GDP at basic prices
Import and export trade of agricultural products, food, beverage, tobacco, motor vehicles, and household goods, other and non-specialised export trading and import for wholesale	423.3	15.8%
Financial leasing, credit granting, other financial service activities, fund management, real estate development and leasing and other real estate services, business head offices of local enterprises, public relation services, business management and consultancy services, translation and interpretation services and other professional services	191.5	7.1%
Publishing of books, computer games, other softwares and other publishing activities and other information service activities, computer programming, data processing, web portals, motion pictures, video and television programme, sound recording and music publishing activities, television programming and broadcasting and other telecommunications activities.	54.1	2.0%

Industry groups	VA (HK\$ billion)	Share of GDP at basic prices
Retail sale of beverage, tobacco products, computer, textiles, hardware, games and toys, pharmaceutical products and second-hand goods	20.1	0.8%
Wholesale trade of agricultural products, food, beverage, tobacco, household goods and motor vehicles, other and non-specialised wholesale and broker and agents for wholesale	16.1	0.6%
Cultural education, educational support services, sports skill instruction, medical and x-ray laboratories, allied health personnel practice activities, activities of business and employers membership organisations, repair of watches and clocks and other personal service activities	13.5	0.5%
Leasing of intellectual property and similar non-financial intangible assets, renting and leasing of other personal and household goods, combined office administrative service activities, agents for artists, athletes, models and other public figures and packaging activities	12.6	0.5%
Manufacturing of chocolate, prepared animal feeds, beer, alcoholic beverage, tobacco products and other food products	9.7	0.4%
Advertising companies and agencies, advertising services and convention and trade show organising services	5.7	0.2%
Manufacturing of luggage and handbags, knitted and crocheted fabrics, cosmetics and Chinese herbal and drug medicine, western medicine, audio and video equipment, irradiation and metal-forming machinery and machine tools, jewellery and games and toys	4.5	0.2%
Fashion design, industrial design and interior and furniture design services and multi-media, and graphical design activities and specialised design activities	4.4	0.2%
Others	8.7	0.3%
<b>Total</b>	<b>764.4</b>	<b>28.5%</b>

## Design-intensive industries

5.9 Among the four categories of IP-intensive industries, the design-intensive industries ranked second in the contribution to GDP on average in the 2019-2021 time span which amounted to HK\$574.3 billion (i.e. 21.4%). The import and export trades related industries in total contributed the most to GDP at HK\$391 billion (i.e. 14.6%). The details of the industry groups and their contribution to GDP are set out in Table 11.

**Table 11:**  
Contribution of design-intensive industries to GDP

Industry groups	VA (HK\$ billion)	Share of GDP at basic prices
Import and export trade for wholesale of food, beverage and tobacco, motor vehicles and household goods, export of machinery and non-specialised export trading and import for wholesale	391.0	14.6%
Retail sale of textiles, games and toys, pharmaceutical and cosmetics and other retail sales of new goods, retail sales via mobile stalls and not via stores and mobile stalls	17.5	0.7%
Wholesale of food, beverage and tobacco, household goods, and non-specialised import for wholesale	11.5	0.4%
Manufacturing of luggage and handbags, Chinese herbal and drug medicine, plastic cases and parts, plastics products, noodles, soft drinks, watches and clocks and irradiation equipment, and repair of electronic and optical equipment	5.7	0.2%
Fashion design, industrial design and interior and furniture design services and multi-media, and graphical design activities and specialised design activities	4.4	0.2%
Others	144.1	5.4%
<b>Total</b>	<b>574.3</b>	<b>21.4%</b>

## Copyright-intensive industries

5.10 The copyright-intensive industries contributed HK\$132.7 billion (i.e. 4.9%) to GDP on average in the 2019-2021 time span. The industry groups related to telecommunication, computer and information technology were the main contributor with a combined total of HK\$75.8 billion (i.e. 2.8%) to GDP.

Table 12:  
Contribution of copyright-intensive industries to GDP

Industry groups	VA (HK\$ billion)	Share of GDP at basic prices
Telecommunication network operation, internet access services and other telecommunication activities	45.4	1.7%
Publishing of computer games and other softwares, computer programming activities, information technology consultancy activities, data processing and related activities and web portals	30.4	1.1%
Wholesale of household goods and machinery, retail sales of computers, audio and video equipment, books and newspapers and music and video recordings and other retail sale of new goods	21.2	0.8%
Publishing of books, newspapers, news agency activities, other information services and publishing activities	9.6	0.4%
Radio broadcasting and television programming and broadcasting activities	5.6	0.2%
Fashion design, industrial design and interior and furniture design services and multi-media, and graphical design activities and specialised design activities	4.4	0.2%
Manufacturing of pulp, paper and paperboard, printing, services activities related to printing and reproduction of recoded media	3.2	0.1%
Motion picture, video and television programme production, distribution and projection activities, sound recording and music publishing activities, photographic production services and photo printing	2.5	0.1%
Performing arts activities and venue operation, creative artists, musicians and writers, library and museums activities and activities of amusement parks and theme parks and other sports and entertainment activities	1.7	0.1%
Manufacturing of computers, communication, audio and photographic equipment, office machinery, jewellery, musical instruments, toys and electronic game and toys	0.9	*
Others	7.6	0.3%
<b>Total</b>	<b>132.7</b>	<b>4.9%</b>

\* Less than 0.05%

## Employment

5.11 Employment data reflects the jobs created by the respective industries and is an important illustration of the economic impact of the respective industries to society. The employment data quoted here were based on the *Quarterly Report of Employment and Vacancies Statistics*<sup>17</sup> published by C&SD.

5.12 On average over the period of 2019-2021, the number of persons engaged in the IP-intensive industries was 1,090,000, accounting for 29.1% of the total employment. Table 13 shows the distribution of persons engaged across different IP-intensive industries.

