

Global Screen Production – The Impact of Film and Television Production on Economic Recovery from COVID-19

A Study by Olsberg•SPI



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OLSBERG•SPI

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The study is endorsed by these leading film commission associations and networks, representing intergovernmental bodies around the world:

- Asian Film Commissions Network (AFCNet);
- Association of Film Commissioners International (AFCI);
- European Film Commissions Network (EUFEN); and
- Latin American Film Commission Network (LAFEN).



¹ Media Business Insight is a content, insight and events business for the creative media industry. The company's brands include *Screen International* and *Broadcast*. <https://www.mb-insight.com/>

Key Findings

\$177 billion

Value of global Screen Production expenditure in 2019



14 million

Total number of FTE jobs created by the global screen sector value chain in 2019



\$414 billion

Total economic impact of global Screen Production in 2019

\$10 million

Weekly spend of an example major film during 16-week shoot



67%

Average proportion of production costs spent in other business sectors outside of Screen Production

- Driven by voracious consumer appetite and major investment, the production of feature-length films and multi-part television series ("**Screen Production**") has increased substantially around the world in recent years. It is now a **key economic driver** in a large number of countries and jurisdictions.
- In 2019, global expenditure on Screen Production reached **\$177 billion**. This includes investment in scripted film and television and documentaries, but not sport, news or commercials.
- Screen Production has a significant impact and the sector drives employment in the global screen sector value chain – creating **14 million full-time equivalent (FTE) jobs** in 2019. **Total economic impact of the Screen Production sector was \$414 billion** last year.
- The global flow of Screen Production investment is **highly positive for economies around the world**. For regions outside the US, the amount of investment that originates regionally is less than the amount ultimately spent on Screen Production in the region.
- Detailed analysis of production budgets and cost reports shows that Screen Productions inject huge amounts of capital very rapidly into an economy. Analysis of a major film shows that an average of **\$10 million per week** was spent during a 16-week shoot.
- This spend positively impacts other sectors to a significant degree. On average, **67%** of production costs are spent in other business sectors outside of Screen Production.
- In 2019, Screen Production spending reached a new high watermark, which would very likely have been exceeded in 2020 – given that trends in rising production volume and value were ongoing – had the COVID-19 pandemic not dramatically impacted production worldwide.
- Overall, the COVID-19 shutdown has led to a loss of **10 million global screen sector value chain FTE jobs** and **\$145 billion** in economic impact over in the first six months of 2020 – though the impact is likely to be temporary as production resumes.
- Given the demonstrable power of Screen Production to deliver substantial spend in a short space of time, it will be a powerful sector for driving economic recovery in many territories. A number of governments are already looking at Screen Production for this purpose.

1. CONTEXT AND PURPOSE OF THE STUDY

In recent years, Olsberg•SPI ("SPI") has observed the phenomenon of the global Screen Production "deluge" across the world: the dynamic expansion of content creation for screens of all sizes.² A driving motivation of this has been to stimulate and meet the worldwide growth in demand for scripted drama delivered across many streaming services. Until the COVID-19 pandemic occurred, growth in this economic activity had been ground-breaking.

Governments of all sizes and descriptions have increasingly recognised and valued the considerable economic benefits delivered by such activity. As a type of specialised and fleet-footed manufacturing activity, it creates modern, highly skilled, productive and mobile employment. It also typically delivers an attractive return on public investment alongside a variety of other economic measures. It increases inward investment, stimulates tourism, helps national branding, and enhances soft power.

These economic benefits sit alongside the many cultural impacts – such as enriching a nation's sense of itself – delivered by the screen ecosystem. These benefits have been recognised for decades and have often been the starting point for government strategies addressing the sector.

Accordingly, public policies have been implemented around the globe to stimulate greater levels of domestic and internationally-sourced productions, most noticeably the extremely effective tool of automatic (i.e. non-selective) fiscal incentives such as cash rebates and tax credits. These are a cornerstone of the strategy for the sector and their use has grown to the point where there are now almost 100 such automatic incentives in operation globally.

Against this backdrop, governments around the world now face considerable economic challenges posed by the need for recovery from the COVID-19 pandemic.

The intent of this analysis (the "Study") is therefore to provide a robust demonstration of the global economic power of Screen Production and examine its potential to assist economic recovery in the wake of COVID-19. This Study shows how maintaining and encouraging Screen Production at a national, regional and local level is one of the solutions to rejuvenating economies across the world.

1.1. Capturing the Benefits that Screen Production Delivers

The information and evidence in this Study build on a number of reports published by SPI in recent years, containing recommended actions for governments to maximise the economic benefits of Screen Production. The studies also reflect on and explain different aspects of the ecosystem, largely to demystify the economic characteristics of this sector. A selection of these are set out below and a summary of the findings of and links to these studies, including identification of some successful policy initiatives, is found in Section 8.

- **The Global Production Deluge (February 2020):** An evidence and discussion paper exploring the opportunities and challenges faced by Screen Production at the time of a worldwide content investment boom.³
Link: <https://www.o-spi.co.uk/wp-content/uploads/2020/03/Global-Production-Production-Deluge-Evidence-and-Discussion-Paper-Final-2020-02-25.pdf>
- **Best Practice in Screen Sector Development (September 2019):** A report examining effective strategies and policies used by governments around the world to maximise their share of the high-value Screen Production market. The research provides insight into the methods that established and emerging markets alike use to successfully build

² "Screen Production" refers to the production of feature films, television drama and factual television

³ Commissioned by Film i Väst in co-operation with Göteborg Film Festival's Nostradamus project and in association with Cine-Regio

competitive screen sectors, and contains best practice findings for automatic incentives, workforce capacity, capacity building in physical infrastructure and services, and film-friendliness.⁴

Link: <https://d2pr6jkptl5mr9.cloudfront.net/afci/media/2019/10/08224749/AFCI-Best-Practice-Study-2019-09-13-Final-Cover.pdf>

- **Global Film Production Incentives White Paper (June 2019):** A report providing detailed insight into the growth of Screen Production incentives worldwide. With nearly 100 such systems operational globally, the White Paper outlines their function and impact in select jurisdictions and identifies key trends in their usage and formulation.⁵

Link: <https://www.o-spi.co.uk/wp-content/uploads/2019/06/Olsberg-SPI-Global-Incentives-White-Paper-Final-2019-06-04.pdf>

- **Film and the Creative Economy: How Film and Television Drama Productions Grow the Creative Industries (July 2017):** This report quantifies a previously unmeasured economic impact derived from feature film and television drama production expenditure. It demonstrates that Screen Productions drive a significant (and perhaps unexpectedly large) amount of activity in the other creative industries.⁶

Link: <https://www.o-spi.co.uk/wp-content/uploads/2017/07/SPI-Creative-Industries-Report-2017-07-31.pdf>

In addition, and alongside many other consultancies, SPI has undertaken a number of economic impact studies that identify a range of metrics typically used when governments are assessing the comparative value of the sectors that they are keen to support. An example is:

- **Screen Business – How Screen Sector Tax Reliefs Power Economic Growth Across the UK (October 2018):** An analysis of the UK's Screen Sector Tax Reliefs demonstrating the vital impact which production and development supported by the Screen Sector Tax Reliefs has on the UK's economy.⁷

Link: <https://www.o-spi.co.uk/wp-content/uploads/2018/10/Screen-Business-Full-Report.pdf>

1.2. Evidence in this Study

In reviewing these reports and many others it is clear that there is a lack of evidence in two important areas – macro and micro – that this Study seeks to address. These are:

- **Macro – the global reach and size of the sector:** There is no robust measure of how much is invested globally in Screen Production and its economic impact around the world, so far as SPI is aware.
- **Micro – the breadth and speed of economic effect it delivers:** An explanation is lacking concerning exactly how individual productions create rapid and positive impacts across a variety of individual business sectors, particularly those outside the creative industries.

It is the missing elements of information that this Study is intended to provide.

⁴ Commissioned by the Association of Film Commissioners International

⁵ Commissioned by the Motion Picture Association

⁶ Sponsored by the Copenhagen Film Fund (Denmark), Film i Väst (Sweden), the Netherlands Film Fund and Screenwest (Australia)

⁷ Commissioned by the British Film Institute and written by Olsberg•SPI with Nordicity

2. EXECUTIVE SUMMARY

2.1. About the Study

As noted in the previous section, the value of Screen Production has increased substantially at a local and global level in recent years. Driven by voracious consumer appetite and major investments from established and new production entities alike, Screen Production is now a key economic driver in very many nations and regions.⁸

This major new analysis presents a robust demonstration of the global economic power of Screen Production and examines its potential to significantly assist economic recovery from the COVID-19 pandemic. It includes the following elements:

1. A forensic analysis of global Screen Production expenditure in 2019. This Study represents the first time that spend has been quantified globally to such a detailed degree⁹
2. An analysis of the economic impacts delivered by Screen Production. Utilising a meta-analysis approach, this element focuses on output and employment, and involved analysis of impact metrics in 47 studies
3. Evidence on the speed and efficiency with which production spend is typically undertaken across the production cycle, based on budget analysis of actual projects
4. An assessment of which economic sectors as a whole benefit from this investment, particularly those supply chain industries severely hit by the current downturn
5. A calculation of the economic losses to output and employment caused by the current COVID-19 related hiatus during the first six months of 2020.

2.2. Key Findings

2.2.1. Global Screen Production Expenditure

Global expenditure on Screen Production reached an estimated **\$177.0 billion** in 2019. This is a new high watermark that would very likely have been exceeded in 2020 – given that trends in rising production volume and value were ongoing – had the COVID-19 pandemic not dramatically slowed production worldwide.

This total incorporates direct production spend by studios, broadcasters, streaming services, producers and funding bodies, as well as third-party spending in the form of pre-sales, minimum guarantees, advances and co-financing. The figure is for new feature films and first-run programming only. It does not include re-runs, rights to library programming and spending on sports and news.

Of the 2019 total, **\$42.6 billion** was spent making feature-length films, representing 24% of last year's global production volume. This aggregated number encompasses theatrical films, low-budget independent titles, animated and documentary features. The remaining **\$134.3 billion** is made up of television films, drama series and youth programming – and also some element of light entertainment and current affairs where it was not possible to remove such non-scripted content from the aggregated figures found in company reports and territorial surveys. The costs of sports rights, news broadcasts and library rights have been completely removed, as has double-counting between countries and companies involved in collaborative productions.

The analysis found that as much as 65% of global Screen Production investment originated from the US, primarily from studio conglomerates, streaming services and major technology

⁸ In the UK, for example, data from the Office of National Statistics shows that film and television helped stop the country going into recession for the period June to August 2019. *Film and TV boom pushes UK economy into black.* Broadcast, 11th October 2019

⁹ More than 100 sources of information were consulted during this quantitative research process

companies. Spend from these companies increased by 28% between 2018 and 2019. While the majority of spend originates from the US, the impact of US investment is global – with many US-backed projects shooting around the world.

2.2.2. *Employment and Economic Impacts*

The employment and economic impacts of this production expenditure are highly significant.

We estimate that **14.2 million** jobs are supported by the global screen sector value chain, (encompassing exhibition and distribution of physical and digital media and the various forms of video-on-demand, in addition to Screen Production). This comprises **4.4 million** direct jobs and **9.8 million** indirect and induced jobs supported by expenditure by the screen sector and by people employed in the screen sector value chain.

The total economic impact of the global Screen Production sector in 2019 is estimated to be **\$414.0 billion**. This comprises **\$177.0 billion** of direct output and **\$237.0 billion** of indirect and induced output.

The analysis of economic impact focuses on three dimensions of economic impact:

- **Direct** – employment and economic output created by Screen Production, i.e. the production of film and television.
- **Indirect** – output and employment arising from business purchases which Screen Production makes from other sectors in the course of production (e.g. transport, hospitality, equipment manufacturers)
- **Induced** – output and employment arising due to spending by people who are employed by Screen Production (including freelancers). For example, Screen Production sector employees will buy goods and services using earnings they have received from the sector.

In addition, the analysis of employment impacts considers the direct, indirect and induced impacts of employment in the wider screen sector value chain.

Using a meta-analysis approach, nearly 50 studies were assessed and they provided evidence for the size of the multipliers for economic output and employment at country and regional level, with the multipliers showing total economic impact of Screen Production in each. To derive a global multiplier, an average of multipliers for each country was calculated, and weighted by the amount of investment in each country.¹⁰

2.2.3. *Comparable Sectors*

Comparative research was undertaken to compare the scale of the global Screen Production sector with other industrial sectors in direct impact terms. This showed that Screen Production is more sizeable than sectors including electric motor vehicles and robotics (industrial and service) which have seen considerable investments in recent years.

Comparison was also undertaken with other creative industries with a similar value base in intellectual property and copyright. This analysis found that the global Screen Production sector is almost 10 times bigger than the global recorded music sector, and significantly larger than the size of the global book publishing sector. Such sectors benefit from the supply chain of Screen Production through, for example, the licensing of music and the optioning of novels.

2.2.4. *The Speed of Spend*

Screen Production can deliver substantial and powerful amounts of expenditure in a short space of time. By way of illustration, productions can be likened to major, specialist, high-tech

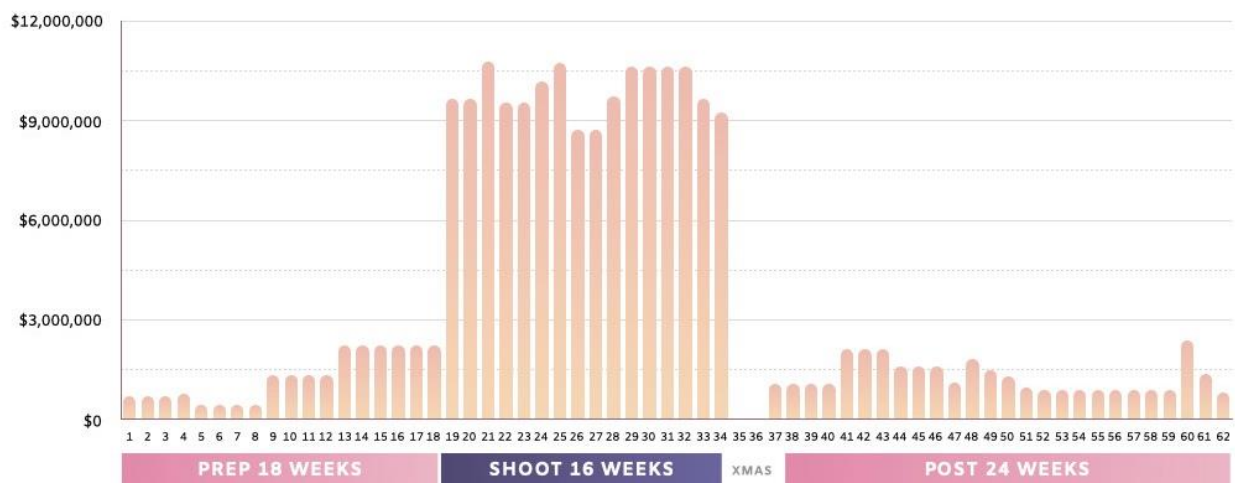
¹⁰ As outlined in Section 3.2.5, the meta-analysis focuses on studies with robust approaches to economic assessment and discarded any that utilised multipliers outside of an average range

manufacturing operations that quickly arise, expend huge sums and employ hundreds of people, before shrinking to a handful of key operatives as the bulk of those previously employed move on to new projects.

