OXFORD ECONOMICS

THE ECONOMIC CONTRIBUTION OF THE FILM AND TV INDUSTRY IN TAIWAN IN 2016


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1. KEY FINDINGS

Taiwan's film and TV industry made a significant contribution to Taiwan's economy in 2016...

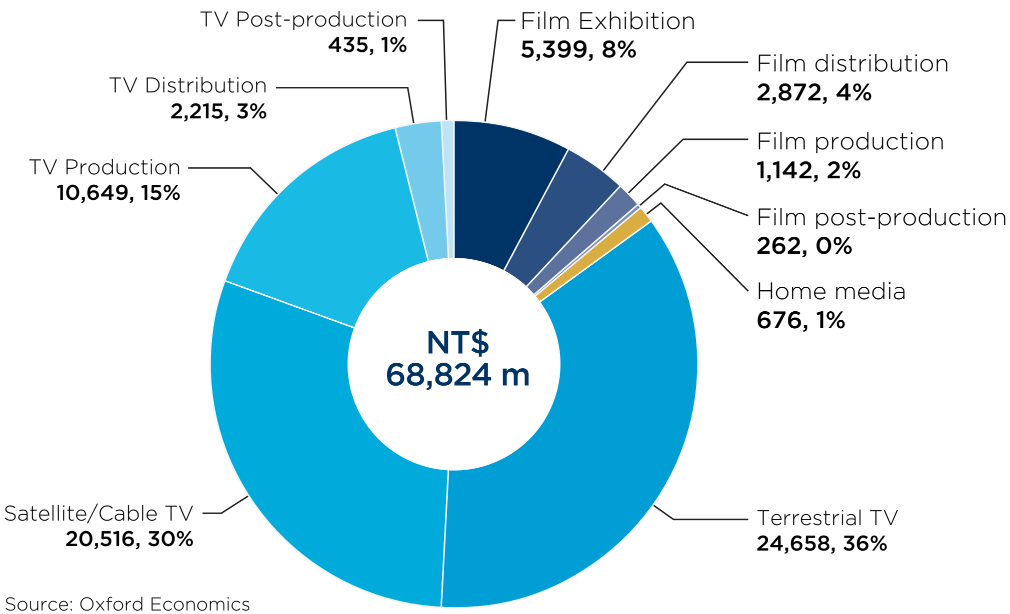
In 2016 the film and TV industry generated a total direct contribution to Taiwanese GDP worth NT$ 68,824 million.[1] This represents 0.40% of Taiwan's total GDP in 2016.

The most significant contributor to GDP is TV broadcasting (comprising terrestrial TV and satellite and cable TV) which makes a total direct contribution worth NT$ 45,174 million through its terrestrial TV, and satellite/cable TV components (Fig. 1). The TV production, post-production and distribution sectors' total direct contributions to GDP totaled NT$ 13,299 million, taking the direct contribution of the whole TV industry to NT$ 58,474 million.

The film industry directly contributed NT$ 9,674 million to the Taiwanese economy in 2016. Most of this comes through the NT$ 5,399 million contribution made by film exhibition. Alongside TV broadcasting, this highlights the value that is generated through the consumer-facing components of the film and TV industry.

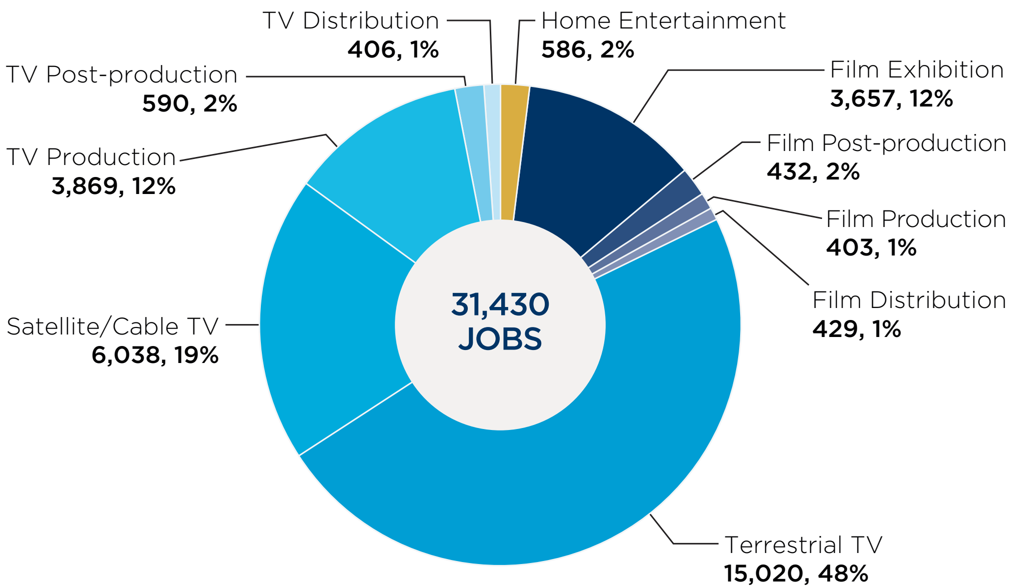
...directly supporting a substantial number of highly productive jobs...

Fig. 1: Direct contribution to GDP of Taiwan film and TV industry, 2016[2] (NT$ millions and percentage split)



Source: Oxford Economics

Fig. 2: Direct employment of Taiwan film and TV industry, 2016 (persons employed and percentage split)



Source: Oxford Economics

[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 'Detailed Methodology' at the end of this report.)
[2] The total of film production and post-production may not add to their total, detailed later in the document, because of rounding.

The large direct contribution that the film and TV industry made to GDP in 2016 sustained a total of 31,430 jobs (Fig. 2). This represents 0.28% of Taiwan's total employment in 2016.

The TV industry directly employed 25,922 people. TV broadcasting was again the most sizeable component, employing a total of 21,058 people. The TV production and post-production sectors collectively employed 4,458 people, with 406 employed in TV distribution.

The film industry directly employed a total of 4,922 people in 2016, the majority of whom (3,657) were employed in film exhibition. Film production employed 835 people, with a further 429 in the distribution of film content. Physical home entertainment rental and retail, which has shrunk in recent years, sustained 586 jobs.