Table 13:  
Contribution of IP-intensive industries to employment, 2019-2021 average

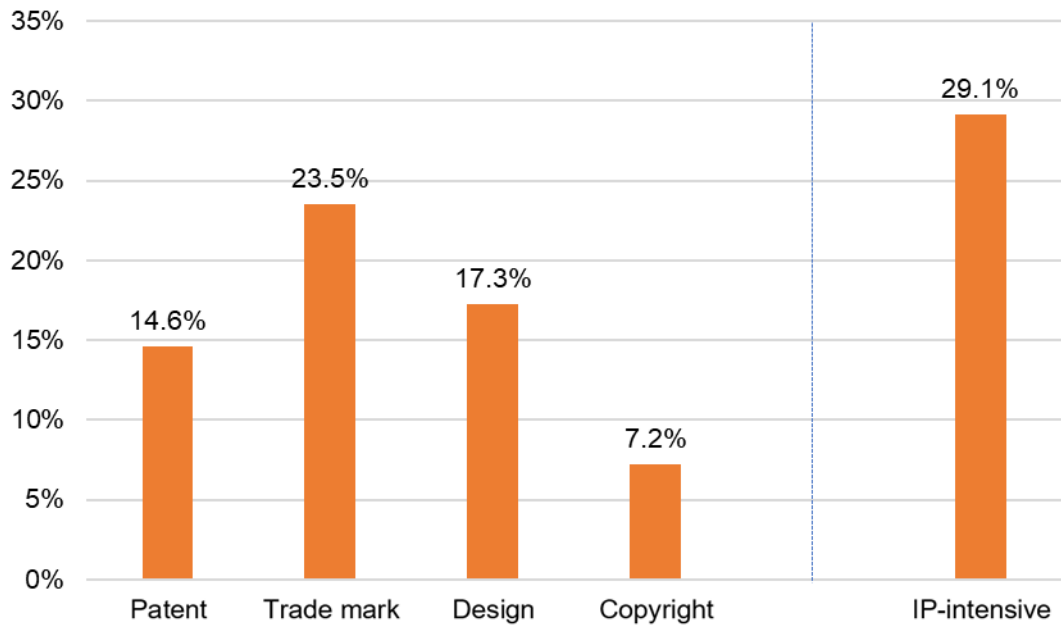
IP-intensive industries	No. of persons engaged ('000)	Share of employment
Patent-intensive	547	14.6%
Trade mark-intensive	881	23.5%
Design-intensive	647	17.3%
Copyright-intensive	270	7.2%
<b>All IP-intensive industries (consolidated)*</b>	<b>1,090</b>	<b>29.1%</b>

\* As certain industries are intensive in more than one IPR category, the figures for all IP-intensive industries (consolidated) are smaller than the sum of the figures for the individual IPR categories.

<sup>17</sup> See <https://www.censtatd.gov.hk/en/EIndexbySubject.html?pcode=B1050003&scode=452>

5.13 The share of employment by IP-intensive industries of individual IPR categories and the IP-intensive industries overall is illustrated in Chart 5.

Chart 5:  
Contribution of IP-intensive industries to employment, 2019-2021 average



5.14 Further breakdown of the top ten IP-intensive industries in the categories of patent, trade mark, design and copyright that engaged the highest number of persons are shown in Table 14.

Table 14:  
Ten IP-intensive industries with the highest number of persons engaged, 2019-2021 average

Rank	HSIC	IP-intensive Industry	No. of persons engaged ('000)	Share of employment	IPR* categories
1	4514	Export trading of household goods	183	4.9%	PT, TM, DS
2	4524	Import for wholesale of household goods	61	1.6%	PT, TM, DS
3	8530	Universities and colleges providing post-secondary courses	55	1.5%	PT
4	4516	Export trading of machinery, equipment and supplies	50	1.3%	PT, TM, DS
5	7022	Business management and consultancy services	35	0.9%	TM, DS
6	4774	Other retail sale of new goods	32	0.9%	TM, DS, CR
7	4772	Retail sale of pharmaceutical, medical and health goods, cosmetics and personal care products	29	0.8%	TM, DS
8	6619	Other activities auxiliary to financial service activities	27	0.7%	TM
9	6420	Investment and holding companies	27	0.7%	PT, TM, DS
10	4526	Import for wholesale of machinery, equipment and supplies	27	0.7%	PT
<b>Share of total employment by the 10 IP-intensive industries</b>			<b>527</b>	<b>14.1%</b>	
<b>All IP-intensive industries</b>			<b>1,090</b>	<b>29.1%</b>	

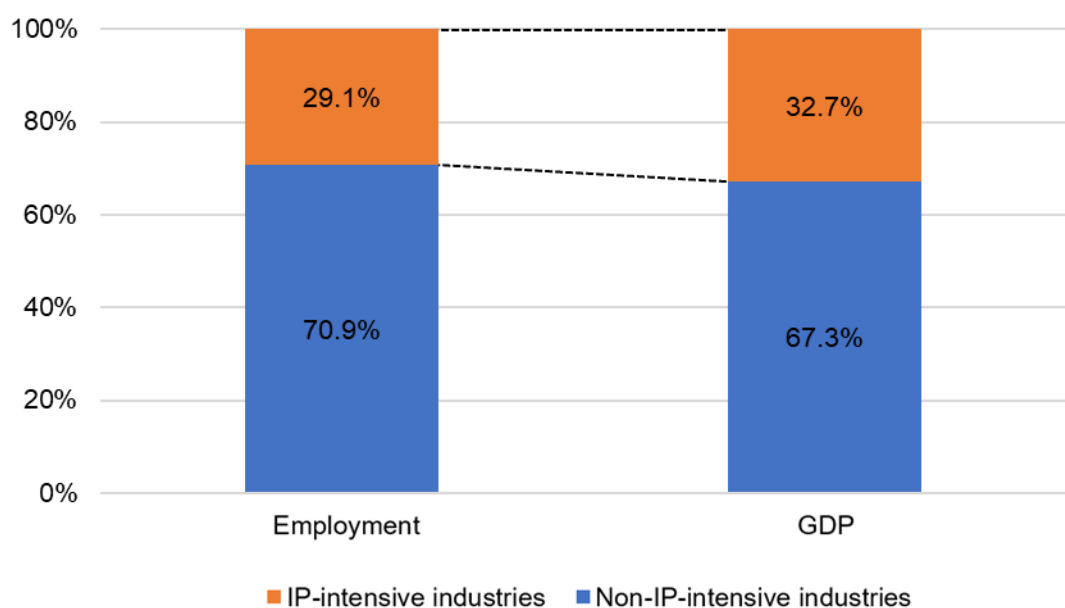
\* PT = Patent; TM = Trade mark; DS = Design; CR = Copyright

5.15 On average over the period of 2019-2021, the number of persons engaged by the ten IP-intensive industries with the highest number of employees was about 527,000, or 14.1% of total employment in Hong Kong. Among these ten IP-intensive industries, most of them are either trade mark-intensive industries (eight out of ten) or design-intensive industries (seven out of ten); and four of them were concurrently intensive in the patent, trade mark and design categories and collectively contributed to 8.6% of the total employment in Hong Kong. These four industries were “Export trading of household goods” (HSIC 4514), “Import for wholesale of household goods” (HSIC 4524), “Export trading of machinery, equipment and supplies” (HSIC 4516) and “Investment and holding companies” (HSIC 6420).