A number of representative projects were analysed to illustrate how fast and to what extent the expenditure takes place. These included: a major film with a budget of a \$220 million; a mid-budget film with a budget of \$20 million; a low-budget film with a budget of \$6 million; a high-end television series with a budget of \$70 million; and a mid-budget television series with a \$13 million budget. Collectively, these productions spent over \$228 million during the period of principal photography.

The example of a major film below shows that an average of \$9.9 million was spent on a weekly basis during a 16-week shoot.

Figure 1: Major Film Cashflow (\$220 Million Budget)



When the COVID-19 stoppage began there were hundreds of projects, of all sizes, that were either already in production and had to stop, or close to entering the stage of principal photography and were put on hiatus. Once infrastructure opens up again, there is a substantial backlog of production which companies are eager to start, with the ability to deliver very substantial spend at speed.

2.2.5. Impact on Business Sectors

Screen Production expenditure also delivers benefits to a wide range of business sectors in an economy – including those that have been particularly harmed during the pandemic, such as travel and hospitality, as well as freelance workers.

To provide evidence of this phenomenon, a forensic analysis of the cost reports of a number of actual projects was undertaken.

The analysis found that the proportion of production costs for these projects spent in the overall economy was an average of 67%, with 33% spent specifically in the Screen Production sector – as outlined in the following table.

Table 1: Proportion of Production Spend in Other Business Sectors by Project Type

	Major Film (\$220m)	Mid- Budget Film (\$20m)	Low- Budget Film (\$6m)	High- End TV Series (\$70m)	Mid- Budget TV Series (\$13m)	Average
	%	%	%	%	%	%
Screen Production Specific	42.5	30.2	32.1	37.3	23.3	33.1
Business Support	11.4	16.0	5.8	11.9	15.9	12.2
Construction	14.6	5.5	2.6	24.6	8.5	11.2
VFX & Interactive	12.5	6.4	1.8	8.1	4.5	6.7
Travel & Transport	4.3	8.3	16.8	1.3	9.8	8.1
Hospitality & Catering	2.3	3.6	10.6	3.6	12.8	6.6
Finance & Legal	1.5	6.8	11.5	1.3	6.7	5.6
Real Estate	1.6	9.7	7.6	2.2	6.4	5.5
Fashion & Beauty	4.6	2.2	7.6	5.4	5.8	5.1
Music & Performing Arts	2.7	6.4	2.2	2.8	3.4	3.5
Power & Utilities	1.1	1.0	0.3	1.0	0.4	0.8
Safety & Security	0.5	1.2	0.2	0.2	1.4	0.7
Training & Education	0.1	1.2	0.7	0.1	0.8	0.6
Health & Medical	0.3	1.5	0.2	0.2	0.3	0.5
	100.0	100.0	100.0	100.0	100.0	100.0

2.2.6. Strategic Use of the Screen Sector in Economic Rebuilding

Given Screen Production's ability to impact an economy significantly and at high speed, a number of governments are already looking to the sector as a key component of economic recovery in the wake of the pandemic.

This is being undertaken through a range of measures to encourage production to restart, including financial and logistical provisions. Such measures reflect the challenges productions may face in the wake of COVID-19.

A number of funding bodies have reallocated or increased funding to ensure that production can resume quickly when restrictions on workplaces or public gatherings are removed. In Australia for example, Screen Australia has doubled the funding to its Premium Development fund, allocating \$3.4 million targeting high-budget productions "with firm market interest that are close to being production ready".¹¹ Screen Queensland has reallocated \$3.3 million in funding to support the industry and ensure that as many productions as possible are ready to resume or start filming as soon as the Queensland Government deems it safe.¹²

In a statement on 11th May, the Canada Revenue Agency (CRA) stated that "The Canadian film industry is an important contributor to the economic and cultural well-being of Canada" before outlining a number of measures implemented by the CRA to streamline the claim processes of the Film and Media Tax Credits.¹³

A number of logistical provisions are also being made to expedite a restart of production. For example, New Zealand has introduced a special entry visa classification of "other essential worker", which film professionals may apply for to enter the country.

¹¹ Screen Australia increased Premium Development fund. IF.com.au, 3rd April 2020

¹² Screen Queensland unveils \$3.3 million industry support package. IF.com.au, 8th April 2020

¹³ Important information related to the Film and Media Tax Credits Program during the Covid-19 crisis. Canada Revenue Agency, 11th May 2020

3. THE VALUE AND ECONOMIC STRENGTH OF SCREEN PRODUCTION

This section describes the worldwide expenditure on Screen Production (**\$177 billion** in 2019), identifying the sources of investment and the spread around the globe where production takes place. It evidences the economic impact of **14.2 million jobs** created in the global screen sector value chain and **\$414 billion** of economic output from Screen Production. The latter far exceeds many other sectors both within and outside the creative industries.

3.1. Global Production Expenditure

The global Screen Production sector is a major economic driver, delivering substantial amounts of expenditure and economic impact to countries around the world. The value of the sector has also been increasing at a rapid rate in recent years – driven by voracious consumer appetite worldwide, technological changes, and increased content investment from new and established producers alike.

This section provides a detailed and robust estimate of the scale of global Screen Production spend in 2019, revealing for the first time the true value of the sector in global terms.

3.1.1. The Value of Global Screen Production

The combined global production spend on feature film and television reached an estimated **\$177.0 billion** in 2019. This is a new high watermark that would very likely have been exceeded in 2020 – given that trends in rising production volume and costs were ongoing – had the COVID-19 pandemic not dramatically slowed Screen Production worldwide.¹⁴

This global production expenditure estimate of \$177.0 billion is the result of a forensic effort to put a dollar value on how much studios, networks, streaming services, producers and funding bodies around the world invest in annual production on a gross cash basis. This total incorporates both direct production costs last year as well as 2019 third-party spending on new, non-sports and non-news programming through pre-sales, minimum guarantees, advances and co-financing. As a global total, it includes production in all markets worldwide in any language.

Of the 2019 total, **\$42.6 billion** was spent making feature-length films, representing almost a quarter (24%) of last year's global production volume. This aggregated number encompasses theatrical films, low-budget independent titles, animated and documentary features.

The remaining **\$134.3 billion** is made up of television films, drama series and youth programming – and also some element of light entertainment and current affairs where it was not possible to remove such non-scripted content from the aggregated figures found in company reports and territorial surveys. Eliminated entirely from the global calculations are the costs of sports rights, news broadcasts and library rights. Double-counting was also removed between countries and companies involved in collaborative productions, between film and television spending data and between licensing and production figures.¹⁵

The analysis found that 65% of Screen Production financing originated in the US, primarily from studio conglomerates, streaming services and large technology companies. A granular examination of financial reports across all of those studios and streamers revealed a collective 28% increase in Screen Production spending from 2018 to 2019. Had a pandemic not intervened, this surge showed every sign of being followed by another annual leap as yet more

¹⁴ As outlined in Section 6, shutdowns and restrictions related to COVID-19 resulted in a 70% decline in production globally

¹⁵ See Appendix Two for full details of methodology used

subscription video services look to establish themselves with substantial original content budgets of their own.

After the US, Europe represents the next single largest regional funding bloc (16.5% of the global total), followed by Asia (13.1%). The remaining 4.5% of the world's production financing is divided across Latin America, Africa, the Middle East and Oceania, as well as non-US small budget independent feature films.

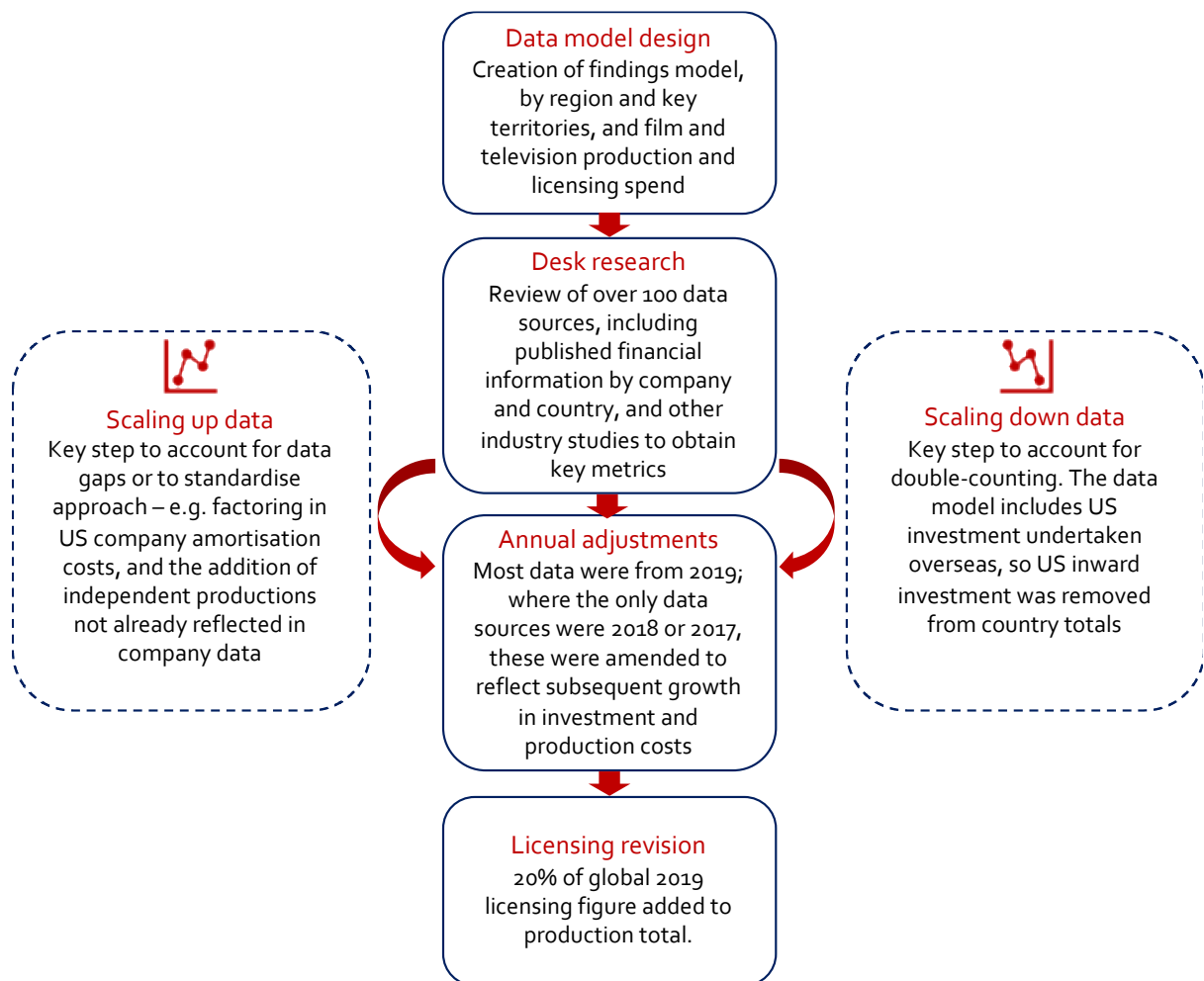
3.1.2. Overview of Valuation Methodology

To estimate the value of global Screen production, a highly-detailed research process was undertaken. As outlined in the following figure, and in further detail in Appendix Two, this process involved a number of methodological steps. Firstly, a data model was created, and populated with the results of company financial reports, national statistics, and other data sources on film and television production expenditure and licensing. In total, more than 100 data sources were reviewed.

Once all available data were collated, a number of assumptions had to be made to account for data gaps. This involved both scaling up and scaling down the data to account for a number of areas of potential under or double counting. For example, since US companies report net figures in their accounting, amortisation costs for both production and licensing of released content were also factored in, to establish a gross total that better equates to annual spending on a cash basis.

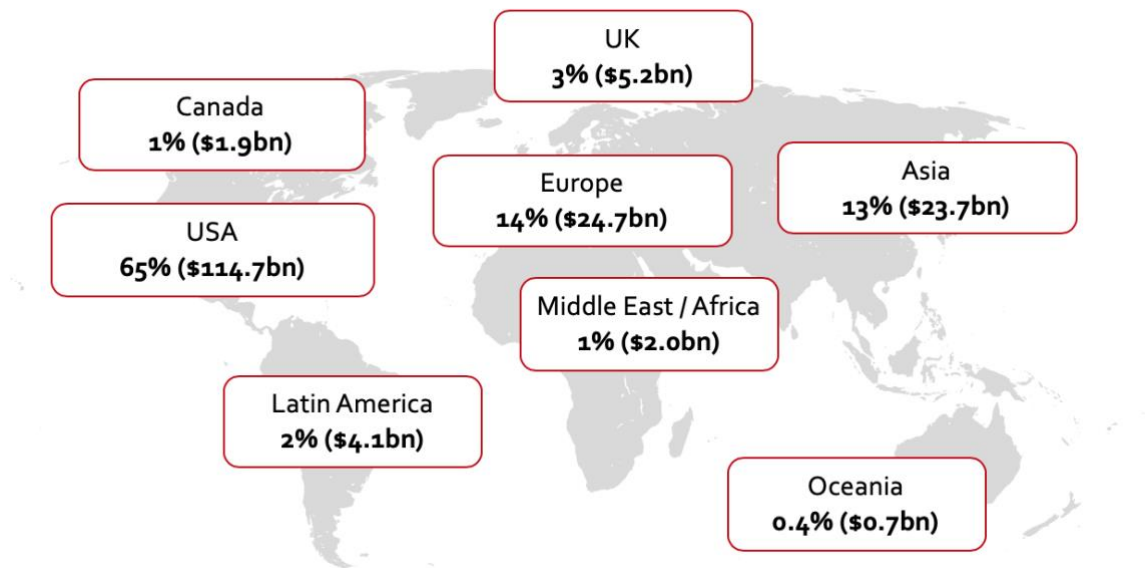
Finally, detailed research was undertaken into the issue of licensing to determine how much of that activity is investment in new programming produced by third parties (as opposed to the acquisition of rights to library titles). Using broadcaster data from Ofcom (UK), CNC (France) and CMPA (Canada), we were able to determine that at least 20% of total TV spending comes in the form of pre-sales, co-production investments and foreign minimum guarantees, activity that would typically be categorised as licensing activity. We applied that 20% to all licensing spending across the globe to establish a worldwide production spending number that reflects the total annual structure of programming investments.