The film and TV industry is directly responsible for a greater share of Taiwan's GDP than the share of employment that it supports. This reveals that the jobs that are created by the industry are highly productive, with an average contribution to GDP worth NT$ 2.2 million per employee. This is more than 44% greater than the economy-wide average of NT$ 1.5 million and illustrates the high value that can be generated by further job creation in the Taiwanese film and TV industry.

… with a significant tax base supported by all this activity.

Significant contributions were made to Taiwanese tax revenues through film and TV activities. The direct tax contributions totaled NT$ 5,928 million, with NT$ 4,979 million derived from the TV industry, three quarters of which came through TV broadcasting (NT$ 3,846 million). NT$ 855 million came from the film industry, mostly driven by the NT$ 477 million from film exhibition, with home entertainment accounting for NT$94 million.

Large multiplier effects mean that these direct activities support a large overall economic footprint.

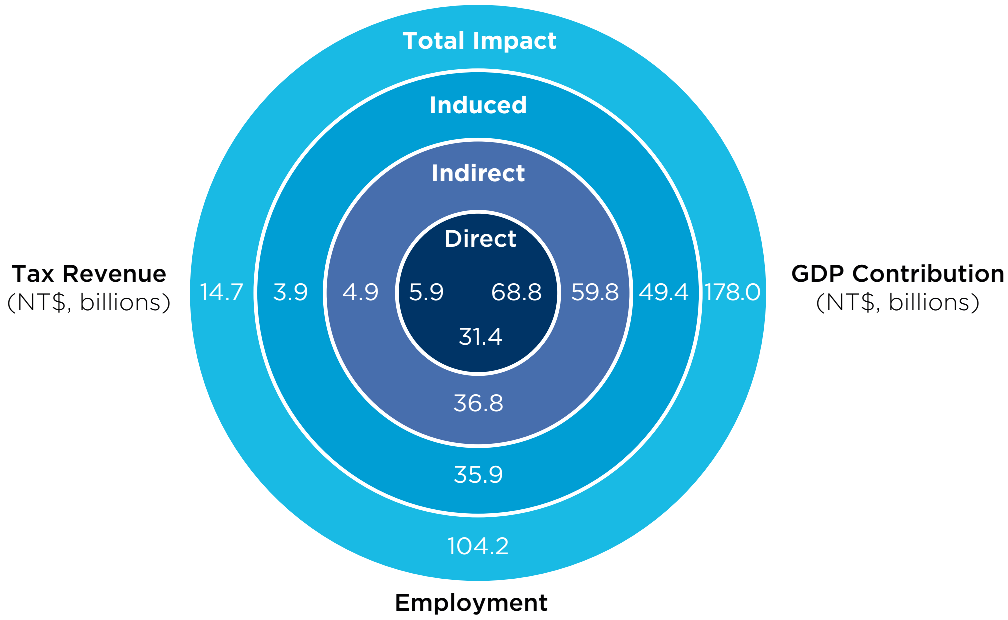
The total economic footprint takes into account the domestic supply chain made by the industry (the indirect contribution) and the consumer spending that direct and indirect employees make out of their earnings (the induced effect).

Once these impacts are considered, the total economic contribution of the film and TV industry in 2016 stood at NT$ 178,036 million. Of this, the indirect and induced impacts were worth NT$ 59,842 million and NT$ 49,371 million respectively. This represents a multiplier of 2.6 meaning that for each NT$ 10 of direct contribution to GDP, a total economic footprint of NT$ 26 was supported.

Film and TV activity supported a total of 104,161 jobs, 36,814 of these coming through the indirect effect and 35,917 the consequence of induced consumer spending. This implies that 3.3 total jobs were sustained in the economy for each direct film and TV industry job –i.e. a job multiplier of 3.3.

Total tax contributions stood at a total of NT$ 14,734 million, with NT$ 4,923 million derived from the indirect effect and NT$ 3,883 million from the induced effect.

Fig. 3: Total economic footprint of the film and TV industry, 2016



Large benefits are derived from the sector's international presence.

The Taiwanese film industry was responsible for NT$ 661 million of exports in 2016. A further NT$ 2,578 million in exports were made by the TV industry, for a total of NT$ 3,239 million by the industry as a whole. Note that as exports form part of GDP, these values would be captured in the film and TV GDP figures discussed above.

Another notable area of activity is the presence of Taiwanese productions in international film festivals. In 2015, the latest year for which data is available, there were 286 entries to film festivals, close to an all-time high based on available data.

Fig. 4: Full breakdown of the film and TV industry's economic contribution, 2016

	GDP (NT$, millions)		Employment		Tax (NT$, millions)	
	Direct	**Total**	**Direct**	**Total**	**Direct**	**Total**
Film production and post-production	1,403	3,390	835	2,240	124	283
Film distribution	2,872	6,939	429	3,305	254	580
Film exhibition	5,399	13,044	3,657	9,063	477	1,090
Home entertainment	676	1,861	586	1,367	94	189
TV production and post-production	11,084	28,965	4,458	16,261	944	2,387
TV distribution	2,215	5,789	406	2,764	189	477
Terrestrial TV	24,658	64,437	15,020	41,277	2,099	5,310
Satellite and cable TV	20,516	53,612	6,038	27,884	1,747	4,418
Total	**68,824**	**178,036**	**31,430**	**104,161**	**5,928**	**14,734**

Numbers may not sum to totals due to rounding

HOW WE ARRIVED AT THESE RESULTS

This report was commissioned by the Motion Picture Association (MPA) and produced by Oxford Economics. It sets out to quantify the size of the film and TV industry in Taiwan and the scale of the contribution that it makes to the Taiwanese economy. In this section we summarise the methodological approach that was taken; a detailed description of this approach and the sources used is included in the Chapter 6 ('Detailed Methodology').

DIRECT ECONOMIC CONTRIBUTIONS

The starting point for this analysis involved establishing the size of the different components of the market, based on official data from the Bureau of Audiovisual and Music Industry Development (BAMID) in the Taiwanese Ministry of Culture. BAMID released an annual Film and Television Broadcasting Industry Trends Research Report, comprised of three documents outlining values such as the turnover, employment and exports of the film, TV and broadcasting industries.