## Wages

5.16 This Study showed that on average in the 2019-2021 time span, the IP-intensive industries as a whole generated 32.7% of GDP and 29.1% of the total employment. These figures suggested that the VA per employee<sup>18</sup> was higher in IP-intensive industries than in the non-IP-intensive industries. The higher VA per employee was reflected in the relatively higher remuneration in the IP-intensive industries.

Chart 6:  
Contributions of IP-intensive industries to employment and GDP compared with non-IP-intensive industries, 2019-2021 average



<sup>18</sup> VA per employee is derived from VA contributed by an industry divided by the persons engaged in that industry.



5.17 This Study measured the percentage of the median monthly wage in the IP-intensive industries over the median monthly wage in non-IP-intensive industries, known as the wage premium, and revealed that the wages earned by employees in the IP-intensive industries are generally higher than those in non-IP-intensive industries. According to the *Annual Earnings and Hours Survey* conducted by C&SD, in May-June 2021, the median monthly wage of employees (excluding government employees as well as student interns, work experience students, and live-in domestic workers exempted by the Minimum Wage Ordinance) engaged in the IP-intensive industries was HK\$20,000, which was 11% higher than that of non-IP-intensive industries (HK\$18,000). In the same period, employees in the patent-intensive industries recorded the highest median monthly wage of HK\$20,300 and yielded the highest wage premium of 13%. The median monthly wage of employees engaged in the copyright-intensive industries, at HK\$18,800, was comparatively lower than those of the other IP-intensive industries, with a wage premium of 4% compared with the non-IP-intensive industries. Details of the median monthly wage and wage premium in different IP-intensive industries are set out in Table 15.

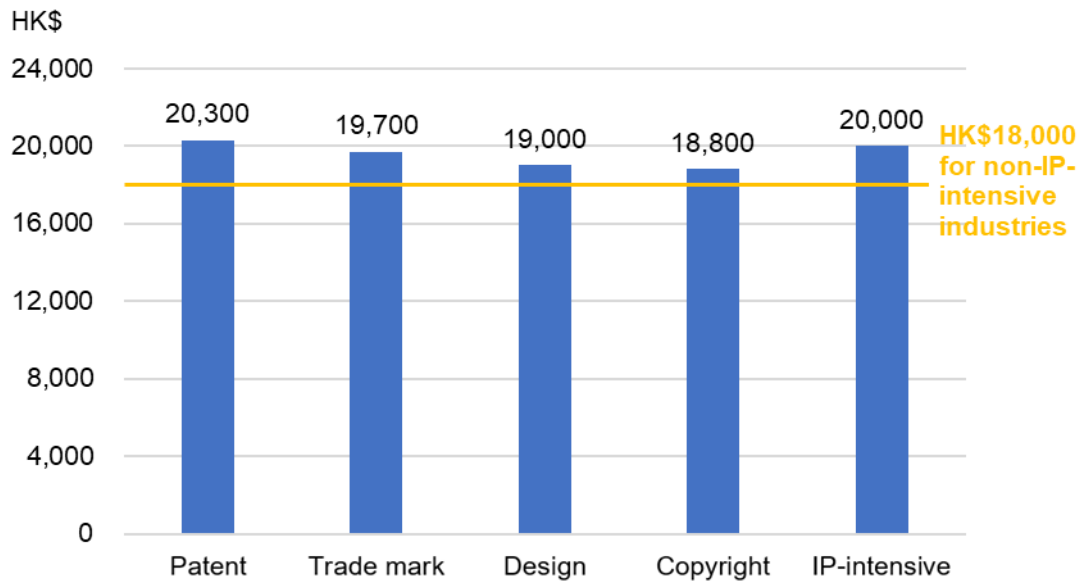
Table 15:  
Median monthly wage and wage premium:  
IP-intensive industries versus non-IP-intensive industries, May-June 2021

IP-intensive industries	Median monthly wage (HK\$)	Wage premium
Patent-intensive	20,300	13%
Trade mark-intensive	19,700	10%
Design-intensive	19,000	6%
Copyright-intensive	18,800	4%
<b>All IP-intensive industries (consolidated)</b>	<b>20,000</b>	<b>11%</b>
<b>Non-IP-intensive industries</b>	<b>18,000</b>	<b>-</b>

Note: Median monthly wages are rounded up to the nearest hundred of Hong Kong dollar. The wage premiums are derived from unrounded figures.

5.18 Chart 7 shows the median wages of different IP-intensive industries against the median wage of non-IP-intensive industries.

Chart 7:  
Median monthly wages for IP-intensive industries, May-June 2021



## 6 Studies conducted by other IPOs

- 6.1 As this Study broadly followed the approach of similar studies conducted by EUIPO/EPO, USPTO and UKIPO, in particular the methodologies applied, the findings of their studies were also provided for reference. It should be noted that economic performances of different economies are subject to a range of factors including different economic structures and other localised factors, the findings of these studies are for background reference only and no inference should be drawn from the findings discussed in Chapter 5 above.
- 6.2 In terms of GDP contribution, the US's study revealed that 41% of its GDP in 2019 was generated from IP-intensive industries while the studies of the EU and the UK showed the average GDP contribution of IP-intensive industries between 2017 and 2019 to the two economies were 47% and 22% respectively. The employment contribution by the IP-intensive industries of the US, the EU and the UK was 33%, 30% and 19% respectively. The wage premium of employees engaged in the US' IP-intensive industries was 60% higher than those in non-IP-intensive industries while the wage premium in the EU was 41%. Reference has also been made to the studies conducted by the Mainland authorities which focused on the patent-intensive and copyright industries. Further details of findings of these studies are set out in **Annex 4** for reference.

## 7 Limitations of the Study

- 7.1 In this Study, IPD only relied on the registration records extracted from the relevant IP registries (with the exception of patents) and the assistance from C&SD in providing economic and related data for the analysis of contribution of the IP-intensive industries. Some notable limitations are discussed below.
- 7.2 In the computation of the IP-intensity values, the data of the persons engaged in the corresponding industries are fundamental for the exercise. There are, however, cases where the data of persons engaged in certain industries were not available for reasons such as no coverage or data suppression to safeguard confidentiality and hence those industries without employment data were excluded from this Study.
- 7.3 Certain industries holding only a small number of registered IPRs of high value engaged a relatively large number of employees. Despite the high value of their IPRs, the IP-intensity value<sup>19</sup> of these industries may be lower than the average IP-intensity value and hence were not classified as IP-intensive, irrespective of their significant contribution to the local economy. One example was the industry of “Hong Kong-based airline and helicopter companies” (HSIC 5101) which held three registered patents with an annual average of 25,170 persons engaged in 2015-2019.
- 7.4 Since only IPR registrations filed and were later granted or registered between 2015 and 2019<sup>20</sup> were used for analysis in this Study, some longstanding IPRs such as certain trade marks that have been registered for many years and still making economic contribution were excluded.
- 7.5 As this Study focused on business establishments which held IPRs and the economic performances of the industries they belonged to, the economic performances of individuals holding IPRs were not covered.