Figure 2: Overview of Global Screen Expenditure Valuation Methodology



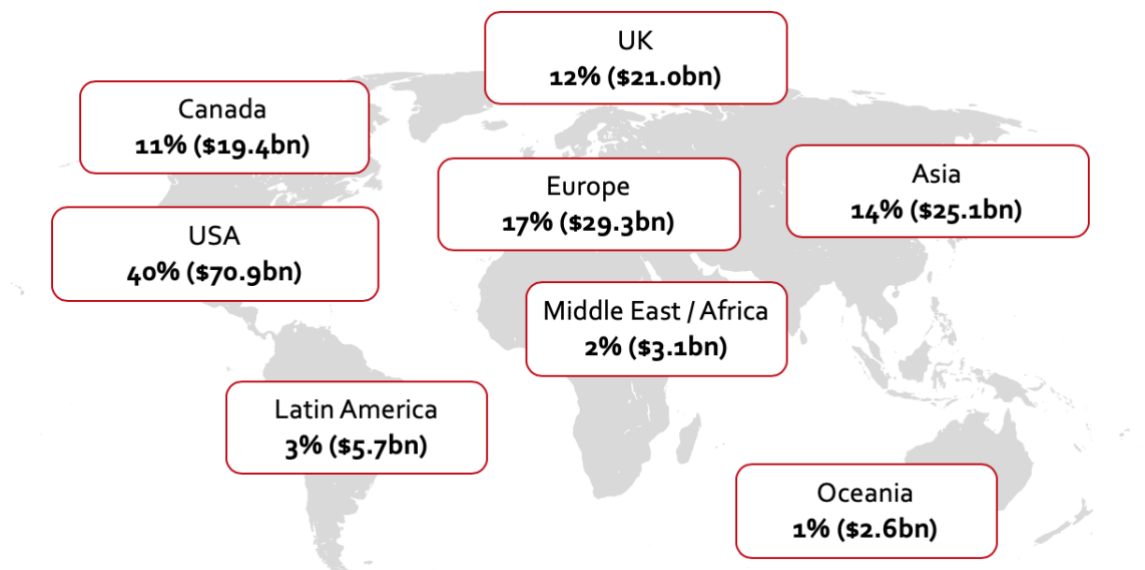
3.1.3. Investment Sources and Global Flow

As the base of the major content-producing studios and services, the majority of global production investment of \$177 billion originates in the US – i.e. 65% or \$135.2 billion. Other major regions for production investment are Asia (13% or \$23.7 billion), Europe excluding the UK (14% or \$24.7bn), and the UK (3% or \$5.2 billion).

Figure 3: The Origin of Global Screen Production Expenditure

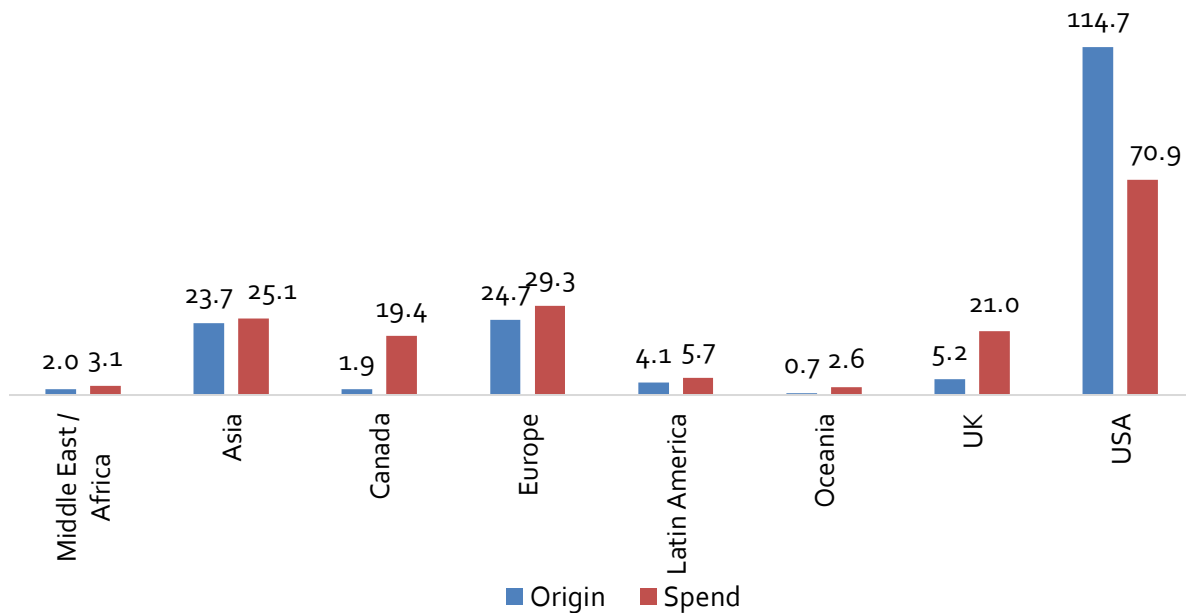
Source: Olsberg•SPI

However, analysis of where investment is spent in the figure below shows that non-US regions represent a much larger share. While 35% of investment originates outside the US, non-US regions and countries represent 60% of spend – a difference of \$42 billion.

Figure 4: Where Global Screen Production Expenditure is Undertaken

Source: Olsberg•SPI

For non-US regions, the investment which originates in these regions is less than the amount spent on Screen Production. For example, in Europe the difference is \$4.6 billion, while in Canada \$17.5 billion more is spent on production than originates in the country. This highlights the positive impact of the global flow of Screen Production on economies around the world.

Figure 5: Comparison of Investment Origin and Spend (\$bn)

Source: Olsberg•SPI

3.2. The Global Economic Impact of Screen Expenditure

3.2.1. Economic Impact

As outlined, Screen Production is the source of significant amounts of expenditure on a global level. This section presents new estimates of the global economic impact of Screen Production in employment and output terms, utilising a meta-analysis of global impact studies. This is the first time that such a systematic and rigorous estimate of global production impact has been undertaken.¹⁶

The analysis of economic impact focuses on three dimensions of economic impact:

- **Direct** – employment and economic output created by Screen Production, i.e. the production of film and television
- **Indirect** – output and employment arising from business purchases which Screen Production makes from other sectors in the course of production (e.g. transport, hospitality, equipment manufacturers)
- **Induced** – output and employment arising due to spending by people who are employed by Screen Production (including freelancers). For example, Screen Production sector employees will buy goods and services using earnings they have received from the sector.

This study follows the methodology of recent studies by SPI for the UK (2018) and Australia (2018), the CMPA for Canada (2020) and Oxford Economics for a range of Asian countries including China (2019), South Korea (2019) and Thailand (2017) by presenting employment estimates for the screen sector value chain, which comprises Screen Production plus other parts of the screen sector such as distribution, exhibition and broadcasting. Screen Production is the driver of this value chain: without Screen Production there would of course be no new

¹⁶ The methodology used to construct the economic impact estimates is presented in Appendix Three

content to exhibit or distribute.¹⁷ It is therefore relevant to present employment estimates using a wider definition of the sector.¹⁸

3.2.2. *Employment and Job Creation*

The total number of jobs supported by the global Screen Production sector is estimated to be **14.2 million**. This comprises:

- **4.4 million** direct jobs in the screen sector value chain
- **9.8 million** indirect and induced jobs supported by expenditure by Screen Production plus the other parts of the screen sector value chain.

As outlined in Appendix Three, employment relates to full-time equivalent (FTE) jobs in the screen sector. FTEs are a method of measuring employment in industries with non-standard or freelance employment patterns, including Screen Production. Each FTE job is equivalent to the average annual work undertaken by an individual employed on a full-time basis.

A regional breakdown of total global employment supported by the screen sector value chain globally is outlined below, including the split between direct and indirect/induced employment. Note that Asia contributes a particularly large proportion of global screen sector employment; this reflects the large size of the screen sector (broadly defined) in China and India in particular, and the fact that (as shown in the Appendix) the multipliers for indirect and induced employment are higher in Asia than in Europe or North America, due to lower wage levels in the industries benefitting from the screen sector's business purchases and spending by screen sector employees.

Table 2: Global Screen Sector Value Chain: Number of FTE Jobs by Region (millions)

Region	Direct	Indirect/Induced	Total
North America	0.92	1.52	2.43
Asia	2.37	6.45	8.83
Europe	0.46	0.58	1.04
Latin America	0.56	1.08	1.63
Africa & Middle East	0.07	0.10	0.17
Oceania	0.03	0.07	0.10
Global	4.40	9.80	14.20

3.2.3. *The Value of Screen Sector Jobs*

While the meta-analysis focused on the volume of employment in the screen sector value chain, research was also undertaken into the value of jobs in the sector. Evidence points to the fact that such jobs are very well remunerated – in some cases significantly higher than the average.

¹⁷ As SPI (2018) states in the *Screen Business* report analysing the impact of tax reliefs for the UK screen sector: "A value chain approach has been undertaken across the sectors in question, which enables the measurement not just of the economic activity stimulated by the development and production of content, but also its downstream impact on various distribution platforms. In the film sector, the analysis includes the traditional exhibition sub-sector, through physical and digital media, and the various forms of video-on-demand (VoD) and subscription video-on-demand (SVoD)."

¹⁸ For the Screen Production sector, narrowly defined, direct employment is around 1.9 million, supporting 3.6 million indirect and induced FTE jobs giving a total economic impact of 5.5 million jobs

For example, according to a 2019 report from the Motion Picture Association (MPA), the Screen industry provided higher than average salaries.¹⁹ According to the Bureau of Labor Statistics, the national average in the USA was \$57,266. In comparison, direct jobs in the industry – those that were engaged in producing, marketing and manufacturing motion pictures, television shows and video content – reported a 50% increase on the national average, typically receiving \$86,049. This difference increased when focusing specifically on production-related jobs, where the average salary was \$101,999 or 78% higher than the national average.

Screen Australia has also reported on employment trends in the industry in Australia, drawing on statistics from the 2016 census.²⁰ The census data reported that 13% of people in film and video production earned between \$35,715 and \$44,644 (AU\$52,000 – AU\$64,999) and 48% earned over \$44,648 (AU\$65,000). For those employed in film and television post-production, 14% were earning between \$35,715 and \$44,644 (AU\$52,000 – AU\$64,999) and 44% earned over \$44,648 (AU\$65,000). A report from the Australian Bureau of Statistics identified the median income in Australia for the 2016/2017 financial year as \$33,215 (AU\$48,360).²¹ Therefore, 61% of those involved in film and television production and 58% in film and television post-production were earning above the median Australian income. This figure was higher again for those employed in television broadcasting, where 62% earned over \$44,648 (AU\$65,000) and 75% earned over the median Australian income in 2016/2017.

Furthermore, the highly skilled and creative jobs in Screen Production are far less vulnerable to replacement by robotics and Artificial Intelligence (AI) than in many sectors. In these terms, they are genuinely jobs of the future.

3.2.4. *Economic Output*

Based on calculated economic output of global Screen Production in Section 0, SPI estimates that the total economic impact of the global Screen Production sector in 2019 was **\$414.0 billion**. This comprises:

- \$177.0 billion of direct output
- \$237.0 billion of indirect and induced output.

A regional breakdown of Screen Production by region – after taking account of inward investment into each country – is outlined below. The table distinguishes between direct output and indirect/induced output.

These breakdowns do not include the impact of inward production, as this spend was counted at source in the valuation model outlined in Section 3.1.

¹⁹ *Creating Jobs, Trading Around the World*. MPA, November 2019

²⁰ *Proportions of employees earning various annual incomes, by industry, 1996-2016*. Screen Australia

²¹ *Personal Income in Australia, 2011-2012 to 2016-17*. Australian Bureau of Statistics, 17th December 2019

Table 3: Screen Production Sector Output Breakdown by Region (US\$bn)

Region	Direct	Indirect/Induced	Total
North America	90.2	120.8	211.1
Asia	25.1	33.6	58.7
Europe	50.3	67.4	117.7
Latin America	5.7	7.6	13.3
Africa & Middle East	3.1	4.2	7.2
Oceania	2.6	3.4	6.0
Global	177.0	237.0	414.0

3.2.5. Overview of Economic Impact Methodology

The methodology used to construct the economic impact estimates is presented in detail in Appendix Three and outlined in the figure below.

This is based on a meta-analysis of existing Screen Production impact studies, with 47 studies across six continents used to create a global impact model. While the direct economic output estimates for global Screen Production are calculated in Section 3.1, it was necessary to undertake this meta-analysis to calculate indirect and induced impacts, and direct employment impacts.

Indirect and induced impacts are normally estimated at the national or sub-national level using detailed input-output (I-O) tables that show the relationship between spending by each industry in a given jurisdiction and income received by other industries.²²

Because I-O tables are not available at the global level, the meta-analysis produced evidence on the size of the multipliers for economic output and employment at the country and regional level and show total economic impact of Screen Production in each country. To derive a global multiplier, an average of multipliers for each country was calculated, weighted by the amount of Screen Production in each country (taking account of investment flows between countries as explained above).

The multipliers in this report are “Type 2” multipliers, which are defined as follows:

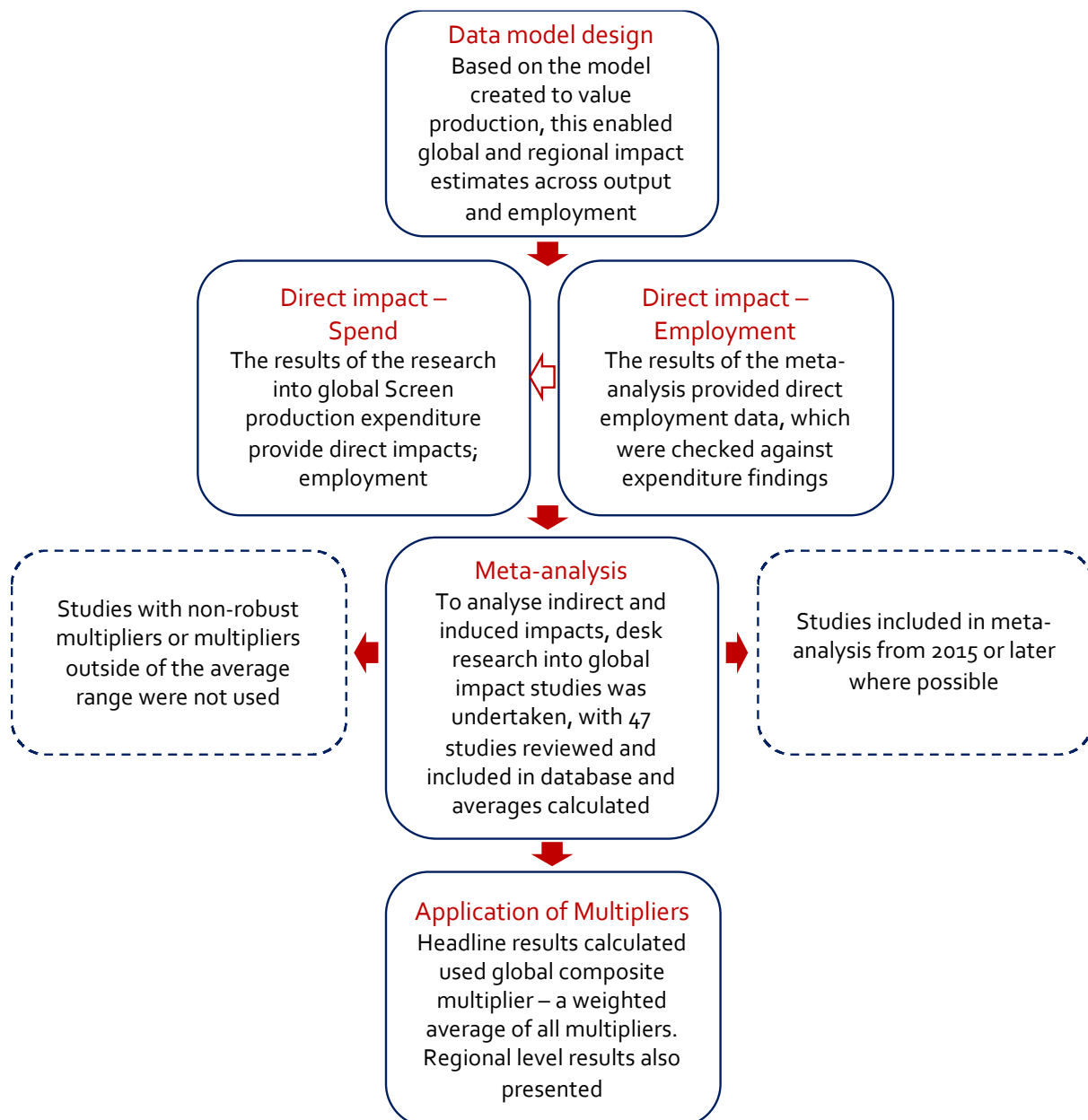
- $(\text{Direct output} + \text{Indirect output} + \text{Induced output}) / \text{Direct output}$.