The most recent BAMID data concerns the activities of these different components of the industry in 2015. In order to generate estimates for 2016, our analysis projected forward based on the growth in economic output, private consumption and employment that the economy saw between the two years. Data was accessed from the Directorate General of Budget, Accounting and Statistics and the Ministry of Finance, supplemented by Oxford Economics forecasts, where 2016 data was not yet available.

Up-to-date data on physical home entertainment sale and rental values were made available by IHS Markit.

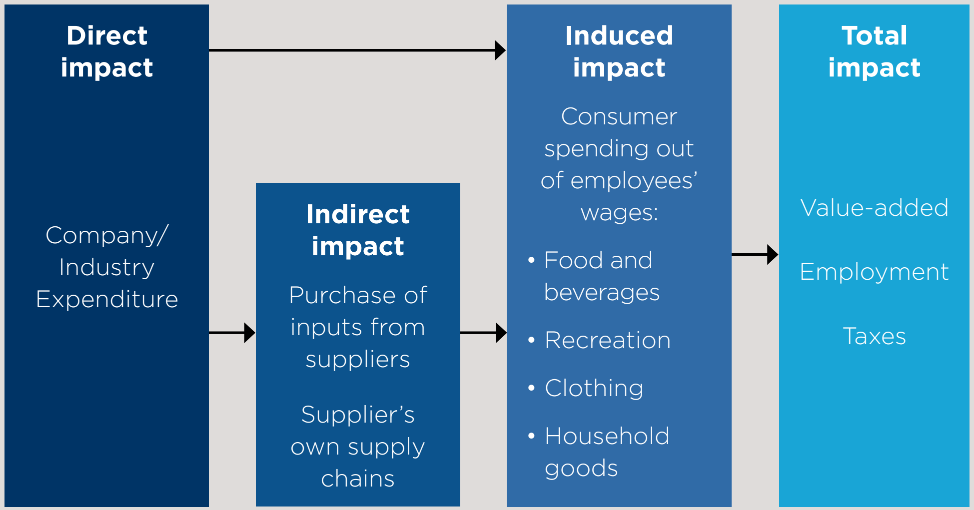
ECONOMIC IMPACT

The economic impact model was based on a Taiwanese Input-Output (I-O) table. This allowed the supply chains that support the purchases made by firms and the consumption made by individuals employed to be analysed.

Use of the I-O table allowed the total output generated in each sector and contribution to GDP to be estimated. Employment was estimated based on the average relationship between employment and GVA in each industry, based on Directorate General of Budget, Accounting and Statistics data. An illustration of the relationship between direct, indirect and induced effects is illustrated by the diagram below.

The tax contributions made were analysed based on the effective tax rates levied on employee earnings, corporate profits, consumption and imports. These estimates used data on tax and economic statistics from the Directorate General of Budget, Accounting and Statistics and the Ministry of Finance.

The economic impact framework



2. FILM INDUSTRY

2.1 FILM PRODUCTION AND POST-PRODUCTION

Film production is responsible for all aspects of physically shooting a film, including casting, locations, sets and filming. Post-production includes film editing, computer graphics, animation and special effects in order to develop the completed production.

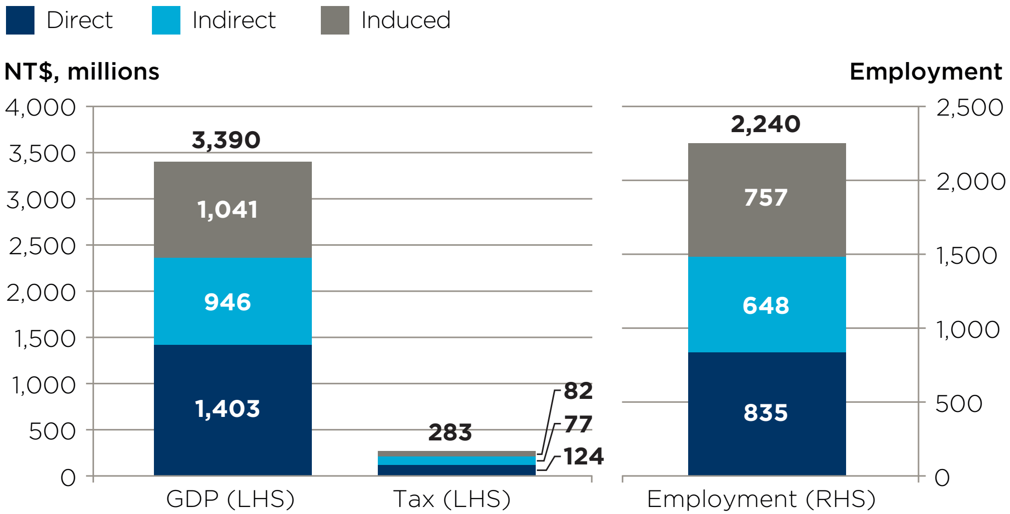
Film production and post-production directly contributed a total of NT$ 1,403 million to Taiwanese GDP in 2016 (Fig. 5). Through this activity 835 jobs were directly supported, along with tax revenues worth NT$ 124 million. Once the indirect supply chain and induced consumer spending impacts are considered, the total economic footprint supported a NT$ 3,390 million contribution to Taiwanese GDP, 2,240 jobs and NT$ 283 million in tax revenues.

2.2 FILM DISTRIBUTION

The film distribution sector is responsible for the process of delivering foreign and domestically produced films to cinemas and theatres in Taiwan. This not only involves the process of shipping film media through physical or digital means, but also concerns the process of building audience awareness and demand through marketing campaigns. The growing importance of the Internet, both as a means of delivering content to consumers and in the promotion and marketing of films, makes this a rapidly evolving component of the industry.