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<sup>19</sup> See paragraph 13 of Annex 1 for calculation of IP-intensity value.

<sup>20</sup> The applications were filed during the period of 2015-2019 but the corresponding IPRs could have been granted or registered at any time up to the time of extraction (i.e. March 2022).

## 8

# Conclusion

- 8.1 This Study focuses on the identification of IP-intensive industries in Hong Kong and analysis of their contribution to the economy. The methods used to identify the IP-intensive industries and analyse the economic contributions of IP-intensive industries in terms of GDP, employment and wages are commonly adopted by other IPOs.
- 8.2 On average over the period of 2019-2021, IP-intensive industries contributed 32.7% to GDP and 29.1% to total employment in Hong Kong. These results are evidence of the fact that IP-intensive industries played a notable role in Hong Kong's economic growth and job creation. This Study also confirms that people engaged in IP-intensive industries generally earned higher wages compared with those in non-IP-intensive industries.
- 8.3 This Study is the first of its kind to evaluate the economic contribution of the IP-intensive industries in Hong Kong. By correlating IP and business registration information as well as weaving together relevant economic statistics, it seeks to provide pertinent information on the IP-intensive industries in Hong Kong and their relationship to the economy as background reference for stakeholders across the Government, industries, academics and the public at large to appreciate the importance of the development of Hong Kong as a regional IP trading centre to Hong Kong's economy and to seize the opportunity to drive positive outcomes in business by exploitation of IP. It may be of greater value if the Study can be updated on a regular basis to understand the possible changes over time as in the cases of other economies.

# Annexes

# Annex 1:

## Methodology of the Study

### Overseas experiences

1. This Study aims to analyse the economic contribution of industries that are IP-intensive. EUIPO/EPO, USPTO and UKIPO have conducted similar studies and the methodologies they applied were largely the same with adjustments to suit their local circumstances. This Study follows similar approach and methodology with necessary modifications in order to identify the IP-intensive industries in Hong Kong and examine their performances in the economic context.
2. The three IPRs, namely patents, trade marks and designs granted or registered by the local registries to Hong Kong business establishments formed the basis of the data for this Study. As this is the first study of its kind, using data coverage of a five-year period (from 2015 to 2019) would have the advantage of avoiding any bias resulting from unforeseeable factors that might have affected the Hong Kong's economy in a particular year. This approach is similar to those adopted by the IPOs mentioned above.

### Hong Kong Standard

#### Industrial Classification (HSIC)<sup>21</sup>

3. As discussed in Chapter 2, only those IPR registration records of Hong Kong business establishments that remained in force as in March 2022 were counted for the purposes of this Study. To identify the IPRs owned by the respective industries, the IPR registration records according to the applicable criteria were extracted and matched with the data of active companies kept by the Government.
4. Industries were classified according to HSIC Version 2.0, which is the statistical classification framework used by C&SD for classifying economic units in Hong Kong into relevant classes based on the nature of their major economic activities. Other IPOs used the “International Standard Industrial Classification of All Economic Activities Revision 4” (on which HSIC is modelled) with local adaptations for the classifications of their respective IP-intensive industries<sup>22</sup>. In Hong Kong, a total of 483 industries are classified at 4-digit level.

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<sup>21</sup> HSIC is a statistical classification scheme for compilation and dissemination of sectoral economic statistics. The HSIC Version 2.0 is the latest version of HSIC modelled on the United Nations' "International Standard Industrial Classification of All Economic Activities Revision 4" with local adaptations. See [https://www.censtatd.gov.hk/en/page\\_698.html](https://www.censtatd.gov.hk/en/page_698.html)

<sup>22</sup> For instance, USPTO used North America Industry Classification System, EUIPO/EPO used Statistical classification of economic activities in the European Community, while UKIPO used Standard Industrial Classification.

## Identification of patent-, trade mark- and design-intensive industries

### *IPR records*

5. The IPR records utilised in this Study were those filed for patent, trade mark or design registrations between 2015 and 2019, and were subsequently granted or registered, and remained in force as in March 2022.
6. The Patents Registry has 1,800 patent records<sup>23</sup> of local filings falling within paragraph 5 above whereas Hong Kong patents granted to local residents only accounted for 6.1% of the total number of Hong Kong patents granted over the same period<sup>24</sup>. As a matter of fact, quite a number of Hong Kong patent applicants have chosen to only file for patent registration outside Hong Kong for their own reasons. If this Study only took into account local patent records, the performance of local industries in their R&D efforts and their use of patents would not be adequately reflected, resulting in an incomplete overview of the local patent-intensive industries and assessment of their contribution to the Hong Kong economy.
7. To address the disparity, this Study also included patent records outside Hong Kong concerning Hong Kong business establishments extracted from the database of Derwent Innovation. According to the Derwent Innovation database, from 2015 to 2019, 5,097 patent applications were filed and later granted outside Hong Kong to Hong Kong business establishments. Repeated patent records that were registered both in Hong Kong and elsewhere were excluded to avoid double counting.
8. With respect to trade marks and designs, the analysis was proceeded on the same basis as in the case of other IPOs that only the registration records of the jurisdiction conducting the study were taken into consideration.

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<sup>23</sup> Such patent records included filings for re-registration, original grant patent and short-term patent.

<sup>24</sup> In contrast, the corresponding percentages of trade marks and designs registered by Hong Kong residents were 36.0% and 26.9% respectively.