They are defined in the same way for employment. Multipliers used for the output analysis are specific for the Screen Production sector where possible; for the employment analysis, multipliers for the wider screen sector value chain are used wherever these are available.

The range of the Type 2 multipliers for output and employment in the 47 studies included in the meta-analysis was between 1.5 and 4 in every case. A few studies with outlandishly high multipliers (above 4) were discarded on the grounds of being unrealistic.

The global weighted average multiplier for output is estimated to be **2.27**, while the multiplier for employment is estimated to be **2.71**. Employment and output multipliers by region are included in Appendix Three.

²² Of the studies included in the meta-analysis, 46 used I-O tables. One of the studies included in the meta-analysis used a Computable General Equilibrium (CGE) model to estimate multipliers instead of I-O tables but this approach is rare in the literature. Any studies that did not include an I-O or other robust, verifiable multiplier approach were discounted and not used in the meta-analysis

Figure 6: Overview of Economic Impact Methodology**3.2.6. The Scale of Comparable Sectors**

Using these results, comparative research was undertaken to compare the scale of the global Screen Production sector with other industrial sectors. The table below shows some comparisons with other recent studies of global sectors. It should be noted that all of these studies relate to direct output from each sector, and do not include indirect and induced outputs.²³

The results show that the global Screen Production sector is almost 10 times bigger than the global recorded music sector, and larger than the global book publishing sector. In direct output terms, Screen Production is more sizeable than electric motor vehicles and robotics

²³ Regarding other comparisons, according to calculations by the UBS bank reported in the *Economist*, content spending by 16 companies in the US last year was roughly equal to the sum invested in America's oil industry in 2019. *The future of entertainment*. The Economist, 14th November 2019

(industrial and service) electric motor vehicles and robotics (industrial and service) which have seen considerable investments in recent years.

Several of the comparable sectors example are creative sectors, which are also based on copyright. To a degree, they are also connected to the supply chain of Screen Production, and benefit significantly from that – for example, the licensing of music and the optioning of novels.

Table 4: Recent Estimates of the Global Size of Comparable Sectors to Screen Production (US\$ billion) (Direct outputs)

Sector	Direct Economic Output	Year	Source
Sport	488.5	2019	ResearchAndMarkets.com
Clothing and apparel	758.4	2019	ResearchAndMarkets.com
Wine	354.7	2019	Statista.com
Kitchen appliances	237.3	2019	Allied Market Research
Electrical engineering services	233.7	2019	Business Wire
Screen Production sector	177.0	2019	<i>Global Screen Production – The Impact of Film and Television Production on Economic Recovery from COVID-19 (this Study)</i>
Electric motor vehicles	126.9	2018	Grand View Research
Book publishing	119.0	2019	IBISWorld
Insulation	52.2	2018	Grand View Research
Robotics (industrial and service)	39.7	2019	Mordor Intelligence
Recorded music	19.1	2019	IFPI

Note: all studies measure direct outputs only.

4. THE UNIQUE POWER OF SCREEN PRODUCTION EXPENDITURE

This section demonstrates how the Screen Production sector has proven to be robust, resilient and fast-acting when faced with the task of emerging from a challenging general economic situation. It explains there are very many projects ready to resume or start around the world and demonstrates the speed and magnitude of the consequent Screen Production spend.

4.1. A Rapid and Positive Recovery

Close examination of how feature film and television drama series productions are planned and how investment decisions are made (the “green lighting” process) demonstrates the speed with which productions can be set up. Perhaps of even greater importance are the huge amounts of expenditure that takes place quickly, throughout the supply chain, when these productions do get going. We believe there are very few other sectors that can deliver such a substantial and speedy investment profile.

This section describes these phenomena with some examples and together with the section that follows, evidences the powerful economic impact that occurs when individual Screen Productions are initiated. By way of illustration, they can be characterised as major, specialist, high-tech manufacturing operations that quickly arise, expend huge sums and employ hundreds of people (particularly in the principal photography and visual effects phases) before shrinking to a handful of key operatives as the bulk of those previously employed move on to new projects.

The experience of the general worldwide hiatus in Screen Production caused by the COVID-19 pandemic is worth consideration. Immediately prior to the hiatus, the global Screen Production sector was experiencing huge, unparalleled growth, as is described in Section 7 and as evidenced in the economic impact analysis outlined in this Study. This meant that as the stoppage descended there were hundreds of projects, of all sizes, that were either already in production and had to stop, or close to entering the principal photography stage and were put on hiatus.

Consequently, as infrastructure opens up again, there is a substantial backlog of production eager to get going. This will result in a large number of projects seeking to start production as soon as a country or jurisdiction opens up. There will be many new guidelines or protocols that must be adhered to in these markets, most of which will result in added expenditure in areas of particular importance such as health, security and safety. SPI is confident the demand for production capacity will be substantial and eventually regain the pre-pandemic momentum that was evident before March 2020.

4.2. The Magnitude and Speed of Spend

The backlog of productions is likely to involve three categories of project:

1. Those that were interrupted during production but not abandoned
2. Those that were in pre-production, close to starting principal photography
3. Those in the early stages of pre-production.

Once jurisdictions are open, whether these projects can resume or start quickly will depend on several factors, most particularly the availability of the creative talent attached to a project. However, once projects do get started it can be seen from the following examples that these productions typically spend large amounts on people and supplies in a relatively short period.

We have selected five representative projects to examine the speed and extent of expenditure that takes place. The following table summarises what each production is likely to spend in the period during the shoot.²⁴

Table 5: Overview of Sample Productions and Spend Patterns

Project	Total budget (US\$)	Expenditure during shoot (US\$)	Number of weeks of shoot	Average per week of shoot (US\$)
Major film	220 million	158.7 million	16	9.9 million
Mid-budget film	20 million	13.8 million	8	1.72 million
Low-budget film	6 million	3.4 million	6	0.6 million
High-end TV series	70 million	43.2 million	17	2.6 million
Mid-budget TV series	13 million	9.5 million	12	0.8 million

4.3. Characteristics of the Sample Productions

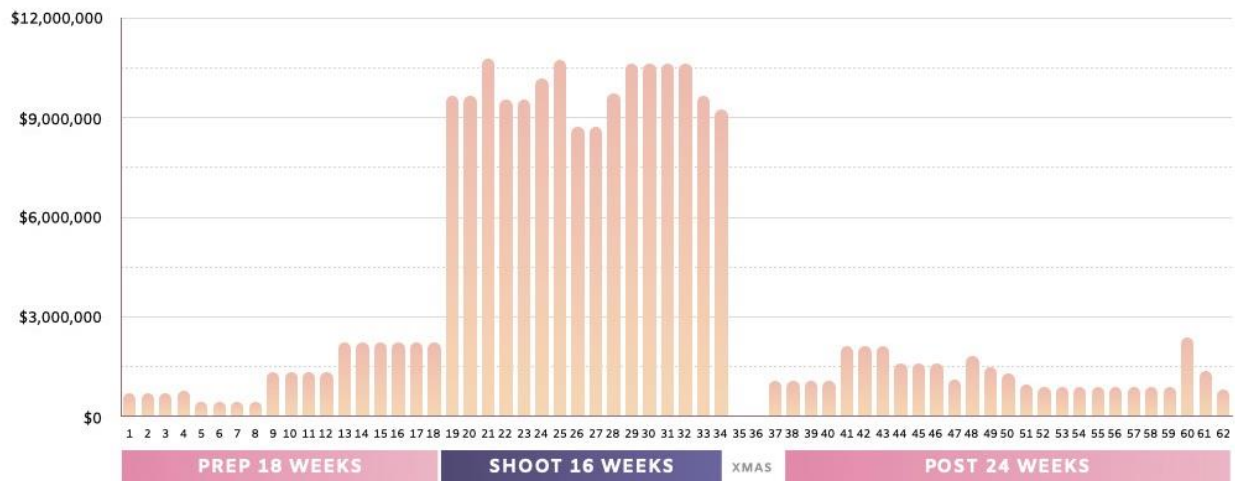
We have selected projects that have standard characteristics likely to be typically found in the relevant genre, so as to avoid outliers – for example, huge budget projects that are heavily dependent on visual and special effects. Several of these examples were shot in more than one location or country, although this does not affect our analyses. An assessment of how these projects contribute to the general and film-specific supply chains is included in Section 5.

Although the expenditure shown in the following charts (and reflected in the above table) is calibrated as if each project starts from scratch, many will get going quickly and the traditional period of pre-production is likely to be shortened for most projects. Many of those that were halted will already have been far into that phase. The positive financial impact of such projects will be experienced even sooner than set out in these examples.

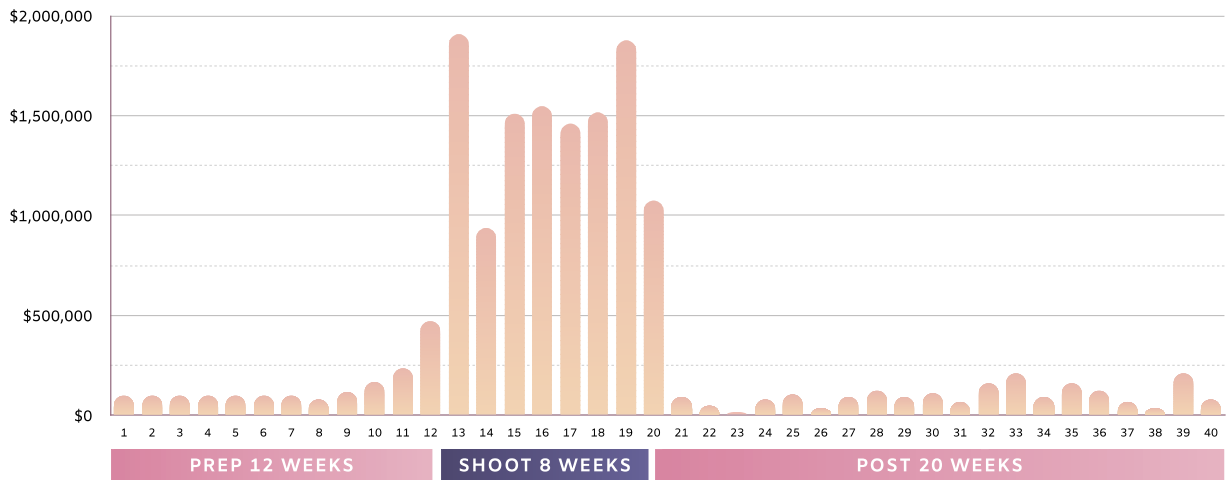
4.3.1. Major Film

This example is of a major film with a budget exceeding \$220 million, with pre-production lasting 18 weeks before the period of principal photography of 16 weeks. During this shoot, a total of \$158.7 million was spent in the relevant local economies. This was a period film shot 13 weeks on sound stages and another three weeks on location in a single country. There was considerable VFX involved.

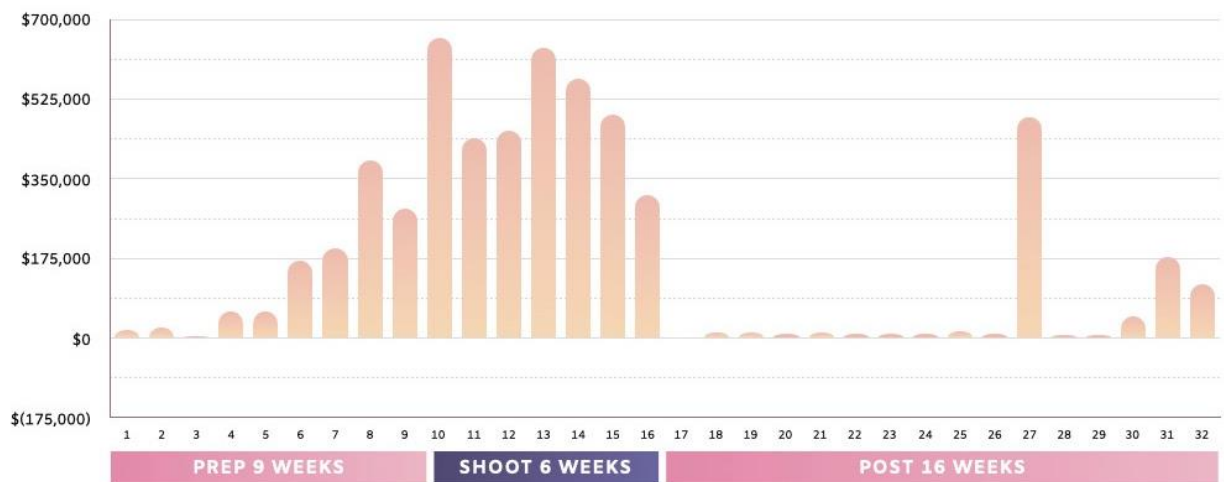
²⁴ The projects are not identified for reasons of to commercial confidentiality

Figure 7: Major Film Cashflow (\$220 Million Budget)**4.3.2. Mid-Budget Film**

This example is of a medium sized independent film with a budget exceeding \$20 million, with a period of pre-production lasting 12 weeks before the period of principal photography of 8 weeks. During this shoot, a total of \$ 13.8 million was spent in the relevant local economies. Most of the shoot was on location and the rest on smaller stages, all taking place in one country.

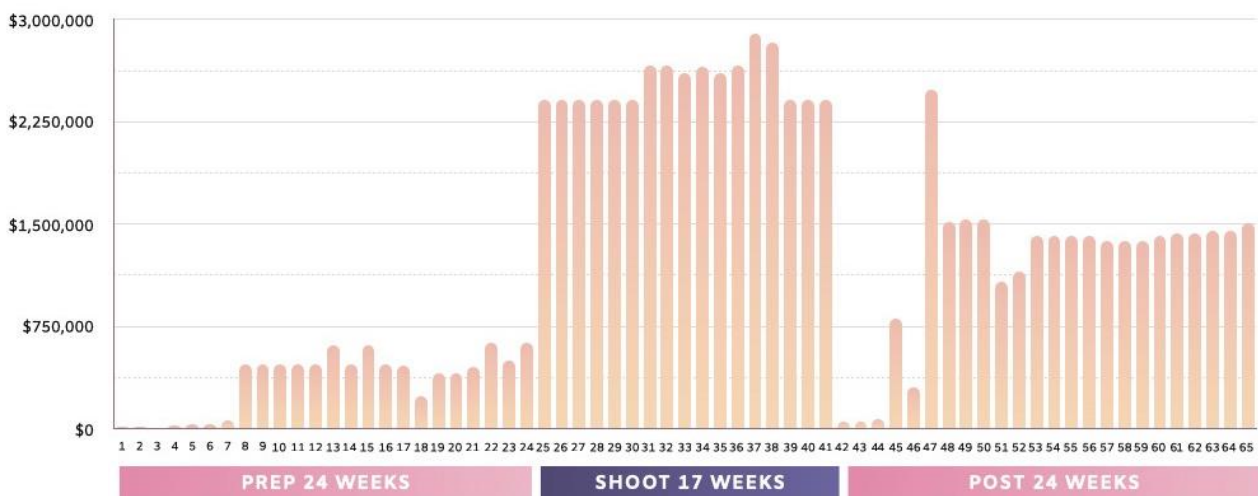
Figure 8: Mid-Budget Film Cashflow (\$20 Million Budget)**4.3.3. Low-Budget Film**

This example is of a low-budget independent film costing \$6 million, with pre-production lasting nine weeks before the period of principal photography of six weeks, all on location in one country. During this shoot, a total of \$3.4 million was spent in the relevant local economies.

