

# The economic contribution of the film and television industries in Hong Kong

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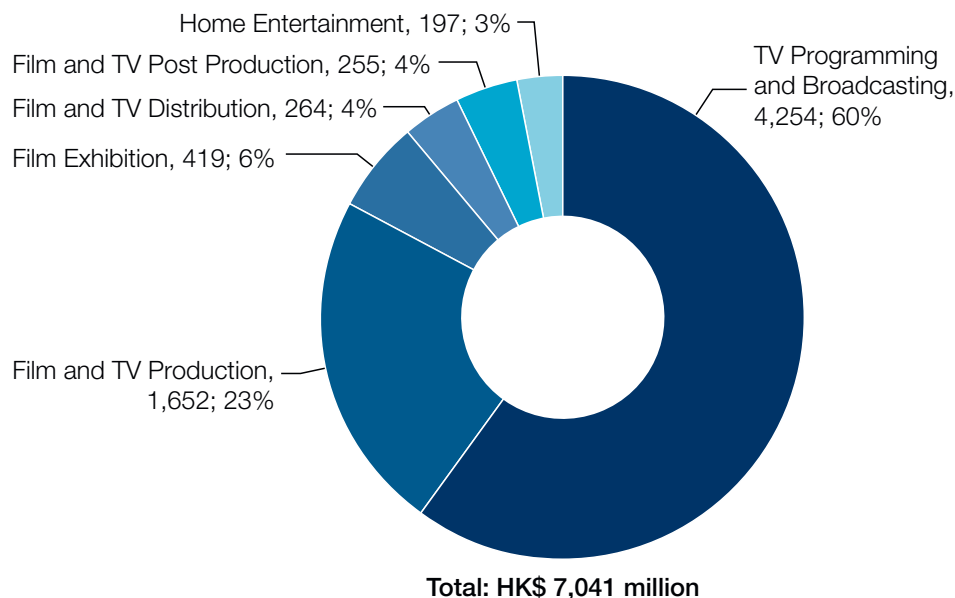
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# 1 Key findings

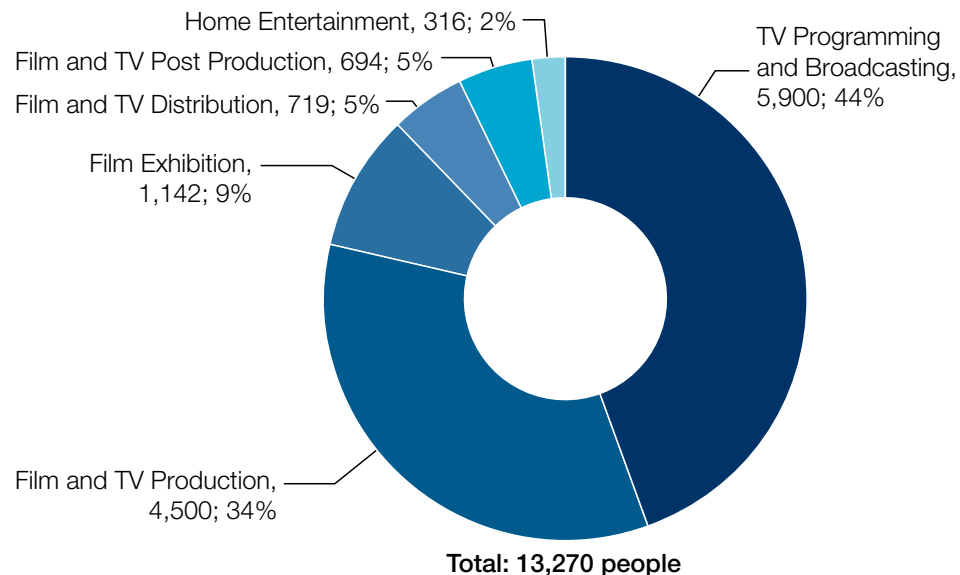
The film and television sectors make a notable direct contribution to Hong Kong's economy...

■ Oxford Economics estimates show that the film and television industries **directly** contributed an estimated **HK\$ 7,041 million** to Hong Kong's economy in gross domestic product (GDP)<sup>1</sup> in 2014. In the process they directly supported approximately **13,270 jobs** and generated some **HK\$ 583 million** in tax revenues.<sup>2</sup>

**Chart 1.1: Direct GDP of the Hong Kong film and TV industry, 2014 (millions of HK\$ and percentage split)**



**Chart 1.2: Direct employment of the Hong Kong film and TV industry, 2014 (persons employed and percentage split)**



- The film and television industries' direct contribution to GDP in 2014 was equivalent to some 0.3% of total national GDP.
- Meanwhile, film and television's direct share of economy-wide employment was 0.4% while it generated 0.4% of total tax revenues.
- In terms of both GDP and employment contributions, the TV Programming and Broadcasting sector makes the single largest contribution for the overall film and television industry, with film and TV production making the second-largest contribution.

1 Throughout this report measures of GDP reflect GDP at 'basic prices' (also known as gross value added or GVA), rather than the 'market Price' measure usually given 'headline' status in official statistics. (See the 'Detailed methodology' section at the end of this report.)

2 Money values in this report are rounded to the nearest HK\$ 1 million, while job figures in the text of this report are rounded to the nearest 100 for simplicity (with the exception of all direct employment figures). Also note that some of the totals reported in the charts of this report may not appear to sum exactly to the figures cited in the chart totals or the text due to the impact of rounding.

***The TV Programming and Broadcasting sector makes the largest contribution, both in terms of GDP and jobs.***

... and lend more significant support to that economy through multiplier effects, making the total contribution larger