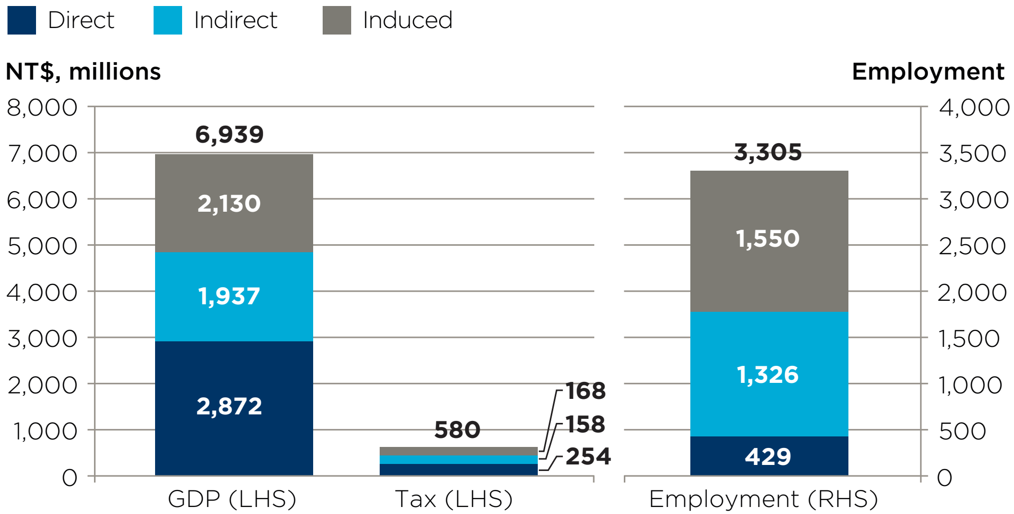
Film distribution made a direct contribution to Taiwanese GDP worth NT$ 2,872 million in 2016 (Fig. 6). A total of 429 people were employed by the sector, with NT$ 254 million in tax revenues generated. Once the indirect and induced contributions are considered, the sector's footprint was worth NT$ 6,939 million, supporting 3,305 jobs and NT$ 580 million in tax revenues.

Fig. 5: Economic impact of film production and post-production, 2016



Source: Oxford Economics

Fig. 6: Economic impact of film distribution, 2016



Source: Oxford Economics

2.3 FILM EXHIBITION

Film exhibition concerns the screening of motion pictures in cinemas and theatres across Taiwan.

The direct contribution of film exhibition to GDP stood at NT$ 5,399 million. A total of NT$ 477 million worth of tax revenues and 3,657 jobs were supported through this activity. Once the indirect and induced contributions are taken into account, film exhibition supported a NT$ 13,044 million contribution to GDP in Taiwan in 2016, more than half of the whole film industry's contribution, supporting 9,063 jobs and NT$ 1,090 million in tax revenues.

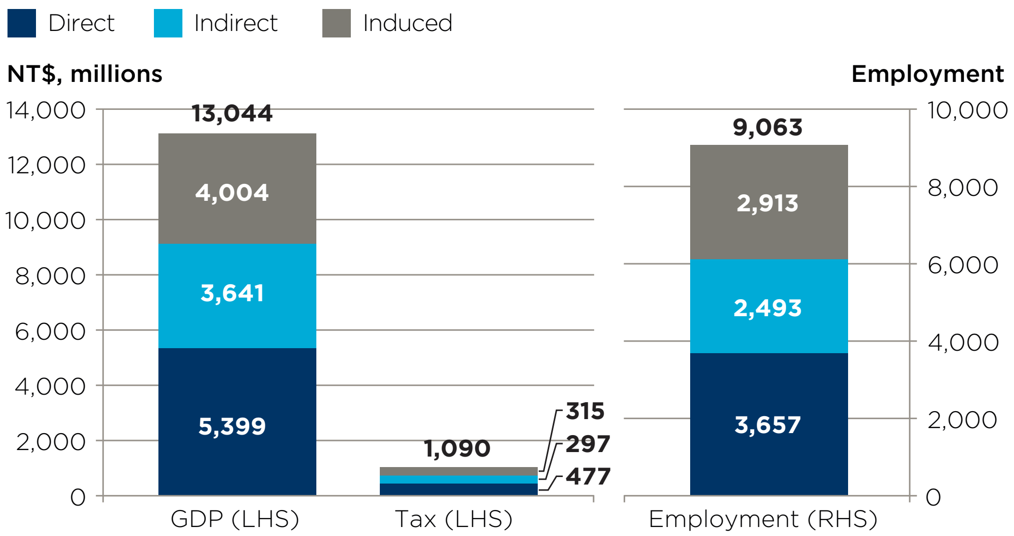
2.4 HOME ENTERTAINMENT

The physical home entertainment sector consists of the sale and rental of video media for private consumption. The type of media sold has changed over time, with Blu-ray now being dominant, its sales having overtaken DVD sales.

Traditionally, home entertainment has represented a significant portion of the film industry. However the rise of online alternatives has resulted in a decline in home media. As such, combined DVD and Blu-ray sales are estimated to have fallen by a quarter between 2010 and 2016, from 4.8 million to 3.7 million units. A more dramatic change has been seen in video rental, with the nominal value of film rental across all video formats having declined by nearly one half (46%) over this same period.[3]

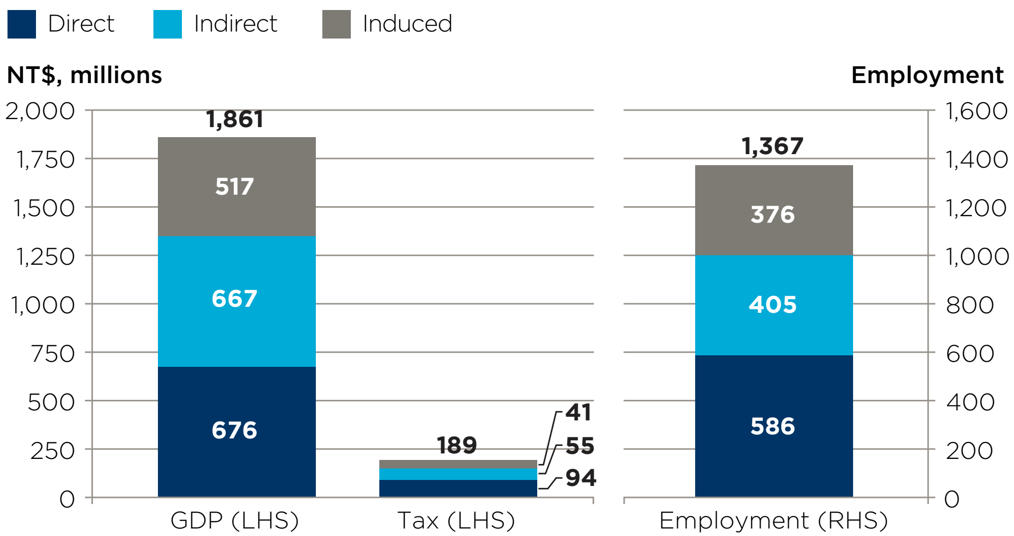
In 2016, home entertainment was responsible for a direct contribution to Taiwanese GDP of NT$ 676 million, supported 586 direct jobs and NT$ 94 million in tax revenues. Once the indirect and induced impacts are considered, the total contribution to GDP stood at NT$ 1,861 million, with NT$ 189 million in tax revenues raised and 1,367 people employed.