Figure 9: Low-Budget Film Cashflow (\$6 Million Budget)

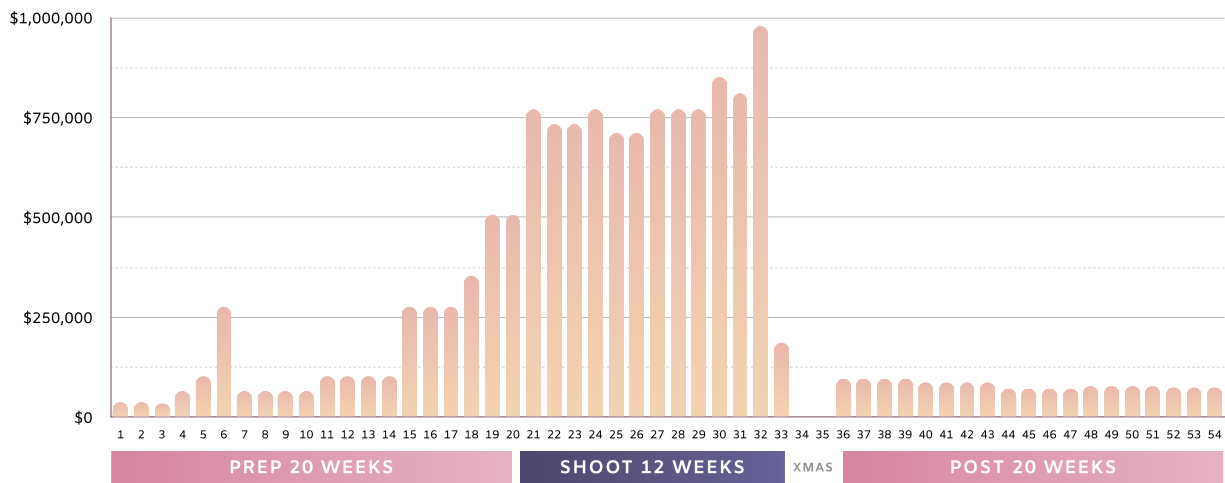
4.3.4. High-End Television Series

This example is of a major television series of nine half-hour episodes with a budget exceeding \$70 million, with pre-production lasting 24 weeks before the period of principal photography of 17 weeks. During this shoot, a total of \$43.2 million was spent in the relevant local economies. The majority of the shoot was studio-based with large sets and the remainder at two locations in one country. The project also had significant CGI/VFX elements.

Figure 10: High-End TV Series Cashflow (\$70 Million Budget)

4.3.5. Mid-Budget Television Series

This example is of a mid-budget television series of four hour-long episodes with a budget exceeding \$13 million, with pre-production lasting 20 weeks before the period of principal photography of 12 weeks, split equally between two countries, including around four weeks on stages, with the remainder a number of locations. During this shoot, a total of \$9.5 million was spent in the relevant local economies.

Figure 11: Mid-Budget TV Series Cashflow (\$13 Million Budget)

4.4. Economic Impact of Resuming Production

Taking all these figures into account, if there was a jurisdiction with the capacity to handle all the above five projects at the same time, then there would be an economic injection for the collective period of the shoots of over \$228 million.

This broad estimate assumes each project could be shot entirely in that one jurisdiction, following the aim of limiting travel – a likely preference in a post-pandemic world, although possibly impractical for the very largest of these productions.

5. THE IMPACT OF PRODUCTION SPENDING ACROSS ECONOMIC SECTORS

This section provides deeper analysis into the nature of Screen Production spend and explains how Screen Productions use the outputs, skills and services of a variety of important business sectors throughout an economy. These include areas that have been particularly damaged during the pandemic, such as travel and hospitality, and which also rely on substantial numbers of freelance workers who have experienced vulnerability and difficulty in recent months.

5.1. Economic Impacts

The positive economic effect generated by the expenditure of Screen Productions has long been accepted and has been described in detail in earlier sections of this Study. The quantitative proof that they generate economic value is shown in published studies by analysing how budgets are spent in the sector and the wider economy. These studies identify the direct, indirect and induced impacts, which represent the currently recognised, primary economic benefits of production frequently referred to as standard economic effects, including those derived from multipliers. For the purpose of our study we refer to these as 'vertical' impacts.

This section identifies an additional facet of these economic benefits that expands on the normal multiplier impacts. It provides more detail on the economic value of Screen Production, derived from analysing production expenditure according to the industry or supply chain sector into which the money is spent. We call this the "Ripple Effect".

It is well known that producing ("manufacturing") a typical film or television drama series involves drawing on a wide range of personnel, skills, services, facilities and infrastructure from other creative industries. As noted elsewhere, SPI produced a report in 2017 that examined this positive impact.²⁵ Analysis of a group of sample productions showed that between 38% (film) and 47% (television drama) of the expenditure has a positive impact on other creative industries.

We have now expanded this analysis of the Ripple Effect by measuring the impacts of such expenditure on a range of other supply sectors, thereby providing a deeper analysis of the economic benefits of production spend that benefit other business sectors.

Our purpose is to demonstrate just how potent these productions are as engines of growth, not just for the creative industries of which they are a part, but for the wider economy.

The research done for the current study examines economic impact throughout the entire economy.

5.2. Breadth of Impact Across Business Sectors

The method undertaken for this study involved a forensic analysis of the cost reports of the same sample productions used in the expenditure analysis made in the previous section:

1. \$220 million major film
2. \$20 million mid-budget film
3. \$6 million low-budget film
4. \$70 million high-end television series
5. \$13 million mid-budget television series.

Below-the-line production expenditure identified in the cost reports was analysed according to a number of business sectors that typically supply goods and services to Screen Productions.

²⁵ *Film and the Creative Economy: How Film and Television Drama Productions Grow the Creative Industries*

Suppliers whose output is exclusively used in Screen Production have been excluded from the analysis of where costs are incurred in the more general economy, which is the metric that this exercise wishes to identify.

Most above-the-line costs such as sums paid to leading actors, writers and producers were excluded as in many cases these were very large items that would skew the analysis and often were paid to individuals in countries outside the jurisdiction where – most costs were incurred.

The analysis found that the proportion of production costs for these projects spent in what may be termed the general economy was an average of 66.9% – with 33.1% spend in the specific Screen Production sector, as outlined in the following table. Importantly, significant amounts (depending on the size of the production) are spent in sectors suffering badly at present, such as Travel & Transport and Hospitality and Catering. Although the sums are lower, money is also spent in service areas such as Safety & Security and Health & Medical. These areas will become far more important as the world recovers from the current pandemic and the proportion of budgets spent in those sectors will doubtless increase.

Table 6: Proportion of Production Spend in Other Business Sectors by Project Type

	Major Film (\$220m)	Mid- Budget Film (\$20m)	Low- Budget Film (\$6m)	High- End TV Series (\$70m)	Mid- Budget TV Series (\$13m)	Average
	%	%	%	%	%	%
Screen Production Specific	42.5	30.2	32.1	37.3	23.3	33.1
Business Support	11.4	16.0	5.8	11.9	15.9	12.2
Construction	14.6	5.5	2.6	24.6	8.5	11.2
VFX & Interactive	12.5	6.4	1.8	8.1	4.5	6.7
Travel & Transport	4.3	8.3	16.8	1.3	9.8	8.1
Hospitality & Catering	2.3	3.6	10.6	3.6	12.8	6.6
Finance & Legal	1.5	6.8	11.5	1.3	6.7	5.6
Real Estate	1.6	9.7	7.6	2.2	6.4	5.5
Fashion & Beauty	4.6	2.2	7.6	5.4	5.8	5.1

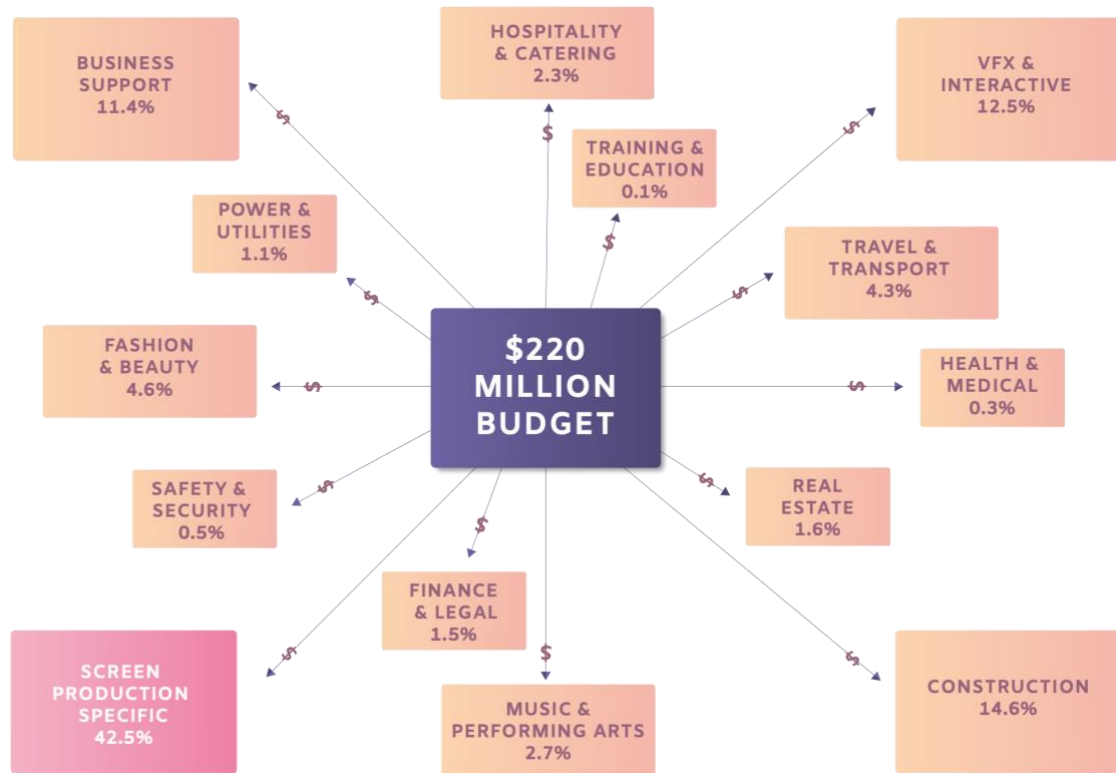
	Major Film (\$220m)	Mid- Budget Film (\$20m)	Low- Budget Film (\$6m)	High- End TV Series (\$70m)	Mid- Budget TV Series (\$13m)	Average
	%	%	%	%	%	%
Music & Performing Arts	2.7	6.4	2.2	2.8	3.4	3.5
Power & Utilities	1.1	1.0	0.3	1.0	0.4	0.8
Safety & Security	0.5	1.2	0.2	0.2	1.4	0.7
Training & Education	0.1	1.2	0.7	0.1	0.8	0.6
Health & Medical	0.3	1.5	0.2	0.2	0.3	0.5
	100.0	100.0	100.0	100.0	100.0	100.0

5.3. Analysis of Individual Projects

Examples of how the expenditure for each of our five productions was distributed across the economy are set out in the figures below.