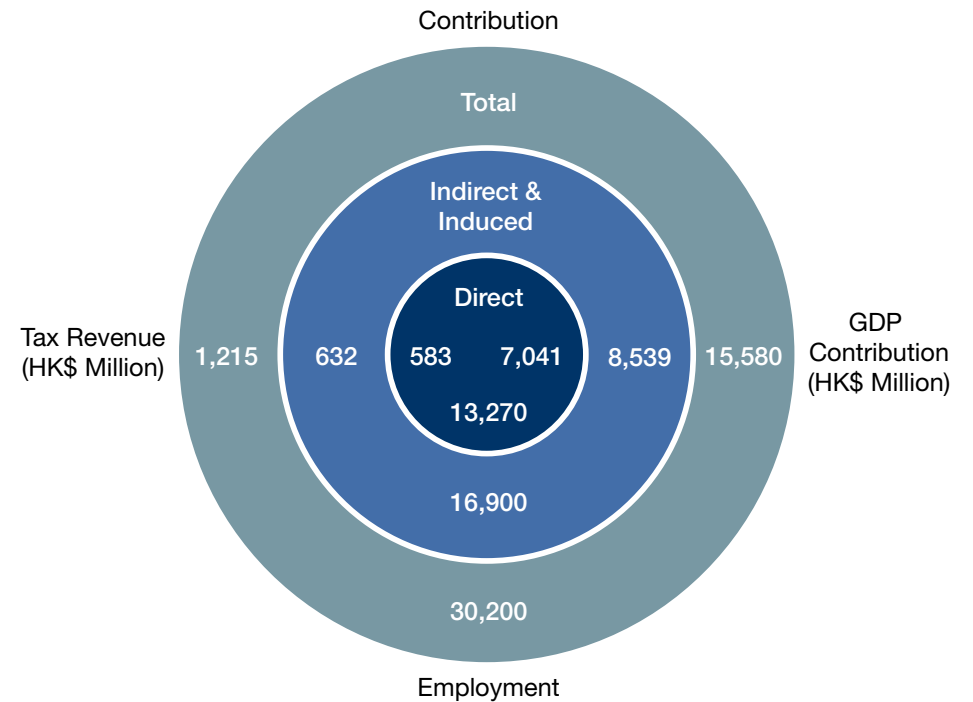
- The film and TV industries also produce ‘indirect’ and ‘induced’ effects across the entire economy of Hong Kong. The indirect effects arise from purchases by the film and television sectors from other industries within the country, and from further transactions throughout various supply chains. The induced effects result from workers - directly employed within the film and TV industries or within the supply chain - spending their earnings, generating more rounds of economic activity. We estimate that the combined indirect and induced sectors made an additional GDP contribution of HK\$ 8,539 million, thereby supporting a further 16,900 jobs and HK\$ 632 million in tax revenues.

***Taking into account ‘multiplier’ effects, in 2014 Hong Kong’s film and television industries generated some HK\$ 15,580 million of GDP...***

- Taking the direct, indirect and induced contributions together, we estimate that the film and television industry’s total economic contribution to GDP in 2014 was **HK\$ 15,580 million**. In addition, it supported some **30,200 jobs** overall. And it generated total tax revenues of **HK\$ 1,215 million**.

***... which was sufficient to support 30,200 jobs and provide HK\$ 1,215 million in taxes.***

**Figure 1.1: Total contribution to Hong Kong’s GDP, tax and employment, 2014**



## Labor productivity is well above the national average for some subsectors...

- Each person employed in Television Programming and Broadcasting in 2014 generated HK\$ 721,018 of GDP – some 1.3 times the economy-wide average of HK\$ 560,951.

### *The television sector's labor productivity is considerably higher than that of the overall economy.*

- Each person employed in export trading of recorded audio and video tapes, CDs, DVDs, and similar media in 2014 (within the home entertainment category) generated HK\$ 1,152,480 of GDP – about twice the economy-wide average.
- High labor productivity is reflected in employees' average earnings, which, at an average of HK\$ 218,400 a year for the Information and Communications sector, are 29% higher than the average across the economy as a whole (HK\$ 169,200).

## ... but the television industry faces a challenge

- Hong Kong's television industry rose to prominence in the 70s and it then transferred talent to the film industry.
- The industry's expansion into overseas markets from the 80s, however, had damaging repercussions for the domestic television industry. As more and more revenues came from overseas markets, the industry began to widen the focus of its programming to cater to wider audiences.
- In addition, the increasing competition from the 90s from new broadcasters has forced the Hong Kong TV industry to control costs.
- As a result, TV programming became less culturally relevant for Hong Kong, leading to a decline in quality.
- This had a knock on effect on the film industry, which sourced much of its talent pool from the television industry.

**Table 1.1: Overview of the economic contribution of the Hong Kong film and television industries**

Metric	Gross Output (HK\$ m)		GDP (HK\$ m)		Employment		Earnings (HK\$ m)		Tax (HK\$ m)	
	Direct	Total	Direct	Total	Direct	Total	Direct	Total	Direct	Total
Film and TV Production	5,163	8,885	1,652	4,150	4,500	8,000	983	1,359	154	324
Film and TV Post-Production	796	1,370	255	640	694	1,200	151	210	24	50
Film and TV Distribution	825	1,420	264	663	719	1,300	157	217	25	52
Film and TV Exhibition	1,310	2,255	419	1,053	1,142	2,000	249	345	39	82
Home Entertainment	906	1,529	197	714	316	1,400	69	234	16	56
TV Programming and Broadcasting	10,376	17,899	4,254	8,360	5,900	16,200	1,289	2,738	326	652
<b>Total</b>	<b>19,376</b>	<b>33,357</b>	<b>7,041</b>	<b>15,580</b>	<b>13,270</b>	<b>30,200</b>	<b>2,898</b>	<b>5,103</b>	<b>583</b>	<b>1,215</b>

Note: The figures in the above table are rounded and thus the total shown may not exactly match a total derived from summing the elements of the table.

## 2 How we arrived at these figures

Oxford Economics was commissioned by the Motion Picture Association (MPA), the Hong Kong International Screen Association (HKISA), the Movie Producers and Distributors Association Limited of Hong Kong (MPDA) and the Hong Kong Video Development Foundation Limited (HKVDF) to assess the economic contribution of the film and television industries in Hong Kong.

The starting point for our estimates was provided by data from the Hong Kong Census and Statistics' data on the *number of establishments and persons engaged and vacancies analysed by industry sub-class*. It uses the *Hong Kong Standard Industrial Classification Ver. 2.0*. This dataset contains 2013 data on persons engaged which we extrapolated to 2014 using GDP growth from 2013 to 2014. This differentiates between film and television production, post-production and distribution as well as film projection and TV programming and broadcasting. Complementary data was concurrently used to estimate GVA. (Details are set out in the final chapter of this report.)

### 2.1 Direct economic contributions

The GDP, earnings, employment and tax contribution due to the activities of businesses in the film and television industries themselves are referred to as the **direct contributions**.

GDP, earnings and employment data are derived from the above-cited Hong Kong Census and Statistics Division's figures for film and television production, post-production and distribution as well as film projection, TV programming and broadcasting, video tape and disc rental, the retail sale of home entertainment and the export trading of recorded audio and video subsectors (the latter three are aggregated into one home entertainment category). Our tax estimates rely on combining estimated industry income with knowledge of the country's tax system and tax-to-GDP and tax to earnings ratios found for broader sectors of Hong Kong's economy.