Fig. 7: Economic impact of film exhibition, 2016



Source: Oxford Economics

Fig. 8: Economic impact of home entertainment, 2016



Source: Oxford Economics

[3] Data on physical home entertainment was provided by IHS Markit.

3. TELEVISION INDUSTRY

TV, which is the larger component of the combined film and TV industry is responsible for a large contribution to Taiwanese GDP and a significant employment footprint.

Taiwanese people watched 12.8 hours of TV per week on average in 2015[4]. Across the whole population this reflects a large amount of consumption, with revenues for TV broadcasting totaling an estimated NT$ 113,100 million in 2016. A significant domestic industry is also involved in the production, post-production and distribution of this content.

3.1 TV PRODUCTION AND POST-PRODUCTION

The combined TV production and post-production sectors are responsible for the entire process of developing TV content, from inception to completion. TV production concerns the process of shooting content, with post-production including all of the editing required to deliver the finished product.

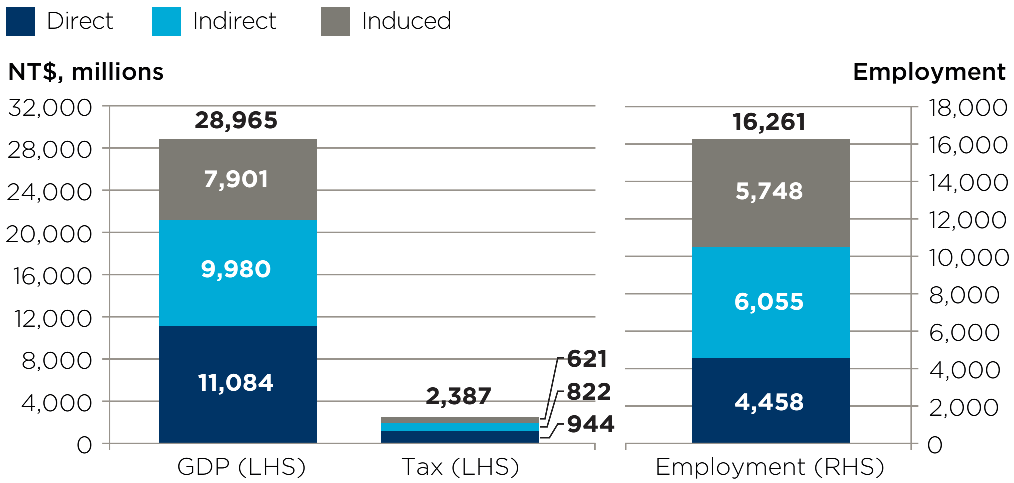
As Fig. 9 illustrates, TV production and post-production made a direct contribution to GDP worth NT$ 11,084 million in 2016. The sector employed 4,458 people and paid a total of NT$ 944 million in taxes. The sector's total footprint, taking into account the indirect and induced impacts has a contribution to GDP worth NT$ 28,965 million, 16,261 jobs and NT$ 2,387 million in tax revenues.

3.2 TV DISTRIBUTION

The delivery of completed TV programming for broadcasting purposes is the responsibility of the TV distribution sector. TV distribution includes logistical tasks, as well as the process of marketing and promoting the content.

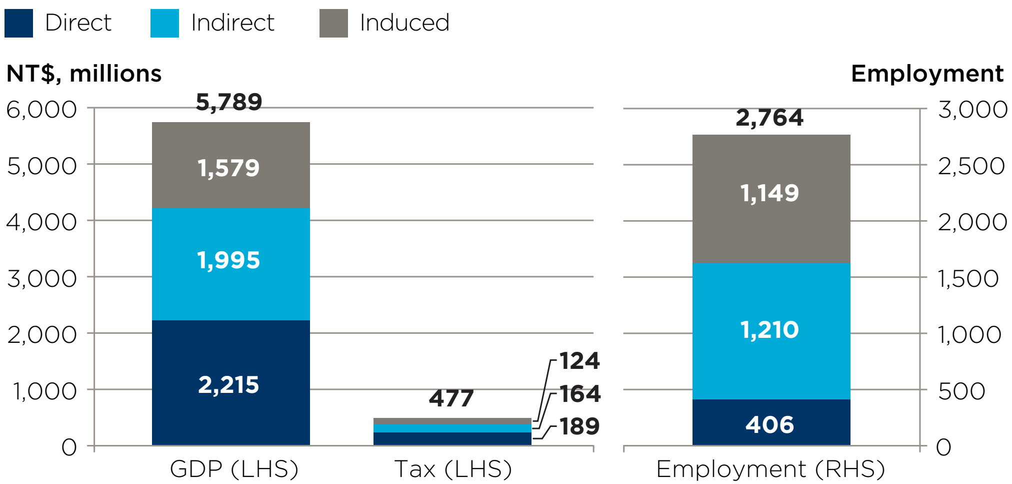
The TV distribution sector made a direct contribution to GDP worth NT$ 2,215 million in 2016 (Fig. 10). This led to tax contributions worth NT$ 189 million and direct employment of 406 people. The total contribution to GDP was worth NT$ 5,789 million, sustaining 2,764 jobs and a NT$ 477 million contribution to tax revenues.