## ***Data matching***

9. The names of the business establishments holding the 58,029 IPR records extracted from the three IP registries and the 5,097 patent records drawn from the Derwent Innovation database for the period of 2015-2019 were matched with the Government's data to ascertain the industry classifications of the business establishments. A summary of the numbers of IPR records in the various IPR categories used for matching is shown in Table 2.
10. Algorithmic programming was applied in order to conduct the matching exercise more effectively and efficiently as well as to enhance the matching rate. The steps of the matching exercise included –
  - (a) standardising the different notions of establishment names in the respective dataset and removing common phrases such as “trading as”, “on behalf”, “co.” and “ltd”, etc. from the names. This step helped ensure similar expressions were used in checking the names of the business establishments so as to improve efficiency of the process; and
  - (b) manual checking would be carried out by inspecting both the establishment names and addresses of the IPR records and searching against the Government's data in cases where attempts made under (a) above failed to match the records.
11. A number of IP registration records were found to be associated with multiple business establishments and different industries. To ensure proper identification of the industries, the method of fractional allocation was adopted for such IPR records, i.e. each matched establishment would be allocated an equal share of the IPRs concerned. To illustrate, if two establishments are found to have matched with the same IPR record but each one is classified under a different HSIC code, each industry classification would be assigned half (1/2) of the share of the relevant IPR. This method was employed in our matching exercise with a view to improving the accuracy of the industry classification.
12. At the conclusion of the exercise, a total of 35,043 records were successfully matched.

### **Calculation of IP-intensity value**

13. This Study adopted an approach similar to those used by EUIPO/EPO, USPTO and UKIPO in the calculation of IP-intensity value. In simple words, the number of IPR records filed for registrations in each industry from 2015 to 2019<sup>25</sup> would be divided by the average number of persons engaged in the industry concerned over the same time period, and then multiplied by 1,000 to obtain the IP-intensity value for each industry. The formula is set out below:

$$\text{IP-intensity for industry A} = \frac{\text{Number of granted or registered IPRs for industry A}}{\text{Number of employees in industry A}} \times 1,000$$

Note:

- (i) Industry A refers to an industry at a HSIC 4-digit level.
- (ii) The respective numbers of patents, trade marks or designs granted or registered for industry A are calculated by summing up the relevant IPR records of the matched establishments in industry A.
- (iii) The number of employees in industry A equals the average number of persons engaged in industry A from 2015 to 2019.
- (iv) A particular industry is regarded as IP-intensive if, in any IPR category, its IP-intensity value is above the mean value across all industries.

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<sup>25</sup> The IPR records granted or registered must remain in force as in March 2022.

# Annex 2:

## Full list of all IP-intensive industries in Hong Kong

**Note:** The abbreviations used in this Annex have the following meanings –

PT - Patent; TM - Trade mark; DS - Design; CR - Copyright; and “O” indicates the industry is IP-intensive

HSIC	Industry	PT	TM	DS	CR
1013	Meat preserving		O		
1020	Processing and preserving of fish, crustaceans and molluscs		O		
1030	Processing and preserving of fruit and vegetables		O	O	
1050	Manufacture of dairy products		O		
1061	Manufacture of grain mill products		O		
1071	Manufacture of bakery products		O		
1073	Manufacture of cocoa, chocolate and confectionery		O		
1074	Manufacture of noodles and similar farinaceous products	O	O	O	
1079	Manufacture of other food products n.e.c.		O		
1080	Manufacture of prepared animal feeds		O		
1101	Manufacture of beer		O		
1102	Manufacture of alcoholic beverage other than beer		O		
1103	Manufacture of soft drinks; production of mineral waters and other non-alcoholic drinks		O	O	
1200	Manufacture of tobacco products		O		
1391	Manufacture of knitted and crocheted fabrics	O	O		
1420	Manufacture of articles of fur		O		
1512	Manufacture of luggage and handbags (excl. plastic shopping bags)		O	O	
1519	Manufacture of other products of leather and leather substitutes (excl. footwear and wearing apparel)		O		

HSIC	Industry	PT	TM	DS	CR
1701	Manufacture of pulp, paper and paperboard	○			○
1811	Printing				○
1812	Service activities related to printing				○
1820	Reproduction of recorded media				○
1909	Manufacture of coke and refined petroleum products n.e.c.		○		
2023	Manufacture of cosmetics, toilet preparations and cleaning materials	○	○		
2029	Manufacture of other chemical products n.e.c.	○	○		○
2111	Manufacture of Chinese herbal and drug medicine		○	○	
2112	Manufacture of western medicine, diagnostic and therapeutic medicaments, and medical and nursing preparations		○		
2219	Manufacture of other rubber products		○		
2222	Manufacture of plastic domestic utensils		○	○	
2224	Manufacture of plastic cases and parts			○	
2229	Manufacture of plastics products n.e.c. (except furniture, toys, sports goods and stationery)	○		○	
2310	Manufacture of glass, glass fibre and glass products			○	
2423	Precious metal refinery (excl. goldsmithing and silversmithing)	○			
2511	Manufacture of structural metal products	○			
2619	Manufacture of electronic parts and components n.e.c.	○			
2620	Manufacture of computers and peripheral equipment				○
2630	Manufacture of communication equipment	○			○
2640	Manufacture of audio and video equipment		○		○
2652	Manufacture of watches and clocks			○	
2660	Manufacture of irradiation, electromedical and electrotherapeutic equipment	○	○	○	
2671	Manufacture of photographic equipment (optical and digital)				○
2672	Manufacture of other optical instruments and equipment (except ophthalmic goods) n.e.c.				○
2731	Manufacture of electric wire, fibre optic cables and other cables	○	○		○
2750	Manufacture of domestic electric appliances	○			
2817	Manufacture of office machinery and equipment (except computers and peripheral equipment)				○
2822	Manufacture of metal-forming machinery and machine tools		○		
2826	Manufacture of machinery for textile, apparel and leather production		○		

HSIC	Industry	PT	TM	DS	CR
2829	Manufacture of other special-purpose machinery	○			
2900	Body assembly of motor vehicles	○			
3211	Manufacture of jewellery and related articles	○	○	○	○
3212	Manufacture of imitation jewellery and related articles	○			
3220	Manufacture of musical instruments				○
3241	Manufacture of wooden toys				○
3242	Manufacture of rubber toys				○
3243	Manufacture of plastic toys				○
3244	Manufacture of metal toys				○
3245	Manufacture of electronic games and toys				○
3249	Manufacture of games and toys n.e.c.		○		○
3251	Manufacture of spectacles and ophthalmic products		○		
3259	Manufacture of medical and dental instruments and supplies n.e.c.	○	○	○	
3313	Repair of electronic and optical equipment			○	
3320	Installation of industrial machinery and equipment	○			
3520	Manufacture and distribution of gas	○			
3700	Sewerage	○			
3812	Collection of hazardous waste		○		
4511	Export trading on a fee or contract basis	○	○		
4512	Export trading of agricultural products and live animals		○		
4513	Export trading of food, beverages and tobacco		○	○	
4514	Export trading of household goods	○	○	○	
4515	Export trading of motor vehicles, motorcycles and other transport equipment	○	○	○	
4516	Export trading of machinery, equipment and supplies	○	○	○	
4517	Other specialised export trading	○	○		
4519	Non-specialised export trading		○	○	
4522	Import for wholesale of agricultural products and live animals		○		
4523	Import for wholesale of food, beverages and tobacco		○	○	
4524	Import for wholesale of household goods	○	○	○	
4525	Import for wholesale of motor vehicles, motorcycles and other transport equipment		○	○	
4526	Import for wholesale of machinery, equipment and supplies	○			