### 2.2 Additional economic contributions

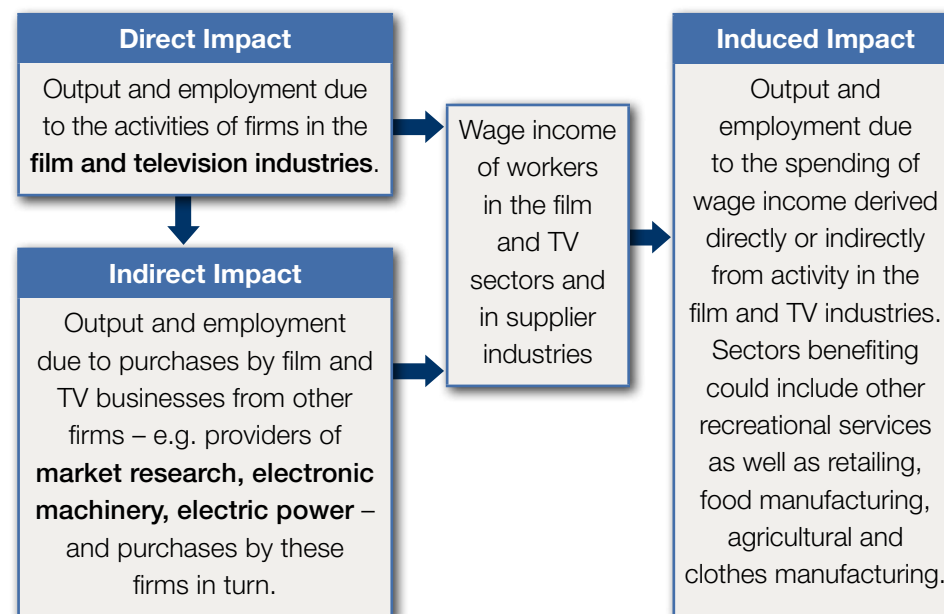
To assess the **total economic contribution** of these sectors for Hong Kong, we also need to take into account additional channels of economic contribution. The

effect of these two key channels can be quantified by combining our estimates of direct contributions with output 'multipliers' implied by detailed national accounts data used to construct an Input-Output table.

These estimates therefore cover:

- **Indirect contributions**, which relate to the output and jobs supported in Hong Kong-based supply chains, due to purchases by Hong Kong film and TV companies of goods and services from other firms located in the country, purchases by those suppliers in turn, and so on throughout the chains.
- **Induced contributions**, i.e. the Hong Kong output and jobs supported by workers in the film and TV industries – and other employees throughout the supply chains – spending the earnings ultimately derived from film and TV activities.

Figure 2.1: The channels of economic impact



## 3 Film and television production, distribution and exhibition

In this chapter we set out the economic impact in greater detail, breaking down the contribution of the film and television production, post-production, distribution, film exhibition, television programming and broadcasting sub-sectors. We also include a section on home entertainment. We focus on each subsector’s contribution to GDP, to taxes and to employment, including direct, indirect and induced effects.

Data for film production distribution and exhibition is sourced from the Hong Kong Census and Statistics’ data on the *number of establishments, persons engaged and vacancies analysed by industry sub-class*, using the *Hong Kong Standard Industrial Classification Ver. 2.0*. This dataset contains 2013 data on persons engaged which we extrapolated to 2014 using forecast GDP growth from 2013 to 2014. This differentiates between film and television production, post-production and distribution.

This level of detail is helpful in understanding the composition of the Hong Kong film industry. However, it does not differentiate between the production, post-production, and distribution of material for cinema exhibition and for non-theatrical exhibition, such as for television, and this should be noted when analysing the figures below.

Economic activity relating to TV programming and broadcasting is separately identified and this activity is presented in the following chapter. The contribution of home entertainment is discussed in this chapter.

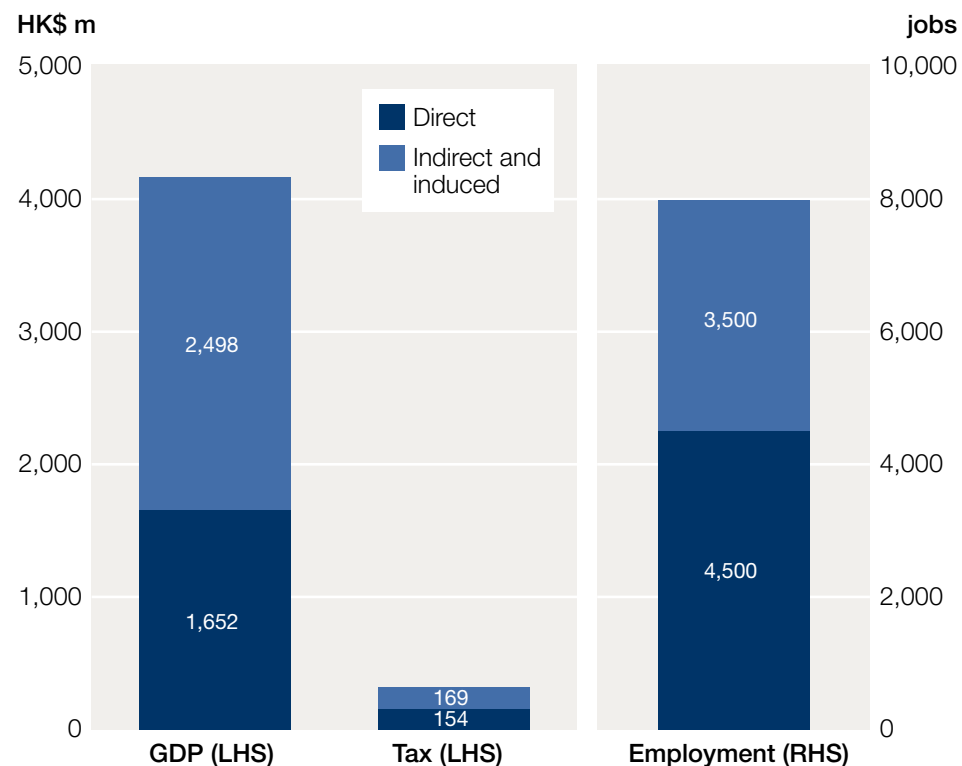
### 3.1 Film and television production

This area of activity relates to the physical process involved in production of motion pictures, videos, television programs or television commercials.