5.3.1. Major Film

Figure 12: Supply Chain Analysis – Major Film



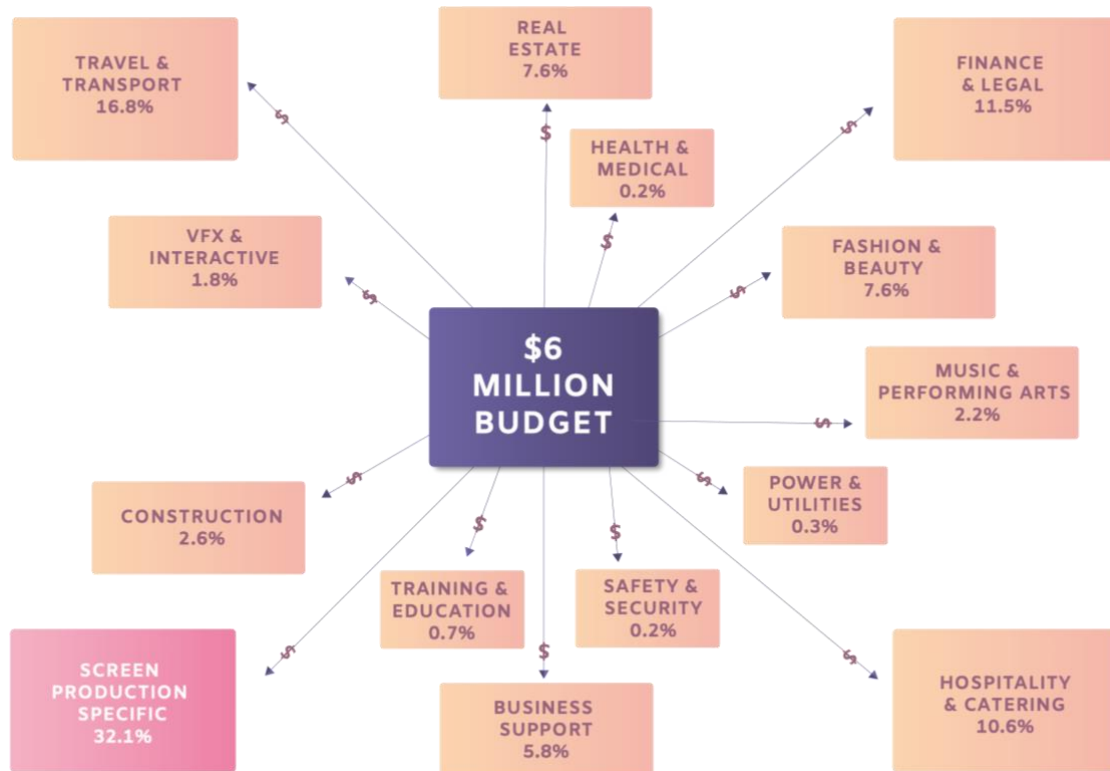
5.3.2. Mid-Budget Film

Figure 13: Supply Chain Analysis – Mid-Budget Film



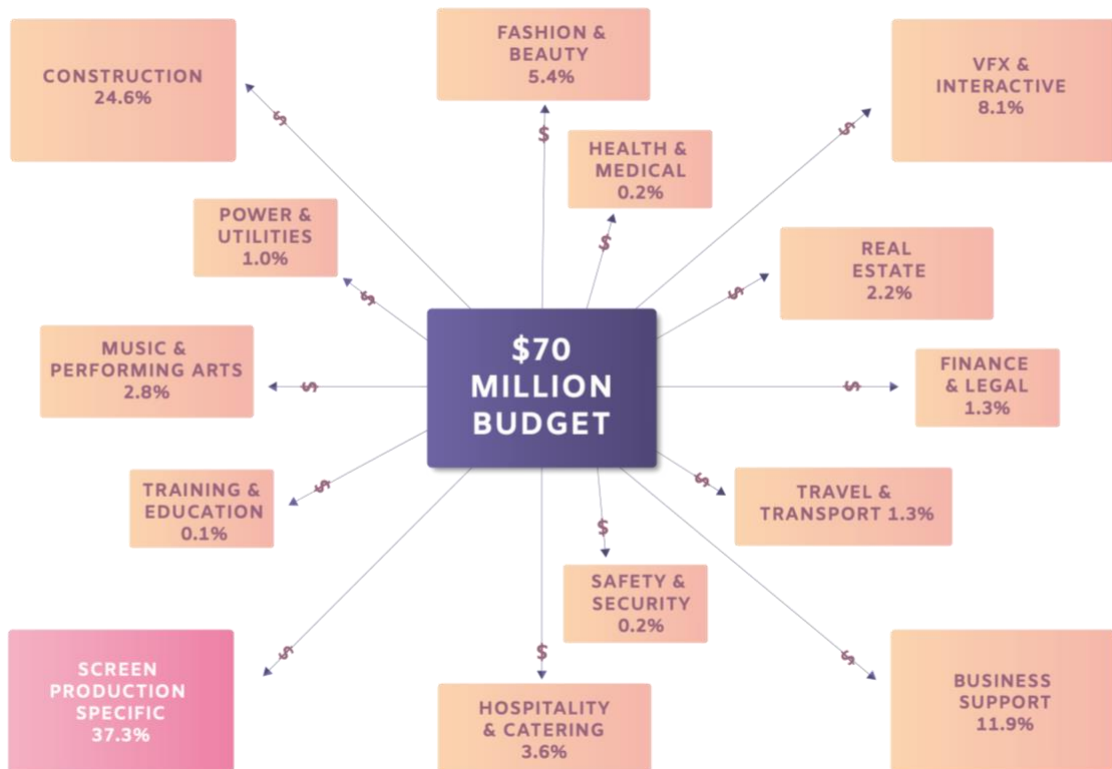
5.3.3. Low-Budget Film

Figure 14: Supply Chain Analysis – Low-Budget Film



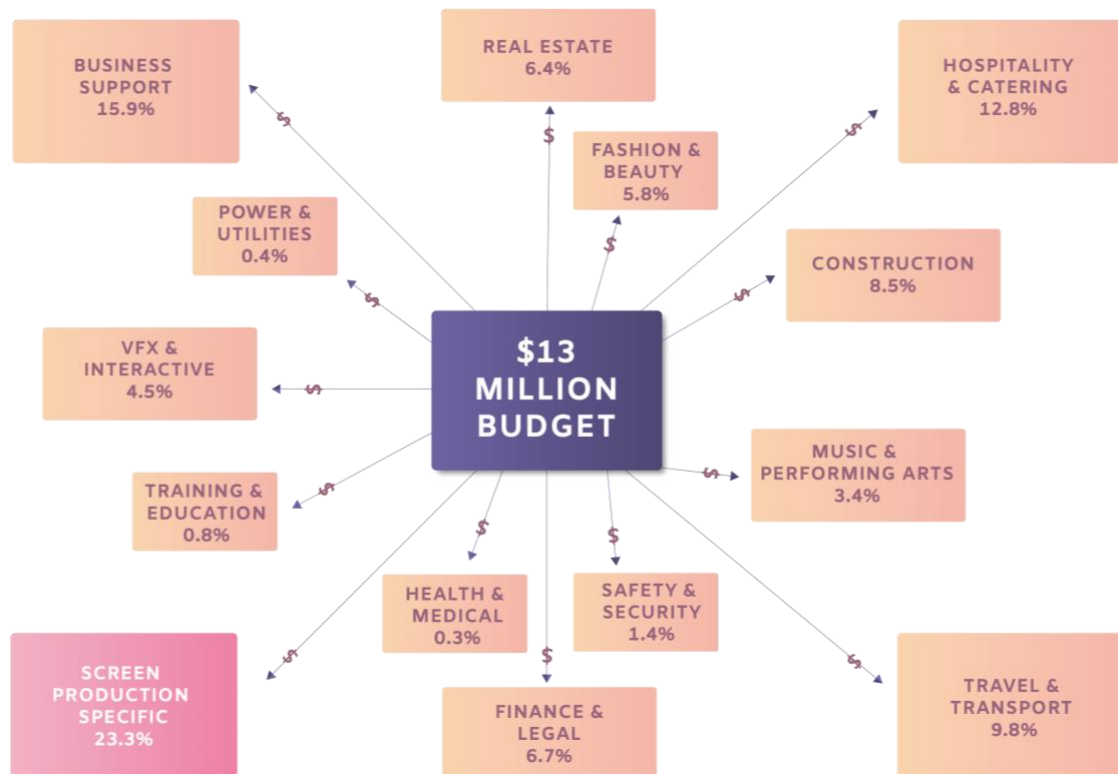
5.3.4. High-End Television Series

Figure 15: Supply Chain Analysis – High-End Television Series



5.3.5. Mid-Budget Television Series

Figure 16: Supply Chain Analysis – Mid-Budget Television Series



5.4. Categorisation of Business Sectors

In general, the approach of the analysis was to identify those costs that were spent in a sector that also supported other industries in addition to Screen Production and allocate them accordingly. The exception to this is the Screen Production-specific category where it was determined that the services and people employed in these areas were Screen Production sector specialists and currently not involved in other business areas.

The categories of business sectors were derived as follows:

5.4.1. Screen Production-specific

A large proportion of the Screen Production allocation is to the wages of Screen technicians. Some of these roles are very specific to the Screen Production sector although in other cases the skills could be and are redeployed into other economic sectors. Examples of this can be found in the category descriptions below.

General business project management skills, for example, are very akin to the roles of some Screen Production staff. Design staff have skills that would readily be employed in the architecture field. However, many of those working in this sector have devoted their working lives to it and have become highly specialist.

Also included in this category are suppliers and services wholly committed to Screen Production; such as the rental of studio sound stages, offices, backlot and related items.

5.4.2. Business Support

Like any economic activity, Screen Production uses the services of the general business equipment and supplies sector in many ways. This could involve purchases of office equipment, printing and copying services. The sector also purchases and rents a large number of

miscellaneous items such as storage containers and marquees especially when a significant production goes on location, when it will rely heavily on being able to access local supplies, as it sets up temporary bases.

5.4.3. Construction

Much of the construction expenses have been classified as Screen Production Specific: a film set is normally only of any use to a specific type of production. The construction department however will reach out to the wider construction industry to hire equipment, and specialists, for example earth diggers and heavy lifting equipment.

5.4.4. VFX & Interactive

This sector is heavily dependent on Screen Production, and the bulk of such costs in most budgets have been allocated to the category specific to Screen Production. There is however considerable crossover of skills between this sector and the other key digital industries, in particular the video games industry.

5.4.5. Real Estate

The costs of dedicated shooting space rental from major studios is included in the Screen Production-specific category, but when productions are on location, they will rent buildings that also serve other sectors of the economy.

5.4.6. Travel & Transport

A key expense of production is the cost of bringing above- and below-the-line personnel into and around a country where the production is located. Furthermore, a moving unit requires considerable transport back up – whether that is by road, train or air. The spend is higher on location-based productions rather than largely studio-based shows.

5.4.7. Hospitality & Catering

These costs relate to accommodating and feeding substantial numbers of talent and crew, especially when a production is using locations at a distance from where the workforce is permanently based. Consequently, the hotel and accommodation sector is an important supplier to productions regardless of whether it is largely studio-based or predominantly moves between different locations.

Catering for the working unit is usually provided by mobile catering companies, but the quality and availability of restaurants are also important to those having travelled to the location of the production.

5.4.8. Finance & Legal

Like any business sector, Screen Production has many requirements for legal expertise with a plethora of standard and specialised contracts to be negotiated. The accounts department of a production also has a crucial role, especially as so many projects involve funding sources that require external audits

5.4.9. Fashion & Beauty

Although there are some dedicated costume hire companies, the costume requirements of any production are considerable. For contemporary productions much of the on screen costume requirement is simply purchased from high street shops, while period or futuristic shows on the other hand will require considerable work by skilled cutters and seamstresses.

Equally, hair and make-up look to the general “beauty” sector for both their products and skilled practitioners – wig makers are a good example of the Screen Production world interacting to mutual benefit with the broader Fashion & Beauty sector.

5.4.10. Music & Performing Arts

It is sometimes hard to differentiate between these two sectors and Screen Production. Almost all the creative roles are filled with people who either have in the past or continue to move between theatre, musicals and the visual arts. In the design area for example the “concept” artists who bring the designer’s work to life, will also work in the exhibition field, and in the theatre. Actors move continuously between the live theatre and the screen. Producers are constantly looking to the live theatre scene for new talent, and writers often move between the live theatre and the screen.

Musicians and singers who work in orchestras and opera companies will often be found in recording studios providing musical background for Screen Productions.

5.4.11. Power & Utilities

As with any major business sector, Screen Production is a considerable consumer of power and general utilities. While “out on the road”, production units will use generators to power their lighting rigs and the location bases. However, the sector is increasingly looking to adapt to more environmentally responsible ways of consuming power and other utilities and major financiers are constantly looking to mitigate their environmental impact.

5.4.12. Safety & Security

Risk assessments for Screen Productions can be very specific, so specially trained health and safety advisors are common. Stunt work, for example, calls for close co-operation between the production, the stunt co-ordinator and the health and safety officers.

Security, particularly on location, can be co-ordinated by the production but will require considerable support from the local community and close contact between the production and a local security operation is often a huge asset to both sides.

5.4.13. Training & Education

Many countries have adopted a variety of training initiatives, internships and apprenticeship schemes to enable pathways for diverse kinds of training across many disciplines. This area, although currently rather underfunded, will become increasingly important as workforce capacity is very limited on a global basis.

5.4.14. Health & Medical

This is a crucial sector in the wake of the pandemic and therefore one that will gain far greater significance. Trained medical staff attend the sets and construction sites providing immediate health cover. Screen Production also relies on the medical community in several ways including the health checks that all key staff undergo – obviously this will increase substantially because of pandemic issues and protocols.

6. THE IMPACT OF COVID-19 ON GLOBAL SCREEN PRODUCTION

This section analyses the impact of COVID-19 on Screen Production. It also summarises some of the efforts to support Screen Production and the workforce during the pandemic and alleviate financial pressure along the production chain.

6.1. Overview

Almost all territories around the world that encourage domestic and international Screen Production restricted filming activity severely as a consequence of the COVID-19 pandemic. The process of shoots being shut down, as a consequence of national lockdowns, began in early March in some countries – e.g. mid-late March in much of Europe, the US and in Australia and New Zealand and early April in Japan.

Screen Production is an activity which requires large teams, sometimes comprised of several hundred people, working in very close proximity to one another. Whether in studios or on locations, often cast and crew are working in spaces which are relatively restricted in size and therefore presented significant risks at the height of the pandemic.

Many countries put together relief funding schemes to support businesses and workers affected by COVID-19. Many of the broader economic packages, such as the UK's financial scheme to pay 80% of wages for workers who were laid off, benefitted those working in Screen Production including freelancers. However, there were also packages designed specifically for the Screen Production sector and broader creative industries sectors. Governments also relaxed deadlines for tax payments, insurance premiums and other requirements to remove the economic strain on people out of work.

However, none of these packages compensated for the suspension – and in some cases abandonment – of the overwhelming majority of Screen Production around the world. Overall, the suspension of economic activity was, in both volume and value, immense.

It was not until mid to late May that territories – ranging from Australia and Iceland to India and various US states – began to publish guidelines designed to enable production to restart under strict conditions.

Such guidelines typically include provisions relating to social distancing on set, the use of personal protective equipment (PPE), restrictions on numbers of cast and crew at certain locations and rules around catering on set – for example, specifying no self-serve or buffet-style food stations.

By the end of May, national production, operating under such guidelines, had restarted in some territories – notably Australia, Czech Republic, Sweden, Slovenia and New Zealand. But for many other territories, such as most states in the US, the UK, Japan and South Africa it remained far from clear when production would restart. While international production had started in some territories, including Iceland, border closures and travel restrictions meant that this was likely to take longer to recommence.

6.2. The Scale of Economic Damage

SPI undertook a survey of around 141 national, regional and local film commissions, from 69 countries, to understand their experience of dealing with COVID-19 and in particular the effect of the various lockdowns and restrictions on their ability to maintain or at some point restart production. There was a response rate of approximately 70% of the countries surveyed.

SPI's survey asked respondents to estimate the reduction in expected production for the first six months of 2020 due to COVID-19 (0% = no loss in the first half of 2020; 100% = total loss). The survey was circulated to 141 film commissions worldwide. In total, 65 individual film commissions answered this question with a specific percentile response.

The number of respondents reporting a loss of production analysed by quartile was as follows:

- 0 – 24% 1 responses = 1.5% of respondents
- 25 – 49% 8 responses = 12.3% of respondents
- 50 – 74% 18 responses = 27.7% of respondents
- 75 – 100% 38 responses = 58.5% of respondents.

Almost 60% of film commissions that responded to this question have lost 75% or more of expected production volume, indicating the vast and damaging scale of the impact of the COVID-19 pandemic on film and television production across the world. In many territories, 90-100% of the value of production was lost during the period of the lockdown. Moreover, in focusing on the first six months of 2020, the survey included a period of activity before restrictions and lockdowns began.

In the case where a commission reported a significant level of activity during the period under review (e.g. less than a 24% loss in production volume) this can be largely attributed to filming that took place up until mid or late March – i.e. prior to the lockdown taking effect in a given territory.

Some commissions responded that while production had come to a halt during the period under review, this did not mean that all of those productions would necessarily be permanently lost – particularly for productions which originated in another country, there was an expectation that the producers would return to shoot their works once lockdown had significantly eased and restrictions such as bans on commercial flights or quarantines of foreign travellers had been lifted. In some cases, commissions expect these productions to return in 2021.

In total, the survey results showed an average decline in production of 70% over the first six months of 2020.

Commissions were also asked how the volume of production they expected in the first six months of 2020 compared with 2019 in the absence of the pandemic.

Precise comparisons with the corresponding period in 2019 can be complicated to make because of the wide variety of factors which influence the level of filming at a given time – for example, currency fluctuations, level of incentive available, the location needs of a particular storyline in a particular film. Nonetheless, they provide a useful yardstick for illustrative purposes.

Their responses broke down as follows:

- Significantly lower = 0% of respondents
- Lower: 2 responses = 2.9% of respondents
- Same: 19 responses = 27.5% of respondents
- Higher: 25 responses = 36.2% of respondents
- Significantly higher: 23 responses = 33.3% of respondents

It is apparent from these responses that the majority of commissions were expecting levels of production in 2020 to be higher than compared with 2019, and in over a quarter of cases significantly higher. This indicates that the planned volume of global Screen Production had been continuing to increase prior to the outbreak of the pandemic – aligning with expectations about the ongoing global growth of the sector.