HSIC	Industry	PT	TM	DS	CR
4527	Other specialised import for wholesale		○	○	
4529	Non-specialised import for wholesale		○	○	
4601	Brokers and agents for wholesale (incl. auctioneers)		○		
4602	Wholesale of agricultural products and live animals		○		
4603	Wholesale of food, beverages and tobacco		○	○	
4604	Wholesale of household goods		○	○	○
4605	Wholesale of motor vehicles, motorcycles and other transport equipment	○	○		
4606	Wholesale of machinery, equipment and supplies				○
4607	Other specialised wholesale		○		
4609	Non-specialised wholesale		○	○	
4722	Retail sale of beverages in specialised stores		○		
4723	Retail sale of tobacco products in specialised stores		○		
4741	Retail sale of computers, peripheral units, software and telecommunications equipment		○		○
4742	Retail sale of audio and video equipment				○
4751	Retail sale of textiles		○	○	
4752	Retail sale of hardware, metalware, paints and other building renovation materials		○		
4761	Retail sale of books, newspapers and stationary				○
4762	Retail sale of music and video recordings				○
4764	Retail sale of games and toys		○	○	
4772	Retail sale of pharmaceutical, medical and health goods, cosmetics and personal care products		○	○	
4773	Retail sale of motor vehicles, motorcycles and other transport equipment	○			
4774	Other retail sale of new goods		○	○	○
4775	Retail sale of second-hand goods		○		
4781	Retail sale via mobile stalls		○	○	
4782	Retail trade not via stores and mobile stalls	○	○	○	
5109	Air transport services n.e.c.		○		
5620	Event catering and other food service activities		○		
5639	Beverage serving places n.e.c.		○	○	
5811	Publishing of books, directories and mailing lists		○		○

HSIC	Industry	PT	TM	DS	CR
5812	Publishing of newspapers, magazines and periodicals			○	○
5819	Other publishing activities		○		○
5821	Publishing of computer games		○		○
5829	Publishing of other softwares	○	○	○	○
5911	Motion picture, video and television programme production activities		○		○
5912	Motion picture, video and television programme post-production activities	○	○		○
5913	Motion picture, video and television programme distribution activities		○		○
5914	Motion picture projection activities	○	○	○	○
5920	Sound recording and music publishing activities		○		○
6010	Radio broadcasting				○
6020	Television programming and broadcasting activities		○		○
6110	Telecommunications network operation				○
6191	Internet access services	○			○
6199	Other miscellaneous telecommunications activities n.e.c.		○		○
6201	Computer programming activities	○	○	○	○
6202	Information technology consultancy activities and computer facilities management activities				○
6209	Other information technology service activities		○		○
6311	Data processing, hosting and related activities	○	○		○
6312	Web portals		○		○
6391	News agency activities				○
6399	Other information service activities n.e.c.		○		○
6420	Investment and holding companies	○	○	○	
6491	Financial leasing		○		
6492	Credit granting (except financial leasing)		○		
6619	Other activities auxiliary to financial service activities		○		
6630	Fund management		○		
6811	Real estate development	○	○	○	
6812	Real estate leasing		○	○	
6814	Property holding and resale		○		
6829	Other real estate services n.e.c.		○		
7011	Business head offices of local enterprises		○	○	

HSIC	Industry	PT	TM	DS	CR
7012	Head/Regional offices of enterprises operating aboard		○	○	
7021	Public relation services		○		
7022	Business management and consultancy services		○	○	
7111	Architectural design services			○	
7116	Environmental engineering services and related consultancy services	○	○		
7120	Technical testing and analysis	○			
7190	Engineering, technical and consultancy services not related to construction and real estate activities n.e.c.	○		○	
7210	Research and development on natural sciences and engineering	○	○	○	
7220	Research and development on social sciences and humanities	○	○		
7290	General and miscellaneous research and development services		○		
7411	Advertising companies and agencies	○	○		○
7419	Advertising services n.e.c.		○		
7511	Interior and furniture design services		○	○	○
7512	Multi-media, visual and graphic design activities		○	○	○
7513	Fashion design services (incl. accessories)	○	○	○	○
7514	Industrial design services	○	○	○	○
7519	Specialised design activities n.e.c.	○	○	○	○
7521	Photographic production services				○
7522	Photo printing and photo finishing services				○
7530	Translation and interpretation services		○		○
7590	Other miscellaneous professional, scientific and technical activities n.e.c.	○	○	○	
7710	Renting and leasing machinery and equipment	○	○		○
7722	Renting of video tapes and discs				○
7729	Renting and leasing of other personal and household goods	○	○	○	○
7730	Leasing of intellectual property and similar non-financial intangible assets (except copyrighted works)	○	○		
7830	Management of human resources functions		○		
7990	Other reservation service and tourist-related activities				○
8020	Security system operation services	○			
8030	Private detective services		○		
8211	Combined office administrative service activities		○		



HSIC	Industry	PT	TM	DS	CR
8219	Photocopying, document preparation and other specialised office support activities				○
8230	Convention and trade show organising services		○		
8291	Debt collecting and credit reporting services		○		
8292	Packaging activities		○		
8294	Agents for artists, athletes, models and other public figures		○		
8299	Other miscellaneous business support service activities n.e.c.		○		
8530	Universities and colleges providing post-secondary courses	○			
8541	Sports skills instruction (except academic)		○		
8542	Cultural education (except academic)		○		○
8549	Miscellaneous education (except academic)		○		
8550	Educational support services		○		
8691	Medical and X-ray laboratories	○	○		
8692	Allied health personnel practice activities		○		
8699	Miscellaneous human health services n.e.c.		○		
8850	Welfare foundations and development projects		○		
9010	Performing arts activities		○		○
9020	Creative artists, musicians and writers		○		○
9030	Performing arts venue operation		○		○
9101	Libraries and archives activities				○
9102	Museums activities and operation of historical sites				○
9200	Activities of amusement parks and theme parks				○
9319	Other sports activities		○		○
9399	Other miscellaneous entertainment activities n.e.c.		○		○
9411	Activities of business and employers membership organisations	○	○		
9412	Activities of professional membership organisations				○
9490	Activities of other membership organisations n.e.c.				○
9536	Repair of watches and clocks		○		
9609	Other miscellaneous personal service activities n.e.c.		○		