We estimate that in 2014 film and television production was worth some HK\$ 1,652 million in GDP and directly responsible for creating 4,500 jobs. Moreover, this activity helped to generate HK\$ 154 million in tax revenue. Taking into account indirect and induced effects these figures rise to HK\$ 4,150 million in GDP, creating 8,000 jobs and raising HK\$ 324 million for the Hong Kong government in tax receipts.

Film and television production makes a bigger direct contribution to Hong Kong GDP and employment than the combined total of post-production, distribution and film exhibition. Indeed, in 2014, this area alone accounted for 64% of the entire Hong Kong film and television production, post-production, distribution and film exhibition sector’s GDP and jobs (excluding home entertainment). Its labor productivity (i.e. its GDP per worker) was some HK\$ 367,137 per employee.

**Chart 3.1: Economic contribution of film production, 2014**



Source: Oxford Economics estimates



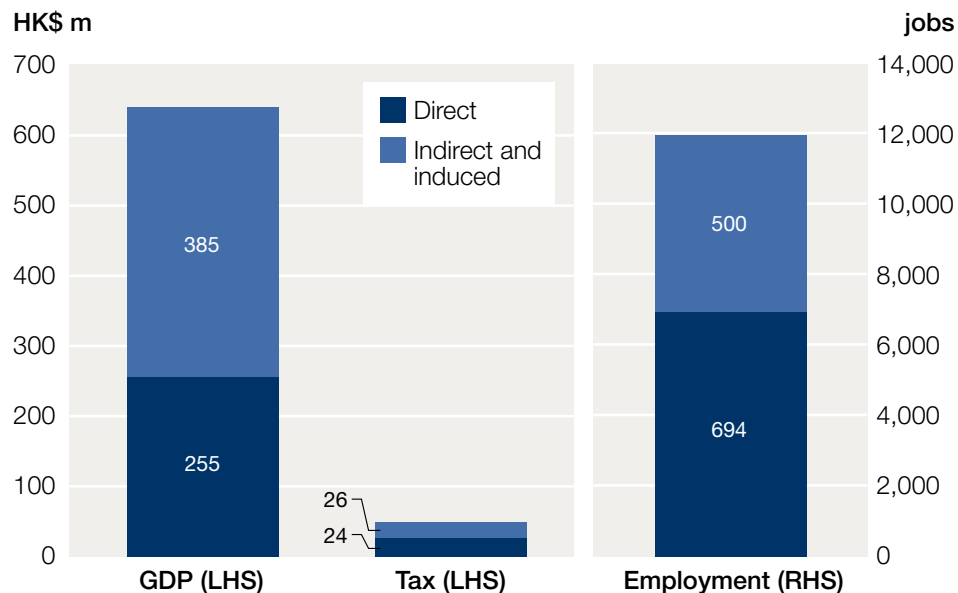
*Film and television production is a much bigger contributor to Hong Kong GDP and employment than either post-production, distribution or film exhibition.*

### 3.2 Film and TV post-production

Film post production mainly relates to the editing, titling, subtitling, credits, computer graphics, animation and special effects as well as the activities of motion picture film laboratories and the production of motion picture film for theatrical distribution.

We estimate that in 2014 these activities were worth some HK\$ 255 million in GDP and directly responsible for creating 700 jobs. Moreover, this activity helped to generate HK\$ 24 million in tax revenue. Taking into account indirect and induced effects these figures rise to HK\$ 640 million in GDP, creating 1,200 jobs and raising HK\$ 50 million for the Hong Kong government in tax receipts.

**Chart 3.2: Economic contribution of film and TV post-production, 2014**



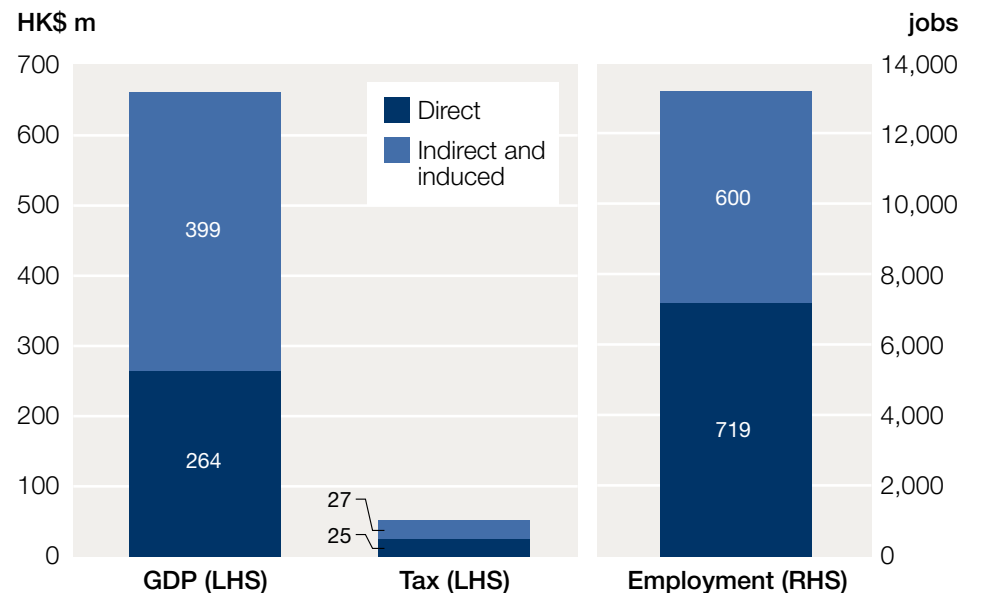
Source: Oxford Economics estimates

### 3.3 Film and TV distribution

The 'film distribution' sector includes the distribution of film, video tapes, DVDs and similar productions to motion picture theatres, television networks and stations and exhibitors. This involves the launching and sustaining of films in the market place, with firms responsible for the logistical task of shipping film prints around the world and building audience awareness and interest through PR and marketing campaigns. Recent technological innovations have meant that digital distribution techniques have become increasingly prominent, with the growth of video-on-demand and download platforms.

There are over 100 film distributors registered with the Hong Kong Film Services Office. We estimate that the film distribution sector generated some HK\$ 264 million in GDP in 2014 and was directly responsible for creating some 719 jobs. Moreover, this activity helped to generate HK\$ 25 million in tax revenue. Taking into account indirect and induced effects these figures rise to HK\$ 663 million in GDP, creating 1,300 jobs and raising HK\$ 52 million for the Hong Kong government in tax receipts.