Fig. 9: Economic impact of TV production and post-production, 2016



Source: Oxford Economics

Fig. 10: Economic impact of TV distribution, 2016



Source: Oxford Economics

[4] Bureau of Audiovisual and Music Industry Development, Taiwanese Ministry of Culture, *Film and Television Broadcasting Industry Trends Research Report, 2015* (Research Report, 2017).

3.3 TERRESTRIAL TV BROADCASTING

The largest component of TV broadcasting in Taiwan is terrestrial TV, which includes Taiwan Television, China Television, Chinese Television System, Formosa Television and Public Television Service.

Terrestrial TV was responsible for a direct contribution to GDP worth NT$ 24,658 million. A total of 15,020 people were employed directly, with NT$ 2,099 million in tax contributions. Once the indirect and induced contributions are included, a total contribution to GDP worth NT$ 64,437 million was made, supporting a total of 41,277 jobs and NT$ 5,310 million in tax revenue.

3.4 SATELLITE AND CABLE TV

The second component of TV broadcasting in Taiwan is satellite and cable TV. This covers a range of commercial subscription channels transmitted by cable, satellite and IPTV.

A total direct contribution to GDP worth NT$ 20,516 million was made by satellite and cable TV, employing 6,038 people and contributing NT$ 1,747 million in tax revenues. The sector's total footprint, once its supply chain and consumer spending contributions are taken into account, totaled NT$ 53,612 million in terms of its contribution to GDP, employed 27,884 people, and generated NT$ 4,418 million in tax revenues.

3.5 VIDEO ON DEMAND

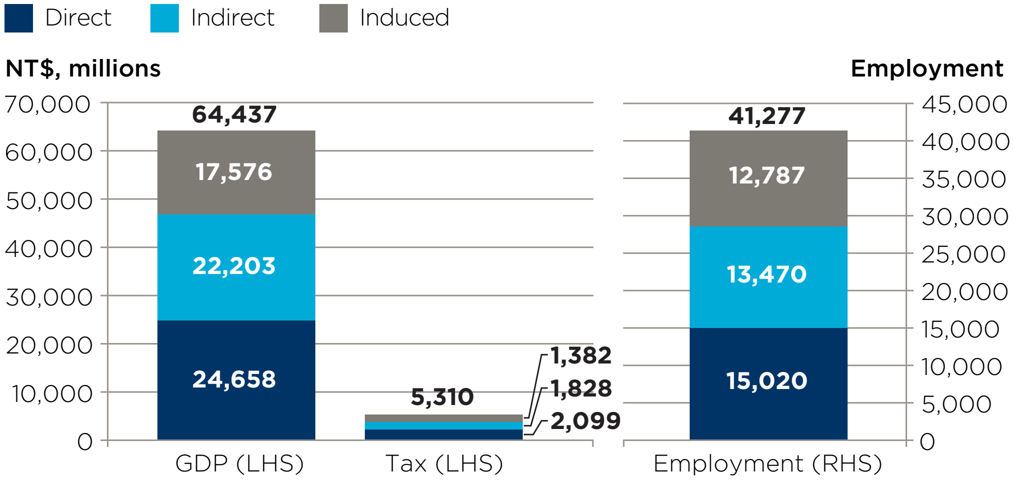
The way in which people consume TV has evolved significantly over recent years, primarily through the emergence of video on demand (VOD).

However, this medium remained small as of 2015, the latest year in which government data is available. Online production and broadcast turnover stood at NT$ 291 million and NT$ 1,150 million respectively, totalling only 1% of the whole of TV production and broadcast industry.

Furthermore, there is no reported employment for the sector within Taiwan. This indicates that the sector does not have a domestic footprint, with its output instead representing imports. Therefore, our analysis does not include this as having a direct or broader economic footprint in Taiwan.

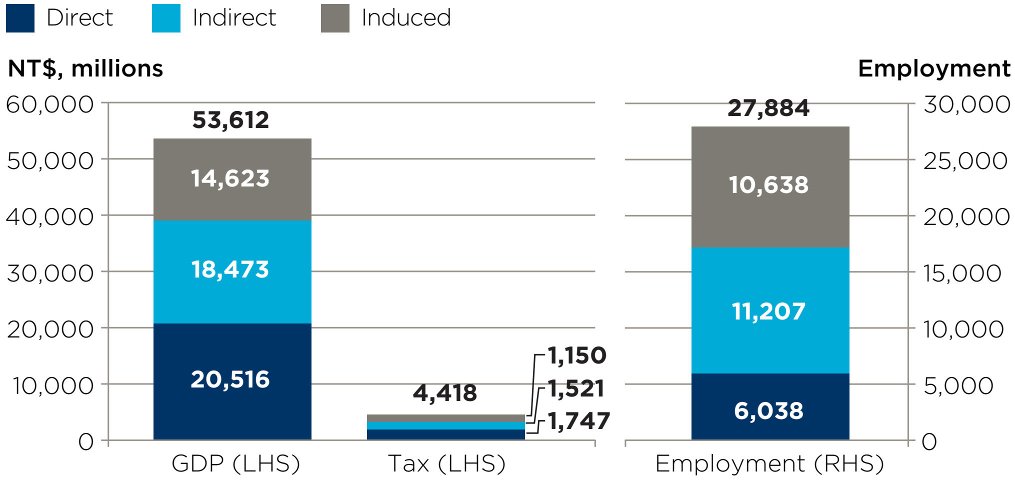
VOD platforms are expected to become more mainstream and represent a growing share of the industry in the coming years. This will likely see an evolution in the composition of the organisations in the sector and the regulatory structure in which they work, potentially generating a substantial economic footprint.

Fig. 11: Economic impact of terrestrial TV, 2016



Source: Oxford Economics

Fig. 12: Economic impact of satellite and cable TV, 2016



Source: Oxford Economics

4. EXPORTS, TOURISM AND FESTIVALS

4.1 FILM AND TV EXPORTS

The Taiwanese film and TV industry supplements other activities derived from its domestic market through its exports.[5] Whilst these exports are relatively small overall, their presence highlights the value that can be derived if the industry can make itself more attractive, especially through the production of film and TV, and TV broadcasts.