6.3. The Economic Impact of the Global Production Shutdown

The data on the reduction in production from the survey was used to model the economic impact of COVID-19 on the Screen Production sector. However, a major part of the loss will be offset as shoots that were paused get back underway.

6.3.1. Economic Output

Based on the average finding from our survey of film commissions of a 70% fall in production over the first 6 months of 2020, the estimated reduction in economic output (on an annualised basis of 35%) is shown in the table below. Overall, it is estimated that the COVID-19 pandemic has led to a global fall in output of just under \$62 billion in Screen Production, with a total economic impact (including multiplier effects) of \$145 billion.

Table 7: Estimated Impacts of COVID-19 on Screen Production Sector Output, 2020 (\$ billions)

Output impacts	Direct	Indirect/ induced	Total
Estimated output in first six months of 2020 without COVID-19	88.5	118.5	207.0
Estimated output in first six months of 2020 with COVID-19	26.5	35.6	62.1
Economic impact	-61.9	-83.0	-144.9

6.3.2. Employment

Over the first six months of 2020, it is estimated that there was a COVID-19 related reduction in employment of 3.1 million FTE jobs in the screen sector value chain, with a total employment impact of 10 million jobs once indirect and induced effects are included.

Table 8: Estimated Impacts of COVID-19 on Screen Sector Value Chain Employment

Employment impacts (million jobs)	Direct	Indirect/ induced	Total
Employment in absence of COVID-19 (million jobs)	4.4	9.8	14.2
Employment with COVID-19 (million jobs)	1.3	2.9	4.2
Jobs impact (million jobs)	-3.1	-6.9	-10.0

6.4. Screen Sector Recovery in Previous Recessions

With most activity having been disrupted during the COVID-19 pandemic, the speed with which Screen Production can recover from the enforced hiatus is crucial to the case for government support for the sector in countries across the globe. The positive performance of Screen Production in previous recessions may provide some indication of its resilience and potential to help drive economic recovery.

This section analyses the performance of Screen Production in the global recession that started in 2007-08 in most countries in the developed world. The analysis uses data for the US, the biggest sector in the world and with the most appropriate data sources.

6.4.1. United States

The US has high quality industry-level economic data which disaggregates motion picture and sound recording as a specific industrial subsector. As defined by the North American Industry Classification System (NAICS), the subsector consists of two industry groups: the motion picture and video industries and sound recording industry. The motion picture and video industries group "comprises establishments primarily engaged in the production and/or

distribution of motion pictures, videos, television programs, or commercials; in the exhibition of motion pictures; or in the provision of post-production and related services.”²⁶

Although this sub-sector includes more than Screen Production it remains an appropriate marker of performance for these purposes.

The analysis in this section uses the data from the US National Income and Product Accounts (NIPA) to assess:

- The decline in employment and output between the start of the 2008 recession and the bottom of the recession in 2010
- The recovery in the first two years after the recession (2010-12).

The table below shows the results of this analysis for employment in the US between 2008 and 2012, for various industry subsectors of the production sector of the US economy (and selected service sectors). The figures are given as percentages rather than total number of jobs because the sectors differ markedly in total size.

As demonstrated, the employment performance of the industry was strong relative to most other industries in this period. A fall in employment of 5.8% between 2008 and 2010 was followed by an increase of 2.6% between 2010 and 2012, resulting in an overall employment fall limited to 3.4% over 2008-12.

Construction and manufacturing industries fared much worse over this period with employment reductions of almost 23% and just over 11% respectively.

The information sector (of which motion picture and sound recording is one subsector) experienced reductions of over 10% in employment overall. The only sectors with markedly better employment performance than motion picture and sound recording were mining (due to the fracking boom), information and data processing and computer systems design (both high-growth areas due to technological advances) and food services and drinking places (mainly restaurants and bars). The COVID-19 pandemic has affected such venues to a much greater extent in 2020 than the 2008-09 financial crash.

Table 9: Selected Industries – Employment Reduction 2008-10 and Recovery 2010-13, US Data

<i>Industry</i>	Percentage changes:		
	2008-10 (%)	2010-13 (%)	2008-13 (%)
Mining	-9.3	21.5	10.2
Utilities	-1.4	-0.4	-1.8
Construction	-24.0	1.9	-22.6
Manufacturing	-14.5	3.8	-11.2
Wholesale trade	-8.7	3.5	-5.5
Retail trade	-7.2	3.3	-4.2
Transportation and warehousing	-8.6	6.6	-2.6
Information:	-10.3	0.0	-10.3
<i>Publishing (incl. software)</i>	-13.4	1.2	-12.3

²⁶ 5121 – Motion Picture and Video Industries, NAICS

Motion picture and sound recording	-5.8	2.6	-3.4
Broadcasting and telecommunications	-10.5	-4.0	-14.1
Information and data processing	-5.6	9.7	3.6
Finance and insurance	-5.3	2.8	-2.6
Real estate, rental and leasing	-10.4	2.0	-8.5
Professional, scientific and technical services:	-4.8	5.2	0.2
Computer systems design and related services	0.4	11.6	12.1
Arts, entertainment and recreation	-3.7	2.2	-1.6
Accommodation	-9.9	5.1	-5.3
Food services and drinking places	-4.2	8.0	3.6

Source: US National Income and Product Accounts (2020), Table 6.5

Note: employment measured as FTE employees

6.4.2. Conclusions

Overall, the analysis in this section shows that based on the trajectory of output and employment in the previous recession in the US in the late 2000s, the global Screen Production sector is very well placed compared to most other sectors to be ready to restart and ramp up production at short notice as pandemic lockdowns continue to ease and the world adjusts to a “new normal”.

Film and television projects are likely to be a faster option for kickstarting economic recovery than many other industries and sectors of the economy that are often promoted as stable. The length of Screen Production supply chains also means that any measures to support the sector will benefit the wider economy.

6.5. The Strategic Value of Screen Production in Economic Recovery

Given Screen Production’s ability to impact an economy, a number of governments are already looking to the sector as a key component of the economic recovery in the wake of COVID-19. This is being undertaken through a number of measures to encourage production to restart. These include:

- The creation of insurance schemes to provide state-backed insurance for independent Screen Production
- The early release of development money to help ensure that projects that are in the pipeline continue to progress
- Allowing costs relating to shut-downs to be included as eligible expenses for incentive schemes
- Temporarily reducing taxes such as VAT on production costs
- Exempting filmmakers (cast and crew) from the standard quarantine requirements for foreign travellers by introducing a modified version of quarantine
- Economic measures to support freelancers in the cultural sphere, including audiovisual workers, during the suspension of production to help ensure that they can remain in the workforce
- Accelerating payments due to independent production companies to help ensure that they remain stable during the crisis.

In many cases these initiatives, put in place by film offices, governments (from local to state/provincial and federal) and various other stakeholders, are integral to Screen Production

restarting. A number of funding bodies have reallocated or increased their funding to ensure that production can resume quickly when restrictions on workplaces or public gatherings are removed. Screen Australia has doubled the value of its Premium Development fund, allocating £2.3 million (AU\$3.4 million) targeting high-budget productions 'with firm market interest that are close to being production ready'.²⁷ The Australian state agency Screen Queensland has reallocated \$2.3 million (AU\$3.3 million) in funding to support the industry and ensure that as many productions as possible are ready to resume or start filming in Queensland as soon as the state government deems it safe.²⁸

Countries including France, Spain, Greece and Colombia have announced changes to their film incentives in an effort to entice more international film productions. The changes to Spain's incentive for foreign productions was announced alongside a large relief package for the sector which included raising tax credits for domestic production and the temporary removal of the requirement for films to have theatrical releases to qualify.²⁹ In a similar vein, the city of São Paulo in Brazil will now launch its cash rebate for international and national productions immediately once COVID-19 subsides.³⁰

Increasingly, governments are recognising the critical role the sector plays in economic recovery in the wake of COVID-19. In a statement on May 11th, the Canada Revenue Agency (CRA) stated that "The Canadian film industry is an important contributor to the economic and cultural well-being of Canada" before outlining a number of measures implemented by the CRA to streamline the claim processes of the Film and Media Tax Credits.³¹

While announcing the reopening of production in the Czech Republic, the Minister of Culture Lubomír Zaorálek made a statement that identified Screen Production as a significant part of the cultural and creative industries and a type of manufacturing in the Czech Republic. He said: "It should be emphasized that within the creative and cultural industries, audiovisual production holds a strong and exceptional position, primarily due to its financial contribution to non-cultural industries, which account for up to 60% of individual film budgets. Specifically, these are small and medium-sized companies. That is why it is really crucial for the Czech economy that audiovisual production starts up again."³²

Following the development of safety precautions for the Screen sector, Iceland announced a modified quarantine that allows foreign filmmakers to apply for an exemption from home quarantine, on the assumption that they would comply with the safety procedures and requirements. Rather than participating in a two-week home quarantine, the quarantine was instead expanded to include the workplace.^{33,34}

The New Zealand Government has also acknowledged the important role that Screen Production, along with the broader creative and cultural sector, will play as New Zealand recovers from the pandemic. Jacinda Ardern, New Zealand's Prime Minister and Minister of Arts, Culture and Heritage, noted that "a healthy cultural sector has many positive flow-on effects for other important parts of our economy, such as technical production, hospitality, venues and domestic tourism," and that "creativity and culture creates jobs, drives economic recovery and enhances social wellbeing."³⁵

²⁷ Screen Australia increased Premium Development fund. IF.com.au, 3rd April 2020

²⁸ Screen Queensland unveils \$3.3 million industry support package. IF.com.au, 8th April 2020

²⁹ Spain powers up international shoot tax breaks. Variety, 5th May 2020

³⁰ São Paulo launches production incentive to grab post-Covid shoots. Variety, 18th May 2020

³¹ Important information related to the Film and Media Tax Credits Program during the Covid-19 crisis. Canada Revenue Agency, 11th May

³² Audiovisual production is once again in full swing in the Czech Republic. Czech Film Commission, 7th May 2020

³³ Who can apply for modified quarantine? Iceland Directorate of Health, 20th May 2020

³⁴ Procedures for workplace quarantine – general. Iceland Directorate of Health

³⁵ Support for arts and music sector recovery. Beehive, 29th May 2020

Under the 'other essential worker' category, film professionals can enter New Zealand in spite of the general travel ban. This exemption requires special criteria to be met.³⁶ Unlike Iceland, workers entering New Zealand are required to self-isolate for two weeks, with the quarantine paid for by the company that applied for the exemption.

³⁶ COVID-19 Border Restrictions Exceptions for Essential Workers and Others. Beehive, 12th June 2020

7. THE GLOBAL DELUGE OF SCREEN PRODUCTION

In recent years there has been a massive increase in the quantity and value of Screen Production around the world, and while the COVID-19 pandemic has reduced this activity (and will continue to for some time) it is expected that the strong demand for content will ensure that production returns to similar if not greater levels in the future.

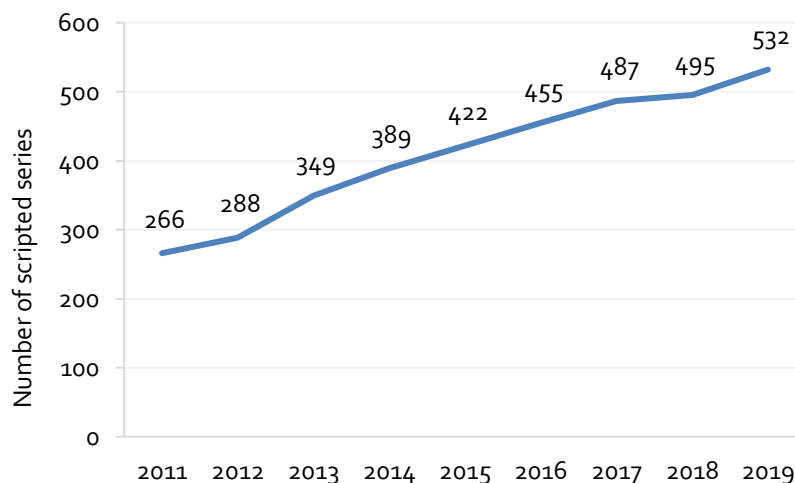
Until the COVID-19 pandemic occurred, the global Screen Production sector was experiencing unprecedented demand for capacity, especially regarding physical infrastructure (studios) and crew.

The halting of production in most countries has caused considerable short-term disruption in the sector, but SPI's research indicates that once the hiatus is over, production will ultimately revert to prior levels but the timeframe is uncertain.

7.1. The Global Production Market

Prior to the pandemic, the growth in the Screen Production market was especially apparent in television drama, where the number of series available in the US doubled between 2011 and 2019 from 266 titles to 532.³⁷

Figure 17: Estimated Number of Original Scripted Series, 2011-19

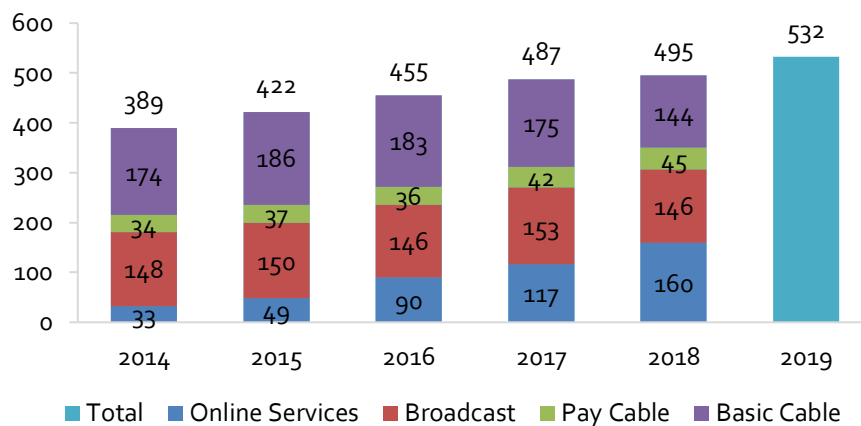


Source: FX Networks Research. Excludes library, daytime dramas, one-episode specials, non-English-language/English-dubbed, children's programmes, and short-form content (<15 mins).

As evident in the figure below, this growth in scripted series was particularly noticeable in relation to online services, where it has increased by 385% between 2014 and 2018. Netflix alone debuted 371 new original series and films in 2019, which represented a 55% increase on 2018.³⁸

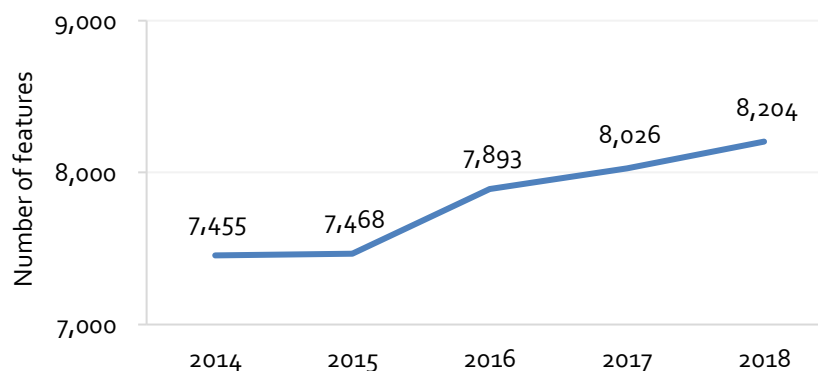
³⁷ *Peak TV Update: Scripted Originals Top 500 in 2019, FX Says*. Hollywood Reporter, 9th January 2020

³⁸ *Netflix Released More Originals in 2019 Than the Entire TV Industry Did in 2005*. Variety, 17th December 2019

Figure 18: Number of Scripted Originals by Distribution, 2014-19

Source: FX Networks Research. Note: FX Networks' 2019 release did not include a breakdown of distribution format.