**Chart 3.3: Economic contribution of film and TV distribution, 2013**



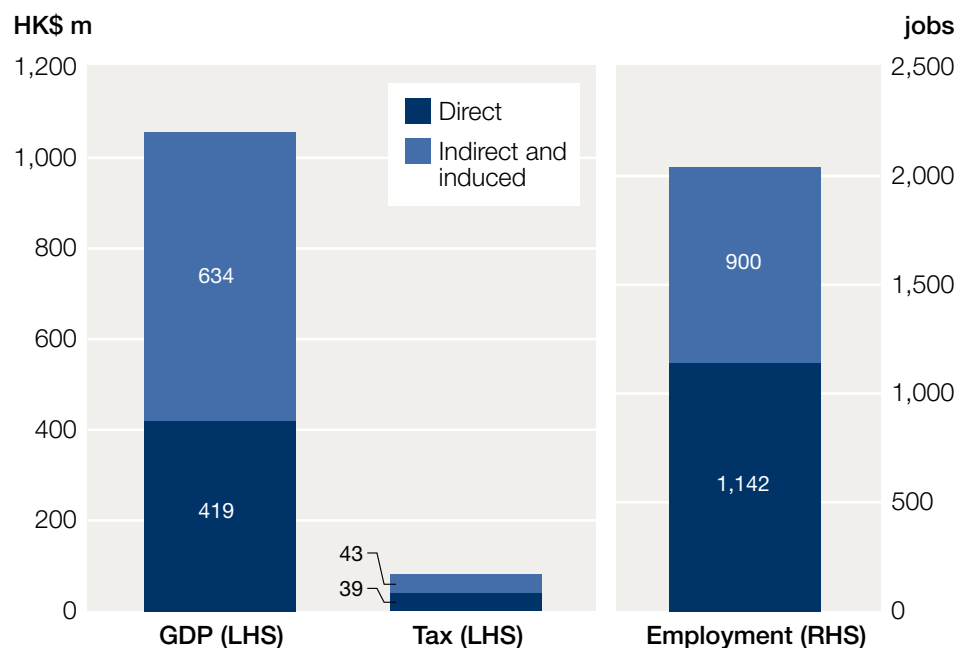
Source: Oxford Economics estimates

### 3.4 Film exhibition

By ‘film exhibition’ we mean the process of screening films to the public, at indoor and outdoor cinemas or in other projection facilities.

According to the MPA, the box office receipts for Hong Kong were HK\$ 1,563 million in 2013. We estimate that the direct GDP of film exhibition was HK\$ 419 million in 2014, supporting 1,142 jobs<sup>3</sup>. Moreover, this activity helped to generate HK\$ 39 million in tax revenue. Taking into account indirect and induced effects these figures rise to HK\$ 1,053 million in GDP, supporting 2,000 jobs and raising HK\$ 82 million in tax receipts.

**Chart 3.4: Economic contribution of film exhibition, 2014**



Source: Oxford Economics estimates

<sup>3</sup> A 2012 survey conducted by the HK Theaters Association, however, found that direct employment was 1,814, consisting of 644 Full Time Cinema staff, 1040 Part Time Cinema Staff and 130 Office Staff.

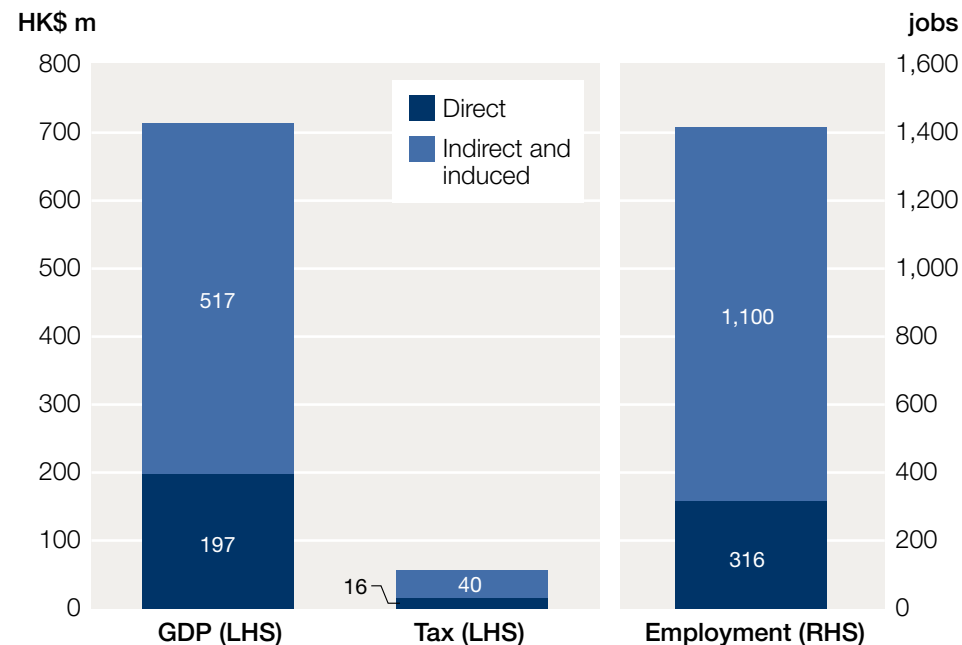
### 3.5 Home entertainment

For the purposes of this report this sub-sector comprises the retail sale, rental and export trading of Blu-ray discs and DVDs. It excludes hardware such as Blu-ray and DVD players, however.

We estimate that home entertainment retail, rental and export trading made a HK\$ 197 million contribution to GDP, directly creating 316 jobs. Moreover, this activity helped to generate HK\$ 16 million in tax revenue. Taking into account indirect and induced effects these figures rise to HK\$ 714 million in GDP, creating 1,400 jobs and raising HK\$ 56 million for the Hong Kong government in tax receipts.

Even the combined direct GDP contribution of the home entertainment sub-sector is less than half that of public film exhibition via cinemas and other outlets. The retail sale of home entertainment is responsible for nearly half of the direct GDP and 53% of the direct employment of the combined retail, export trade and rentals markets. This underlines the dominance of the retail sale market within home entertainment.

**Chart 3.5: Economic contribution of home entertainment, 2014**



Source: Oxford Economics estimates

## 4 Television programming and broadcasting

This chapter sets out the economic impact of television programming and broadcasting, concentrating on the subsector's contribution to GDP, to taxes and to employment, including direct, indirect and induced effects.