Note: n.e.c. means not elsewhere classified

# Annex 3:

## Full list of copyright-intensive industries in Hong Kong

HSIC	Industry description	Factor
1811	Printing	100%
1812	Service activities related to printing	100%
1820	Reproduction of recorded media	100%
4761	Retail sale of books, newspapers and stationary	100%
4762	Retail sale of music and video recordings	100%
5811	Publishing of books, directories and mailing lists	100%
5812	Publishing of newspapers, magazines and periodicals	100%
5819	Other publishing activities	100%
5821	Publishing of computer games	100%
5829	Publishing of other softwares	100%
5911	Motion picture, video and television programme production activities	100%
5912	Motion picture, video and television programme post-production activities	100%
5913	Motion picture, video and television programme distribution activities	100%
5914	Motion picture projection activities	100%
5920	Sound recording and music publishing activities	100%
6010	Radio broadcasting	100%
6020	Television programming and broadcasting activities	100%
6110	Telecommunications network operation	100%
6191	Internet access services	100%
6199	Other miscellaneous telecommunications activities n.e.c.	100%

HSIC	Industry description	Factor
6201	Computer programming activities	100%
6202	Information technology consultancy activities and computer facilities management activities	100%
6209	Other information technology service activities	100%
6311	Data processing, hosting and related activities	100%
6312	Web portals	100%
6391	News agency activities	100%
6399	Other information service activities n.e.c.	100%
7411	Advertising companies and agencies	100%
7511	Interior and furniture design services	100%
7512	Multi-media, visual and graphic design activities	100%
7513	Fashion design services (incl. accessories)	100%
7514	Industrial design services	100%
7519	Specialised design activities n.e.c.	100%
7521	Photographic production services	100%
7522	Photo printing and photo finishing services	100%
7530	Translation and interpretation services	100%
7990	Other reservation service and tourist-related activities	100%
8219	Photocopying, document preparation and other specialised office support activities	100%
8542	Cultural education (except academic)	100%
9010	Performing arts activities	100%
9020	Creative artists, musicians and writers	100%
9030	Performing arts venue operation	100%
9101	Libraries and archives activities	100%
9200	Activities of amusement parks and theme parks	100%
9412	Activities of professional membership organisations	100%
9102	Museums activities and operation of historical sites	50%
9319	Other sports activities	50%
9399	Other miscellaneous entertainment activities n.e.c.	50%
3241	Manufacture of wooden toys	46%
3242	Manufacture of rubber toys	46%
3243	Manufacture of plastic toys	46%

HSIC	Industry description	Factor
3244	Manufacture of metal toys	46%
3245	Manufacture of electronic games and toys	46%
3249	Manufacture of games and toys n.e.c.	46%
9490	Activities of other membership organisations n.e.c.	41%
3220	Manufacture of musical instruments	35%
3211	Manufacture of jewellery and related articles	34%
4741	Retail sale of computers, peripheral units, software and telecommunications equipment	33%
4742	Retail sale of audio and video equipment	33%
4774	Other retail sale of new goods	33%
2620	Manufacture of computers and peripheral equipment	30%
2630	Manufacture of communication equipment	30%
2640	Manufacture of audio and video equipment	30%
2671	Manufacture of photographic equipment (optical and digital)	30%
2672	Manufacture of other optical instruments and equipment (except ophthalmic goods) n.e.c.	30%
2731	Manufacture of electric wire, fibre optic cables and other cables	30%
2817	Manufacture of office machinery and equipment (except computers and peripheral equipment)	30%
4606	Wholesale of machinery, equipment and supplies	30%
1701	Manufacture of pulp, paper and paperboard	25%
2029	Manufacture of other chemical products n.e.c.	25%
7710	Renting and leasing machinery and equipment	20%
7722	Renting of video tapes and discs	20%
7729	Renting and leasing of other personal and household goods	20%
4604	Wholesale of household goods	19%*

\* Despite the fact that “Wholesale of household goods” (HSIC 4604) was assigned a copyright factor below 20%, it was included as a copyright-intensive industry following the practice of the EUIPO/EPO and UKIPO.

Note: n.e.c. means not elsewhere classified

# Annex 4:

## Studies conducted by other IPOs for reference

1. This Annex summarised the findings of the respective studies on IP-intensive industries conducted by EUIPO/EPO, USPTO and UKIPO as well as the data published by the Mainland authorities on their patent-intensive ( 專利密集型產業 ) and copyright industries ( 版權產業 ).
2. As each economy has its distinct economic structure and other localised factors, the information set out in this Annex is for general reference only and no inference should be drawn from the discussions set out in the report.
4. The study identified a total of 357 IP-intensive industries and their distribution by IPR categories is as follows:
  - (a) 150 patent-intensive industries;
  - (b) 275 trade mark-intensive industries;
  - (c) 177 design-intensive industries;
  - (d) 77 copyright-intensive industries;
  - (e) 4 geographical indications-intensive industries; and
  - (f) 11 plant variety rights-intensive industries.

### EUIPO/EPO

3. The latest study conducted by EUIPO/EPO focused on IPRs (patents, trade marks, designs and plant variety rights) applied for and granted at the EUIPO, EPO and Community Plant Variety Office during the five-year period from 2013-2017<sup>26</sup>.
5. EUIPO/EPO assessed the economic contribution of these IP-intensive industries between 2017 and 2019. During the period, the IP-intensive industries generated 47% of EU's GDP. The persons engaged in IP-intensive industries accounted for 30% of the total employment in the EU and yielded a wage premium of 41%.
6. In terms of trade, the IP-intensive industries accounted for 80% of the total exports of goods and services and 81% of the total imports of goods and services in the EU.
7. The study also assessed the economic contribution of the IP-intensive industries in the European Free Trade Association countries during the period of 2017-2019 (on average)<sup>27</sup>, and revealed that IP-intensive industries are equally important for the non-EU member countries in Europe. For instance, Norway's IP-intensive industries made higher contribution to GDP than the EU average, and in Iceland, the share of employment among its IP-intensive industries was comparable to the EU average.