Film industry exports totaled NT$ 661 million in 2016. The largest share of this came from film production, worth NT$ 341 million (Fig. 13), and making up 11% of the sector's turnover, reflecting the extent to which it is boosted by foreign film production taking place in Taiwan. Film post-production and distribution contributed NT$ 26 million and NT$ 294 million respectively, 4% of their total sales.

Overall, these exports represent a success story for the film industry, with the total value of film exports growing more than five times since 2012. In part, this is likely to be long-term consequence of the opening-up of mainland China to Taiwanese film exports under the 2010 Cross Straits Economic Cooperation Framework Agreement.[6]

The country's larger TV sector was responsible for a total of NT$ 2,578 million in exports. TV production exported a total of NT$ 472 million, with a further NT$ 21 million from TV distribution. TV broadcasting was responsible for a more substantial amount of exports, with satellite and cable TV responsible for exports worth NT$ 1,874 million and terrestrial TV exports worth NT$ 211 million.

Fig. 13: Direct exports of Taiwanese film and TV industries, 2016

	Total Exports (NT$ millions)
Film production	340.6
Film post-production	26.4
Film distribution	293.9
Film exhibition	0.0
Total Film	**660.9**
TV production	472.0
TV post-production	0.0
TV distribution	21.0
Terrestrial TV	210.8
Satellite and Cable TV	1,874.3
Total TV	**2,578.1**
Total Film and TV	**3,239.0**

Collectively, film and TV's NT$ 3,239 million of exports, represent slightly less than 2% of the total turnover of the sector (excluding physical home entertainment).

4.2 FILM AND TV INDUCED TOURISM

Taiwan's small local film industry and limited export market have constrained the potential for induced film and TV tourism. Nonetheless, international productions hold the potential to boost tourism to the island. Ang Lee's acclaimed *Life of Pi* (2012) was partially shot in Taiwan. Subsequently Taipei was the setting of Luc Besson's *Lucy* (2013) while Martin Scorsese's *Silence* (2015) was also filmed in Taiwan[7]. Interestingly enough, empirical work conducted among foreign visitors to Taiwan has confirmed the association between destination image and travel intentions.[8] Despite this, Lam expresses concern that compared to other destinations, Taiwan's film

[5] Note that exports are a part of GDP and as such their value is already captured in the industry estimates described above rather than being an 'add on'. Tourism and festivals represent additional areas of economic activity but are described here in broad terms rather than being the subject of explicit quantification.
[6] 'Harnessing Ang Lee's fame to boost Taiwan's film sector', Taiwan Today ,accessed 26 May 2017, http://taiwantoday.tw/news.php?unit=2,23,45&post=2870
[7] 'Hollywood turns to Taiwan as island becomes film hub', *Daily Mail*,4 December 2014, accessed 17 July 2017, http://www.dailymail.co.uk/wires/afp/article-2860288/Hollywood-turns-Taiwan-island-film-hub.html and Taipei Film Commission, *2016 Filming Taipei: What we offer,* accessed 18 July 2017, http://www.filmcommission.taipei/en/AboutFilmCommission/PublicationsDet/d2d3f4a0-61fc-4d02-a0c0-d67fccf41ed7
[8] Tsai, Y., Chu, C. and Kobori, K., 'The influence of Video Clips on Travel Intention and Destination Image', *International Journal of Arts and Commerce,* Vol. 6, No.1, January 2017

industry has not left any enduring physical landmarks, suggesting that film-induced tourism to Taiwan is reliant on existing (natural or cultural) creations.[9]

Nonetheless, recent tourism trends provide some support for the presence of film-induced tourism in Taiwan. While Chinese mainland visitor numbers have fluctuated, a notable trend is the increasing number of South Koreans visiting Taiwan, with a 30 percent increase in Korean visitors in late 2016. South Korea's own famed film and TV industry has helped with this trend, with South Korean reality travel shows filmed in Taiwan such as *Grandpas over Flowers* and *Dad, Where Are We Going ?* shot extensively at Taiwanese locations.

This has seen large numbers of Koreans heading to locations such as Shida night market, Julien Old Street and the Gold Museum which featured in these travelogues. Taiwan's film industry has also had an effect, with the waterfront of Tamsui being popular with Korean visitors due to the enduring appeal of *Secret* (2007). More recently, *Our Times* – a 2015 Taiwanese rom-com – became a hit in South Korea, prompting fresh waves of Korean tourists.

The respective appeal of the two countries entertainment industries may have helped spur new transport links, with Korean Air and the budget airlines such as *T'way* and *Tigerair* offering direct flights between Taipei and centres such as Busan.[10]

These recent trends indicated that, despite past limitations, the Taiwanese film and TV industry has the potential to expand its appeal to international audiences.

4.3 FILM FESTIVALS

One of the key barometers for the success of Taiwanese film is the extent to which its productions are recognised at major international film festivals.

Recent years have seen a significant increase in the exposure of Taiwanese films in international festivals, with 286 film entries in 2015, close to the 2013 peak of 294 (Fig. 14).[11] Of these entries, Hou Hsiao-hsien's film *"The Assassin"* received 17 international awards, including Best Director at the 2015 Cannes Film Festival.

In total, 88 films were selected in 2015. However this is a fall of slightly more than 30% since the peak year of 2009, with 17 award wins in 2015, again below the past peak. This indicates that the growth in film entries has not translated directly into awards in recent years.

Fig. 14: International film festival activity, 1998-2015

Year	Number of Entries	Films Selected in Festivals	Number of Cinema Awards
1998	140	52	5
1999	141	129	11
2000	249	91	7
2001	76	88	32
2002	185	140	17
2003	183	82	5
2004	209	69	8
2005	104	61	22
2006	224	83	9
2007	193	93	14
2008	208	91	16
2009	211	125	12
2010	239	124	32
2011	206	122	23
2012	244	96	35
2013	294	86	21
2014	289	86	16
2015	286	88	17

[9] Lam, A.,(2015) Film Tourism (Not) in Taiwan: A Research Report on Film Tourism in Taiwan. *Journal of Political Sciences and Public Affairs* S2:009. doi:10.4172/2332-0761.S2-009
[10] 'Boom in Korean Visitors to Taiwan Helps Mitigate Mainland Shortfall', HTDC Research, 29 December 2016, accessed 17 July 2017, http://economists-pick-research.hktdc.com/business-news/article/International-Market-News/Boom-in-Korean-Visitors-to-Taiwan-Helps-Mitigate-Mainland-Shortfall/imn/en/1/1X000000/1X0A8FR0.htm
[11] Bureau of Audiovisual and Music Industry Development, *op. cit.*

5. CONCLUSION

This report has detailed the significant impact that the Taiwanese film and TV industry had on the domestic economy in 2016. The industry stands as the backbone of the nation's creative sector.