As is the case for film production distribution and exhibition, data relating to TV broadcasting activity in Hong Kong is sourced from the Hong Kong Census and Statistics' data on the *number of establishments, persons engaged and vacancies analysed by industry sub-class*, using the *Hong Kong Standard Industrial Classification Ver. 2.0*.

As indicated in the previous chapter, the actual production and distribution of TV content is covered under film and television production and distribution. Programming and broadcasting activities include the broadcast of content created from purchased program components (e.g. films, documentaries) and self-produced program content (e.g. news, sports, educational content) or a combination of these, as well as acquiring the right to distribute content.

TV broadcasting as defined here includes over-the-air, via satellite, via a cable network or via internet. Data broadcasting, integrated with TV broadcasting is also included.

Hong Kong's television broadcasting industry landscape comprises of free to air (FTA) providers as well as a pay TV providers for domestic and non-domestic transmission.

The FTA sector for domestic transmission is dominated by Television Broadcasts Limited (TVB), with channels also transmitted by Asia Television Limited (ATV). Of the two, TVB is the dominant transmitter. In October 2013, the government licensed two more FTA TV companies, Fantastic TV and HK Entertainment Network.

Pay TV has no longer been a monopoly since 2000. There are currently three domestic pay television program service licensees, Hong Kong Cable Television Limited, PCCW Media Limited and TVB Network Vision Limited (formerly known as TVB Pay Vision Limited).

Moreover, Hong Kong is a broadcasting hub for the Asia Pacific region. There are 19 non-domestic television program service licensees providing over 200 satellite television channels for the Asia Pacific region.

We estimate that the direct GDP of the television programming and broadcasting sector was worth HK\$ 4,254 million in 2014, directly supporting 5,900 jobs and generating HK\$ 326 million in tax revenue. Taking into account indirect and induced effects these figures rise to HK\$ 8,360 million in GDP, accounting for 16,200 jobs and yielding HK\$ 652 million in tax receipts.

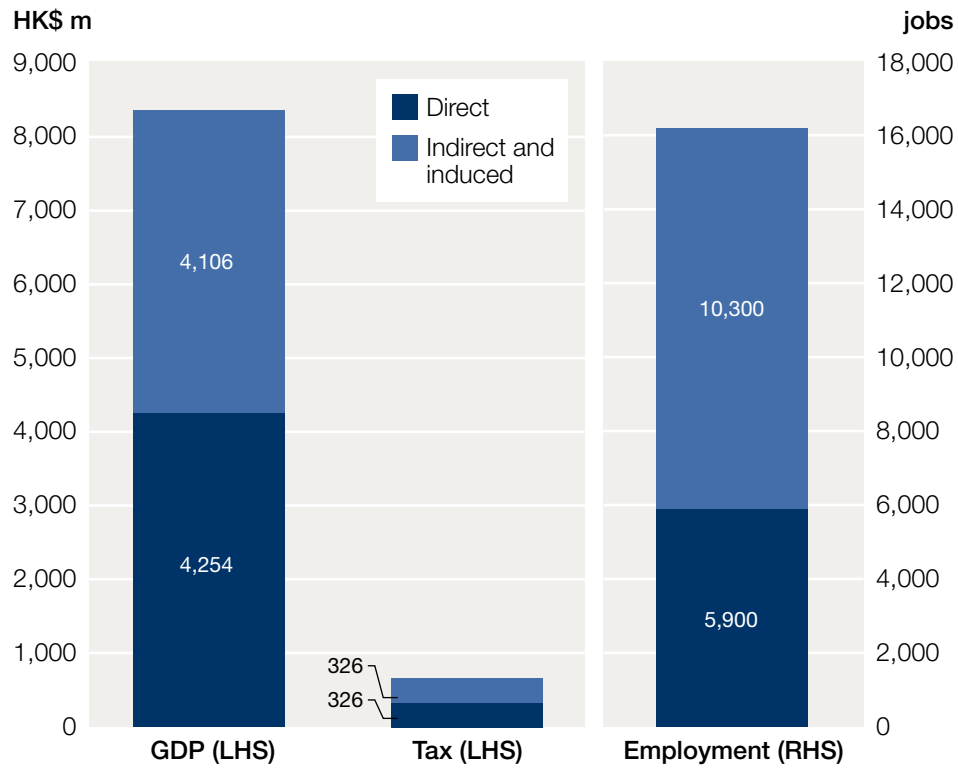
The television sector therefore accounts for 60% of the direct GDP of the combined 'film and television' industry, and for 44% of direct employment. Its labor productivity (HK\$ 721,018 per employee) is considerably higher than the economy-wide labor productivity (HK\$ 560,951 per employee).

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***The television sector's labor productivity is considerably higher than that of the overall economy.***

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**Chart 4.1: Economic contribution of television programming and broadcasting, 2014**



Source: Oxford Economics estimates

## 5 Exports and festivals

### 5.1 Film and TV exports

Data from the Hong Kong's Census and Statistics department's *Statistical Digest of the Service Sector* indicated that video discs and other recorded magnetic tapes accounted for HK\$ 412 million in exports in 2013, an increase of 99.4% from 2012. Of that HK\$ 412 million in exports, the vast majority (HK\$ 320 million) consisted of re-exports with the remainder (HK\$ 92 million) consisting of domestic exports. The component of exports that accounted for the dramatic increase in exports in 2013 from 2012 was re-exports, which experienced a 209.6% surge. Note that any other film and TV exports would effectively be captured in the direct film and TV economic contribution figures reported in Chapters 2 and 3, since such exports are a component of GDP.

One such figure captured in the analysis includes overseas Hong Kong movie box office receipts, which added to approximately HK\$ 151 million in 2013 (Create Hong Kong Annual Report). Table 5.1 below shows the breakdown by country.

**Table 5.1: Overseas HK Movies Box Office by Country, 2013**

Country	Box Office Receipts (HK\$)
Taiwan	114,262,091
Malaysia	19,411,767
Singapore	8,808,216
USA	6,720,626
Thailand	700,853
Australia	425,484
New Zealand	237,383
<b>Total</b>	<b>150,566,420</b>

Given the small size of the Hong Kong market, the Hong Kong film and television industry relies on overseas sales, with Asia accounting for the majority of these sales.<sup>3</sup> A large export market for Hong Kong film and TV products is China. At the heart of this for the film industry is the Closer Economic Partnership Arrangement (CEPA) signed in 2003 that exempts Hong Kong films from the import quota for non-Chinese films. However, in practice, this agreement seems to have facilitated mainly big budget co-productions for import into the Chinese market.<sup>4</sup> Some of the successful co-productions that have resulted from this economic partnership recently include *The Silent War*, winning the Best Costume Designer in the 7th Asian Film Awards (AFA), *The Grandmaster*, winning Best Cinematography of the 56th Asian Pacific Film Festival (APFF), and *Journey to the West*, the highest-grossing movie on the mainland in 2013, with box office receipts of over RMB 1.2 billion.<sup>5</sup>

<sup>3</sup> HKTDC Research, "Film entertainment industry in Hong Kong," 6 March 2014.