<sup>26</sup> P.40 of [https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document\\_library/observatory/documents/reports/IPR-intensive\\_industries\\_and\\_economic\\_in\\_EU\\_2022/2022\\_IPR\\_Intensive\\_Industries\\_FullR\\_en.pdf](https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/reports/IPR-intensive_industries_and_economic_in_EU_2022/2022_IPR_Intensive_Industries_FullR_en.pdf)

<sup>27</sup> In Iceland, the IP-intensive industries accounted for 37% of GDP and 30% of total employment. In Norway, the IP-intensive industries accounted for 49% of GDP and 26% of total employment. In Switzerland, the IP-intensive industries accounted for 40% of GDP and 28% of total employment. See P.25 of EUIPO/EPO report.

## USPTO

8. USPTO identified the IP-intensive industries by the number of IPRs granted (utility patents, design patents and registered trade marks) to each industry during a five-year period from 2012 to 2016<sup>28</sup>. The latest USPTO study sought to assess the economic contribution of the IP-intensive industries for the year 2019. Similar to the study conducted by EUIPO/EPO, the time period selected for measuring economic performance was set later than the time period of recording the IPRs registration to allow time for commercialisation of the IPRs.
9. The study identified a total of 127 IP-intensive industries and their distribution by IPR categories is as follows<sup>29</sup>:
  - (a) 70 patent-intensive industries;
  - (b) 110 trade mark-intensive industries;
  - (c) 87 design-intensive industries; and
  - (d) 13 copyright-intensive industries<sup>30</sup>.
10. The study showed that the IP-intensive industries in the US contributed 41% of US' GDP and 33% of the total employment in 2019.
11. Employees in the IP-intensive industries also received higher remuneration whose wages was 60% higher than those engaged in the non-IP-intensive industries.
12. On trade of goods, the IP-intensive industries accounted for 79% of total exports of goods and 84% of total imports of goods in the US.

## UKIPO

13. The latest study conducted by UKIPO considered IPR applications (patents, trade marks and registered designs) filed and granted during the three-year period between 2017 and 2019 in the UK<sup>31</sup>. The same period was used to measure the economic contribution of the IP-intensive industries.
14. The study identified a total of 218 IP-intensive industries and their distribution by IPR categories is as follows:
  - (a) 61 patent-intensive industries
  - (b) 123 trade mark-intensive industries;
  - (c) 50 design-intensive industries; and
  - (d) 83 copyright-intensive industries.
15. During the period of 2017-2019, UK's IP-intensive industries contributed 22% of the UK's GDP<sup>32</sup> and accounted for 19% of the total employment. The IP-intensive industries accounted for 58% of goods exported from the UK.

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<sup>28</sup> P.2 of <https://www.uspto.gov/sites/default/files/documents/uspto-ip-us-economy-third-edition.pdf>

<sup>29</sup> P.2 of <https://www.uspto.gov/sites/default/files/documents/uspto-ip-us-economy-third-edition.pdf>

<sup>30</sup> In the USPTO report, the copyright-intensive industries only included the set of industries that were primarily responsible for the creation or production of copyrighted materials.

<sup>31</sup> Paragraph 2.5 of <https://www.gov.uk/government/publications/use-of-intellectual-property-rights-across-uk-industries/use-of-intellectual-property-rights-across-uk-industries-2017-to-2019>

<sup>32</sup> Instead of using GDP, UKIPO's study used the non-financial gross value added that excluded public administration and defence, public provision of education and health, all medical and dental practice activities, and finance and insurance to measure the total value of net output of individual industries to the economy. The non-financial gross value added of the UK was about two thirds of the UK's GDP. In terms of number of industries, it only accounted for 84% of all industries at 4-digit level. If we measured UK's GDP contribution by the IP-intensive industries, they only contributed 22% of GDP (instead of 33% as stated in the report).

## Mainland China

16. According to the Global Innovation Index compiled by WIPO, Mainland China's ranking rose from 35<sup>th</sup> in 2013 to 12<sup>th</sup> in 2023. China National Intellectual Property Administration ("CNIPA")<sup>33</sup> and the National Copyright Administration<sup>34</sup> commenced publishing the data of the patent-intensive and copyright industries in Mainland China since 2020<sup>35</sup> and 2007, respectively. The methodologies applied by the Chinese authorities in data collection and analysis are different from the IPOs mentioned in the preceding paragraphs. The approach that the Chinese authorities adopted provides insight on how different IPOs approached the subject matters and sheds light on the recent developments of the IP industries in Mainland China.
17. Such reports were last published in early 2023 providing statistics of 2021. In 2021, the patent-intensive industries in Mainland China contributed 12% of GDP and 7% of employment with a wage premium of 10%. The copyright industries contributed 7% of GDP and 10% of employment, and 14% in exports of goods.

## Limitations

18. The above findings on the economic contribution by the IP-intensive industries in different economies should be read with caution, bearing in mind the following:
  - (a) the IPOs of different economies adopted different IP registration periods and economic contribution periods;
  - (b) the categories of IPRs considered by IPOs varied. EUIPO/EPO covered more categories of IPRs in their studies including geographical indications and plant variety rights that were not covered in the studies of other IPOs. The inclusion of additional IPRs might result in a higher economic contribution by the overall IP-intensive industries in their study results; and
  - (c) UKIPO used non-financial gross value added instead of VA or GDP to measure IP-intensive industries' contribution to output, which might lead to a higher economic contribution.

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<sup>33</sup> In the study conducted by CNIPA, the patent-intensive industries were based on the pre-defined seven industries, namely 1) information and communication technology manufacturing industry, 2) information and communication technology service industry, 3) new equipment manufacturing industry, 4) new material manufacturing industry, 5) medicine and medical industry, 6) environmental protection industry, and 7) R&D, design and technology service industry. See [https://www.cnipa.gov.cn/module/download/down.jsp?i\\_ID=183178&collID=88](https://www.cnipa.gov.cn/module/download/down.jsp?i_ID=183178&collID=88) and [https://www.gov.cn/gongbao/content/2019/content\\_5419213.htm](https://www.gov.cn/gongbao/content/2019/content_5419213.htm)

<sup>34</sup> In the study of the copyright industries in Mainland China, the copyright industries were identified primarily based on WIPO's "*Guide on Surveying the Economic Contribution of the Copyright Industries*". However, there has been no disclosure on the copyright factor assigned to each industry to reflect the proportion of the activity of each industry that could be attributed to copyright-intensive activities. See <https://www.ncac.gov.cn/chinacopyright/contents/12227/357267.shtml>

<sup>35</sup> In March 2020, CNIPA announced the economic contribution of patent-intensive industries in 2018, based on the classification of patent-intensive industries set in 2019. See [https://www.cnipa.gov.cn/art/2020/3/12/art\\_543\\_146426.html](https://www.cnipa.gov.cn/art/2020/3/12/art_543_146426.html)

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