The total contribution to GDP made by the industry across the economy as a whole was worth NT$ 178,036 million in 2016, supporting 104,161 jobs and NT$ 14,734 million in tax revenues. The largest component of the industry was TV, driven primarily by the broadcasting of content through satellite and cable TV and terrestrial TV. The total footprint of the TV industry supported more than 88,000 jobs across the Taiwanese economy.

The domestic film industry is the smaller component of the combined industry. However, its total economic footprint sustains the employment of nearly 16,000 people (including home entertainment) across the economy as a whole. Its importance to the domestic economy is boosted by its ability to promote its outputs internationally, with 11% of film production demand coming from exports. Furthermore, Taiwan's films have an impact through their presence in international film festivals.

6. DETAILED METHODOLOGY

6.1 MEASUREMENT OF GDP

References to GDP refer to Gross Domestic Product at basic prices, which exclude taxes (less subsidies) on products. Gross Value Added (GVA) is another term for GDP at basic prices and is often used to refer to groupings of business or industries.

While taxes on products (such as indirect taxes like VAT) are excluded from GDP at basic prices, the indirect taxes generated by the film and TV industries are estimated in the main body of this report and included as a part of the industry's tax contribution.

6.2 QUANTIFYING THE DIRECT CONTRIBUTION

The primary source of data utilised in this report is the annual *Film and TV Broadcasting Industry Trends Research Report*, published by the Bureau of Audiovisual and Music Industry Development (BAMID) in the Taiwanese Ministry of Culture. This consists of three documents: (1) outlining the value of the film; (2) TV production; and (3) TV broadcasting industries respectively.

This report details the gross output, employment and exports of different components of the industry (except for physical home entertainment) in 2015. The output of the production, post-production and distribution components of both the film and TV industry were extrapolated forward to 2016 based on the growth in the communications industry.

Film exhibition and TV broadcast were projected forward to 2016 values based on the growth in nominal private consumption. This official national accounts data was gathered from the Taiwanese Directorate-General of Budget, Accounting and Statistics, with forecasts from Oxford Economics' Global Economic Databank utilised when official data did not offer values for 2016.

Employment growth was analysed using the change in productivity in the economy, based on the change in total GDP per worker. This was used to estimate the contribution to GDP per worker in 2016 in each sector, and therefore 2016 employment by sector.

Analysis of the physical home entertainment sector utilised information from IHS Markit (formerly Screen Digest), detailing revenues for the retail and rental of films on DVD and Blu-ray. The contribution that these made to GDP was estimated by splitting figures into rental and distribution shares using the relationship between GDP and gross output in the Taiwanese retail and rental sectors (derived from the Taiwanese input-output tables).

6.3 MODELLING THE TOTAL ECONOMIC FOOTPRINT

The economic impact model used in this report utilises a 166-sector input-output table was accessed from the National Statistics Office of the Republic of China.

The I-O table was used to establish the pattern of purchases of goods and services that the individual sectors within the film and TV industry make across the Taiwanese economy, and leakage from the domestic supply chain (e.g. through imports). Purchases made further down the supply chain are also factored in. This establishes the gross output of the indirect effect. GDP and earnings were estimated based on the ratios given in the I-O table.

Calculating the induced contribution involved identifying the earnings of individuals employed either directly or indirectly. The direct and indirect cost of employment had already been calculated. Taxes were deducted, calculated from data from the Republic of China Ministry of Finance, accessed through Haver Analytics. The share of these earnings that were spent was estimated based on national private consumption as a share of disposable income using Taiwanese Directorate-General of Budget, Accounting and Statistics data, accessed through the Oxford Economics databank.

This total consumption was mapped across different industries based on the pattern of household spending reported in the I-O table, with this again used to map the impact through its supply chain. As with the indirect effect, the I-O table was used to analyse GDP and other economic outputs.

The indirect and induced effects of employment were estimated using the relationship between GDP and employment, provided by data from the Taiwanese Directorate-General of Budget, Accounting and Statistics, accessed through Haver Analytic.

Direct, indirect and induced tax contributions were analysed based on the effective tax rates charged on employee earnings (individual income tax), corporate profits (corporate income tax), consumption (VAT, service taxes and excise duties) and imports (customs and other import taxes). This used data on tax and economic statistics from the National Statistics Office.

6.4 MULTIPLIERS

The activity that firms generate through their supply chains and induced consumer spending means that their total economic footprint is significantly greater than their direct contribution alone. The size of this multiplier effect depends on the sector's reliance on its supply chain and employees, as reflected in the value of its intermediate purchases and employee remuneration, as well as the kinds of industries it purchases from. Our approach combines the evidence on the structure of the sector from BAMID and the way that this filters into the rest of the economy through the I-O table.

Two forms of multiplier are detailed in Fig. 15. The Type I multipliers consider the size of the direct and indirect contributions relative to the size of the direct contribution alone. The Type II multipliers consider the whole of the direct, indirect and induced effects relative to the direct effects.

Fig. 15: Type I and Type II GDP multipliers by sector

	Type I	Type II
Film production and post-production	1.67	2.42
Film distribution	1.67	2.42
Film exhibition	1.67	2.42
Home entertainment	1.99	2.75
TV production and post-production	1.90	2.61
TV distribution	1.90	2.61
Terrestrial TV	1.90	2.61
Satellite and cable TV	1.90	2.61
Total	1.87	2.59

6.5 OTHER DATA

Data on exports and the number of films featured at festivals were identified in the *Film and TV Broadcasting Industry Trends Research Report*.

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The modelling and results presented here are based on information provided by third parties, upon which Oxford Economics has relied in producing its report and forecasts in good faith. Any subsequent revision or update of those data will affect the assessments and projections shown.

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