<sup>4</sup> <http://variety.com/2014/film/news/hong-kong-biz-is-tested-as-mainland-china-vies-for-filmmakers-attention-1201182489/>

<sup>5</sup> <http://hong-kong-economy-research.hktdc.com/business-news/article/Hong-Kong-Industry-Profiles/Film-Entertainment-Industry-in-Hong-Kong/hkip/en/1/1X000000/1X0018PN.htm>

## 5.2 Film festivals

Hong Kong has hosted an annual film festival, FILMART, since 1997 to promote Hong Kong as a film and television distribution center in the region. FILMART is Asia's largest film and television and entertainment market, and is ranked second in the world for film events. In 2014, FILMART attracted a record-setting 772 exhibitors, the majority (652) overseas exhibitors, and nearly 7,000 visitors from 51 countries and regions.<sup>6</sup> The number of overseas buyers increased by 10 percent, and buyers coming from the United States increased by 20 percent, highlighting the importance of the Hong Kong film and television market.<sup>7</sup>

Another important platform for the Hong Kong film industry is the Hong Kong -Asia Film Financing Forum (HAF) and is held concurrently with FILMART. In its 12<sup>th</sup> year, the forum brings together mainly Asian filmmakers with upcoming projects for co-production ventures with film financiers, producers, bankers, distributors and buyers. The forum is attended annually by more than 1,000 filmmakers and financiers from more than 35 countries, with 25-30 projects selected every year to take part in the three-day event (with 300 competitive submissions in 2014).<sup>8</sup> From those projects, 7 are presented an award at the HAF Awards amounting to about HK\$ 671,000.

In addition, the Hong Kong International Film Festival Society (HKIFF-who also organises FILMART and the HAF) holds the Hong Kong International Film Festival every year, which celebrated its 38<sup>th</sup> year in 2014. With screenings of over 280 films from 50 countries across venues in Hong Kong, the festival has an audience of over 600,000 viewers.

Other established film festivals in Hong Kong include:

- Hong Kong French Film Festival
- Sundance Film Festival Hong Kong
- Hong Kong Jewish Film Festival
- Cine Fan Summer International Film Festival
- Hong Kong Lesbian and Gay Film Festival
- Hong Kong Independent Film Festival

6 [http://www.hktdc.com/fair/hkfilmart-en/s/4130-General\\_Information/Hong-Kong-International-Film--TV-Market--FILMART-/FairStatistics.html](http://www.hktdc.com/fair/hkfilmart-en/s/4130-General_Information/Hong-Kong-International-Film--TV-Market--FILMART-/FairStatistics.html)

7 <http://www.eexpohk.com/en/news.htm?year=2014&id=1>

8 <http://www.haf.org.hk/haf/report2014.htm>

## **6 Conclusion**

This report has provided a detailed overview of the film and television sectors in Hong Kong, systematically quantifying the economic impact of various sub-sectors of the industry.

These estimates indicate that film and television made a material contribution to economic activity in Hong Kong in 2014, directly contributing HK\$ 7,041 million of GDP, in turn supporting 13,270 jobs and generating HK\$ 583 million of tax revenues. The sector therefore accounts for 0.3% of Hong Kong's total GDP, 0.4% of total jobs across the economy and 0.4% of the country's total tax revenue.

Allowing for “multiplier” effects and taking the direct, indirect and induced contributions together, we can say that the industry's total economic contribution in 2014 was HK\$ 15,580 million of GDP. Associated with this activity, the sector's total contribution to employment was some 30,200 jobs and its total contribution to tax revenues was HK\$ 1,215 million.

Looking ahead there is scope for a “re-emergence” of Hong Kong's television industry with a focus on programs and films culturally centered on Hong Kong, which has in the past nurtured Hong Kong's nascent film talent. A resurgence of the industry will be vital to sustaining Hong Kong's thriving film industry.

## 7 Detailed methodology

### 7.1 GDP measure

GDP can either be measured at basic prices or at market prices. The estimates produced in this report are measured using GDP at *basic prices*, which exclude taxes (less subsidies) on products. Gross Value Added (GVA) is another term for GDP at basic prices.

GDP at market prices is the “headline measure” of GDP used in Hong Kong and most other countries. GDP at market prices includes all taxes less subsidies on products.

### 7.2 Quantifying the direct contribution

The main source used to quantify the direct contribution was data from the Hong Kong Census and Statistics’ data on the *number of establishments and persons engaged and vacancies analysed by industry sub-class*. It uses the *Hong Kong Standard Industrial Classification Ver. 2.0*. This dataset contains 2013 data on persons engaged which we extrapolated to 2014, differentiating between film and television production, post-production and distribution as well as film projection and TV programming and broadcasting. Forecast real GDP growth from 2013 to 2014 from the Oxford Economics Global Economic Model (GEM) was used to derive estimates for 2014.

This publication reports the results of a quarterly survey of employment and vacancies, with the latest survey from June 2014. HSIC Ver.2.0 is similar to the recent United Nations Statistics Division International Standard Industrial Classification of All Economic Activities (ISIC) Revision 4 classification. This differentiates between film production, post-production and distribution as well as film projection and television programming and broadcasting. This data contains employment by sub-sector in terms of the number of persons engaged, defined as the number of working proprietors, active partners and unpaid family workers plus the number of employees.

In order to estimate employment, we used ratios of employees to persons engaged across the motion picture, video and television programme production, sound recording and music publishing industry; the programming and broadcasting sector; the import/export trade industry; and the retail trade sector. For the export trading of recorded audio and video tapes, CDs, DVDs, and similar media subsector, an estimate was derived to find the portion related to films and television using the proportional difference between the retail sale of music and video recordings and the retail sale of film and television recordings only.

Next, a GDP estimate across each sub-sector was constructed using data on the value added per person engaged from the Key Statistics on Business Performance and Operating Characteristics of the Import/Export, Wholesale and Retail Trades, and Accommodation and Food Services Sectors in 2012 and also from the Key Statistics on Business Performance and Operating Characteristics of the Information and Communications, Financing and Insurance, Professional and Business Services Sectors in 2012. From these publications, the value added per person engaged was taken from the import/export trade sector (Other import/export trade), the retail trade sector (other retail trade), the motion picture, video and television programme production, sound recording and music publishing sector, the programming and broadcasting activities sector, and the rental and leasing sector. The GDP for the retail sale of home entertainment was estimated indirectly using data from Screen Digest, however.

In order to shock the Input-Output (IO) model to measure the wider impact of the film and television industry, gross output from each subsector is needed. The gross output across each subsector was estimated using the ratio of the value added to turnover by industry sector from the same publication as used to estimate GDP, using the same broad sector categories. In order to split the turnover figure for retail sale of home entertainment between the value of the film and television material sold and the value of the retail margin to retailers, Screen Digest data was used to estimate the relevant proportion to credit to the different sectors in the I-O model.



### 7.3 Modelling the total economic contribution

Broadly speaking, input-output multipliers measure the relationship between an initial shock (such as spending) and final outcomes across the whole of the economy in terms of gross output, GDP and employment.

This study uses “Type II” multipliers. Type II multipliers allow for both the “indirect” supply chain effects (i.e. the film and TV industries purchasing from other industries) and “induced” effects which arise from workers spending wages (derived from employment) on goods and services. (Studies which only allow for the indirect or supply chain effects use what is known as Type I multipliers. Type II multipliers will be larger than Type I multipliers.)

In order to estimate the indirect and induced contributions, we constructed an Input-Output (IO) table for Hong Kong based on Hong Kong supply and use tables from 2005. An IO table details economy-wide transactions between sectors in matrix form, quantifying the extent to which different industries sell to and purchase from each other. In the estimated Hong Kong IO table film and TV activities is captured within the broader “business services” and “other services” industry categories. In order to refine the sectors for the film and television industry we used the relationship between the film/TV sectors and the relevant broader sector from the official Taiwan IO tables, in terms of the pattern of supply chain and labor (wage) purchases.

By appropriately manipulating the IO matrix, we were able to estimate the contribution of, for example, film production on the rest of the economy through its supply-chain purchases (indirect effect) and through the spending of those employed directly and indirectly in film production (induced effect).

No specific sector capturing all of the activities of the film, home entertainment and TV industries exists within IO tables, as these are split among several industries and the IO tables aggregate many industries together. We therefore allocated each sub-sector to a relevant IO category.

Accordingly, the activities covered by production, post-production, distribution, projection, and the retail sale video margin to distributors were allocated to the “Motion Picture, Video and Music Publishing Services” category, the retail margin of the sale of DVDs and related home entertainment products and export trading of such products was allocated to the “Wholesale and Retail Trade; and Repair

of Motor Vehicles” category, while the rental of such products was allocated to “Renting & Leasing Services”. TV programming and broadcasting-related activities were allocated to the “Broadcasting and Programming Services” category.

We then “shocked” the IO table using the level of direct gross output (or sales), derived as described in the previous section. Shocking the model simulated the contribution of the film and TV sectors on gross output in the rest of the economy.

### 7.4 Leakage and adjustment for double counting

Generally, when domestic demand expands there will also be an increase in the demand for imports. For example, if consumers spend money on the film and TV industry some of this spending will flow out of the country (e.g. due to the payment of film royalties or the purchase of imported materials by production companies). This is formally known as “leakage”. Allowing for leakage is important as otherwise the contributions on domestic demand will be overestimated.

The format of the constructed Hong Kong IO table allows for such leakage on a disaggregated industry by industry basis. So this factor has been taken into account in the total economic contribution estimates.

The values in the IO table constructed for this study were however (downwardly) adjusted to reflect the fact that, while the IO table typically reports the gross compensation of labor, (including gross wages and salaries) employees will ultimately only be able to spend on other goods and services using their net income (i.e. disposable income after income tax).

Accordingly, the values estimated in the IO table were downwardly adjusted using data for Hong Kong indicating the average proportion of income tax relative to employee gross earnings. This ratio was estimated to be approximately 6% based on data from the 2011 Population Census.

Finally, for certain sub-sectors, it was clear that downward adjustments to the indirect and induced contributions would also need to be made to avoid double counting of output. This is because, in some cases, part of a given industry’s supply chain included other sub-sectors that have been classified as part of the film, video and television market. For example, exhibitor direct revenues implicitly reflect purchases from film distributors, so adding purchases from distributors as a part of indirect revenue could be double counting.

The full list of final gross output and GDP multipliers associated with the modelling described above are reported in Table 7.1.

**Table 7.1: Gross output and GDP multipliers**

Sub-sector	Type II Multiplier	
	Gross Output	GDP
Film and TV Production	1.72	2.51
Film and TV Post-Production	1.72	2.51
Film and TV Distribution	1.72	2.51
Film Exhibition	1.72	2.51
Home Entertainment	1.69	3.62
TV Programming and Broadcasting	1.73	1.97

## 7.5 Estimating GDP, earnings and employment

The gross output totals derived from the above modelling were converted into estimates for total (i.e. direct, indirect and induced) GDP contributed by each sub-sector using the overall estimated ratio of GDP to total gross output, derived from the outputs of the input-output modelling. These were then converted into employment estimates using the overall employment to GDP ratio, also derived from the outputs of input-output modelling.

Direct earnings, were estimated using the information described in Section 7.2 above. For the indirect and induced contributions, we used the multipliers implied by the IO table.

## 7.6 Modelling tax revenues

The taxes allowed for in this study included personal income tax and corporate income tax.

In order to model the level of revenue that would be raised for the government as a result of this activity, we made use of a number of different data sources.

Personal income tax contributions were derived by estimating the national average ratio of income tax to average employee earnings (5.8%) in 2014. The sources for this data were the Hong Kong Census and Statistics Department and the Hong Kong Inland Revenue Department. This ratio was then applied to estimated direct and total earnings to derive the respective direct and total personal income tax contributions.

Finally corporate income taxes were derived by estimating the national ratio of the corporate tax revenue to GDP (5.8%) using the Oxford Economics Global Economic Databank and the Hong Kong Inland Revenue Department data. This ratio was then applied to estimated direct and total Gross Output to derive the respective direct and total corporate income tax contributions.

These various sources of taxation were then combined to derive the final figure.





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