While feature film has seen less pronounced growth over the same timeframe, volume has increased at a sustained level globally. As seen in the figure below, the number of feature films produced worldwide increased by 10% between 2014 and 2018. The most dramatic growth in volume has come from East Asian countries – specifically China, India and South Korea.

Figure 19: Estimated Number of Feature Films Produced Worldwide, 2014-18

Source: European Audiovisual Observatory

A driver for the growth is an increase in 'tentpole' television, where the cost to produce high-end television is increasing significantly. In October 2019, Netflix estimated the cost of a competitive show had increased 30% since 2018.³⁹ While the cost of producing a high-end cable and streaming drama in 2016/2017 was in the range of US\$5-7 million and US\$1.5-3 million for broadcast network dramas, high-end television series in 2018-2019 far exceeded that. The six-episode final season of *Game of Thrones* reportedly cost US\$15 million per episode, with a similar per episode cost being reported for *See* on Apple TV+.⁴⁰

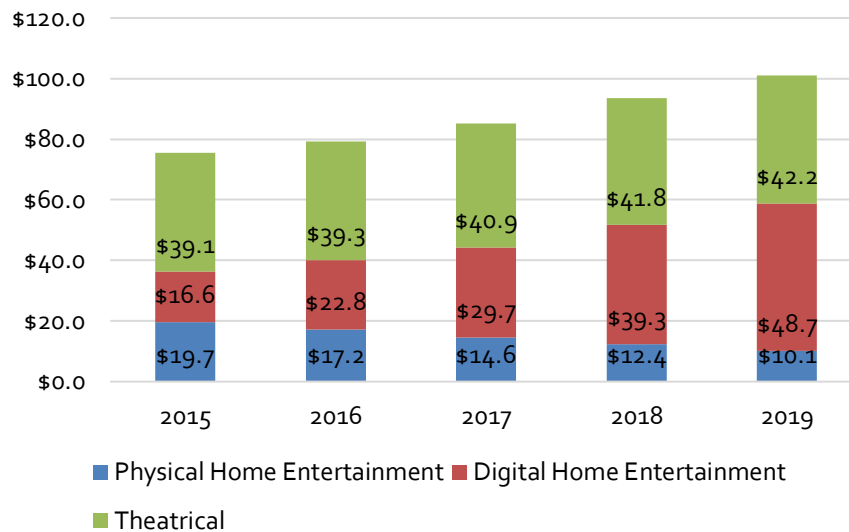
Production growth aligns with rising consumer spend on theatrical and home entertainment. In 2019, global consumer spending on theatrical, physical and digital home entertainment

³⁹ *The lavish budgets of Disney and Apple's upcoming original TV shows make 'Game of Thrones' look frugal.* Business Insider, 23rd October 2019

⁴⁰ *Apple TV Plus' See reportedly costs almost US\$15 million per episode.* The Verge, 12th July 2019

reached US\$101 billion. This was an increase of 34% on 2015 and the first time this market surpassed the \$100 billion mark.⁴¹

Figure 20: Global Theatrical and Home Entertainment Consumer Spending (US\$bn)



Source: 2019 THEME Report. MPA

While digital entertainment is rapidly expanding, the global box office has also been showing continued growth. In 2019, the global box office reached US\$42.4 billion, an increase of 3% from 2018. The international box office – all regions excluding the US and Canada, reached US\$31.1 billion, representing 73% of total grosses in 2019.

While the COVID-19 pandemic has interrupted box office growth, demand for streaming services has exploded and underlying consumer interest in scripted, and non-scripted, content remains high.

7.2. Production Growth in Streaming and Online

The increase in production is underpinned largely by consumer demand and the evolution and growth of consumer access to content. As consumers continue to gain access to reliable and high-quality internet globally, services such as Netflix, Amazon Prime and Disney+ are offering access to a steadily growing array of new, original and existing content for consumption.

7.2.1. Global Subscription Growth

A key catalyst for growth has been the expansion of over-the-top (OTT) services. There are approximately 700 million global subscribers outside of China, with Netflix and Amazon Prime Video the two current leaders in this market.

However, they are facing competition from newer streamers such as services launched by Apple, Disney, WarnerMedia and NBC Universal. Disney+ had a reported 10 million mobile app subscribers sign-up in the first 24 hours of its November 2019 launch in the US, Canada and the Netherlands, and 28.6 million subscribers by February 2020.⁴² This has grown as Disney+ has launched in various international territories in 2020 and by end of Q1 2020 it had 54.5 million subscribers.⁴³

⁴¹ 2019 THEME Report. MPA, March 2020

⁴² Disney+ already has 28.6M subscribers. TechCrunch, 4th February 2020

⁴³ Disney says it now has 54.5 million Disney+ subscribers. CNBC, 5th May 2020

7.2.2. Internationally-Financed, Locally-Created Content

Efforts by streamers to demarcate themselves from competitors have led to an increased spend on original content. Disney is expected to invest US\$1 billion into developing new content for Disney+ in 2020. Netflix also increased its content spend in 2019 by US\$3 billion and was predicted to spend US\$17 billion on content in 2020, with original content is expected to be a large focus.⁴⁴

In addition to expanding content spend for original content, some of these streaming services have turned to financing locally-created content to attract global subscribers. These 'hybrid' productions use local above-the-line creative talent but tend to have budgets and production values closer to their US counterparts.

7.3. The International Market for Portable Productions

While the content budgets of US production houses used to be mainly spent in California and New York, the attractiveness of other jurisdictions in the US and internationally means that a significant amount of production activity is portable, i.e. shot outside the country of origin.

This presents a substantial opportunity for countries around the world to attract investment by hosting productions. Governments have responded by offering several policy initiatives to capture this business, including incentives, as well as support for studio facilities, workforce programmes, and responding to producer needs through film commissions.

The biggest content investors are involved with too many projects to manage all phases of production in-house. As a result, the most sought-after jurisdictions, local production companies and production services companies are those which can deliver the final product to a high standard with minimal oversight.

7.4. The Production Location Decision

SPI's analysis of the production location decision factors taken into account by international portable productions is outlined below. This demonstrates how different factors influence where productions choose to film, and shows that the availability and quality of infrastructure, particularly studios and workforce, are becoming among the most important factors alongside creative, logistical, and financial considerations.

The global dearth of studios has caused some Hollywood based major producers to attempt to pre-book studio space well before a particular piece of content has entered pre-production. This is because they are concerned that essential studio space will not be available in the possible countries they could choose for shooting.

The main factors are:

1. Creative specifics
2. Initial budgeted costs
3. The effect of incentives on reducing costs
4. The availability of dedicated shooting spaces (i.e. studios)
5. The availability and experience of crew and workforce
6. The variety and availability of external locations (if needed)
7. Safety and security⁴⁵
8. Perceived ease of filming and support from local agencies
9. Communications and transport infrastructure
10. Lifestyle offer and key talent and creatives.

⁴⁴ Netflix to spend \$17bn on content in 2020: analyst. Screen Daily, 16th January 2020

⁴⁵ Particularly in a post-pandemic environment

Priorities assigned to these factors change over time. For example, health and safety is a major consideration in the wake of COVID-19, when previously other factors would have been more important. Because of the lack of studios globally, and also workforce, these factors will also rate highly for years to come.

8. SUMMARY OF PREVIOUS SPI STUDIES

This section presents information from other recent SPI reports that includes a description of best practice in government policy initiatives aimed at maximising the economic benefits from a thriving Screen Production sector.

In Section 1 of this Study, reference is made to a number of previous SPI reports that include information relevant to the current subject matter. Extracts of the principal findings of these reports are summarised below. A link to each full report is provided for further reading and other SPI reports can be found online at www.o-spi.com.

8.1. The Global Production Deluge (February 2020)

An evidence and discussion paper exploring the opportunities and challenges faced by Screen Production at the time of a worldwide content investment boom.⁴⁶

Link: <https://www.o-spi.co.uk/wp-content/uploads/2020/03/Global-Production-Production-Deluge-Evidence-and-Discussion-Paper-Final-2020-02-25.pdf>

Much of the information in this report has been summarised in section 7 of this Study.

8.2. Best Practice in Screen Sector Development (September 2019)

This report examines effective strategies and policies used by governments around the world to maximise their share of the high-value screen production market.⁴⁷ The research provides insight into the methods that established and emerging markets alike use to successfully build competitive screen sectors, and contains best practice findings across automatic incentives, workforce capacity, capacity building in physical infrastructure and services, and film-friendliness.

Link: <https://afci.org/research-best-practices/>

Four of the most important areas within which best practice can be demonstrated provide the framework for the Study:

- Automatic incentives
- Workforce capacity
- Capacity building in physical infrastructure and services
- Film-friendly Screen Production environment.

These four areas are critical for domestic production and in the attraction of international Screen Productions, providing there are both attractive incentives to draw projects and capacity to ensure that projects can be effectively serviced. A healthy screen sector is based on both production types – with a strong national sector developing skills and infrastructure that can be utilised by international projects, which in turn can raise the level of skills and generate further development in local facilities and workforce.

Best practice in the four Study areas relates to an ultimate intention of maximising production activity in a given jurisdiction. By offering stable incentives, a skilled workforce, options for infrastructure, and an overall film-friendly approach to hosting productions, governments can expect to capture more of the global footloose production market. Here are the key findings:

⁴⁶ Commissioned by Film i Väst in co-operation with Göteborg Film Festival's Nostradamus project and in association with Cine-Regio

⁴⁷ Commissioned by AFCI

Automatic incentives

- The structure and process of an incentive system should be simple and clear for both national and international producers, using an understood and tested model such as a rebate or tax credit
- Legislation and guidelines should provide certainty on all areas of eligibility and with a lack of subjectivity, while timescales for application, response, and payment should be clearly outlined
- Guidelines should also be free from onerous additional requirements, such as censorship or approval of script or footage, rights obligations, and excessive or unspecified promotional requirements
- The incentive should function predictably and as described, and administrators should be responsive to producers and advise potential projects on structures that will enable access to the incentive
- Incentive budgets are ideally uncapped, and payment is not dependent on the originating producer sharing rights
- Systems can either pay to a local or international producer, but payment must be without delays and as outlined in the guidelines
- Incentives with targeted measures that offer additional value for meeting certain criteria will be more effective if they are producer-friendly enough to be regularly used.

Workforce capacity

- Effective development depends on meeting industrial requirements. Gap analyses and strategic skills audits based on the needs of national and international producers should underpin interventions
- Effective workforce development involves multiple stakeholders across public and private spheres, including industry, economic development agencies, and skills development bodies
- Strategy must be informed by the fact that international productions use standard structures and crew roles across borders
- Effective workforce strategies benefit a wide range of trainees across different positions while targeting specific skills gaps in higher grades
- With a workforce development strategy in place, the needs of the industry should be robustly tracked on an ongoing basis to ensure a sufficient pipeline of skills and workers as the sector grows and develops.

Capacity building in physical infrastructure and services

- The scale of global production investment has significantly increased the need for physical spaces to shoot, or manufacture, Screen content. Production studios are now a key area of need in many markets and strategic, long-term government investment is a key intervention for developing production infrastructure and building the sector
- Studios require significant capital expenditure, and financial support from the state can be necessary either to promote private investment in the facility by lending upfront costs on favourable terms, or by directly investing in infrastructure
- For example, authorities can undertake robust research and data analysis regarding production and studio demand so that investors can understand market potential. They can also assist by identifying land or progressing private developments quickly through necessary planning processes, and can also prime the market by investing in state-of-the-art technology and digital connectivity
- Given the investment required, authorities have a key role in ensuring a stable market through a predictable production incentive with a long legislative sunset date

- Incentives can be formulated to encourage infrastructure development – either through offering additional value for productions using specific facilities, or by offering additional value to producers who also invest in infrastructure
- It is important that the development of infrastructure is linked to a broader market growth strategy – particularly with regards to building workforce
- Studios in particular can play a key role in developing skills, and new developments often include training provision for this reason.

Film-friendly production environment

- A film-friendly production environment involves a shared, positive view of the industry across a range of different government departments, agencies, and other entities
- Screen productions need to bring technical equipment and crew – particularly in less developed markets – and this must be a straightforward process with no delays
- Film commissions and other agencies should therefore effectively communicate the positive impacts of the Screen sector, in order to ensure ongoing support from all relevant stakeholders and, in turn, ensure effective policy measures.

8.3. Global Film Production Incentives White Paper (June 2019):

This report provides detailed insight into the growth of the Screen Production incentives landscape worldwide.⁴⁸ With nearly 100 such systems operational globally, the White Paper outlines their function and impact in select jurisdictions and identifies key trends in their usage and formulation.

Link: <https://www.o-spi.co.uk/wp-content/uploads/2019/06/Olsberg-SPI-Global-Incentives-White-Paper-Final-2019-06-04.pdf>

The majority of Screen Production incentives function as automatic models – i.e. the incentive is triggered by qualifying expenditure, rather than functioning as a selective fund. This means that producers undertaking qualifying expenditure – as outlined by an incentive's regulations and guidelines – can expect to receive a pre-determined contribution to that investment, subject to verification.

Most national incentives are not based on qualitative selection of projects, although some jurisdictions do offer selective “top-up” funds for specific projects, while other public funds will disburse investment on a selective basis. This White Paper focuses only on automatic systems.

Such incentives are predictable, which is a key attraction for producers looking to balance the financial and logistical risks of production. They are also relatively clear and straightforward, and unlike selective funding systems, there is no discretionary element in project selection or pay-out once specified expenditure has been undertaken. Since international projects require certainty in planning for their chosen locations, any element that creates doubt regarding whether an incentive is achievable will hinder its effectiveness.

Screen Production incentives are generally focused on production – i.e. the principal photography of film, television drama and documentary projects – although they are often relevant for other aspects of the film-making process, such as visual effects (VFX) and post-production, as well as animated projects.

Most systems encourage international productions alongside the production of local projects and official co-productions. For national producers, an incentive is a key support measure for progressing projects in a challenging international finance environment, and a healthy national production sector also develops a skills, talent and infrastructure base that is utilised by international productions.

⁴⁸ Commissioned by MPA

8.4. Creative Industries Ripple Effect (July 2017)

This report quantifies a previously unmeasured economic impact derived from feature film and television drama production expenditure. It demonstrates that Screen Productions drive a significant (and perhaps unexpectedly large) amount of activity in the other creative industries.⁴⁹

Link: <https://www.o-spi.co.uk/wp-content/uploads/2017/07/SPI-Creative-Industries-Report-2017-07-31.pdf>

Over the last decade SPI has identified an increasing – but not previously evidenced – trend, through which investment in Screen Productions generates value in the other creative industries.

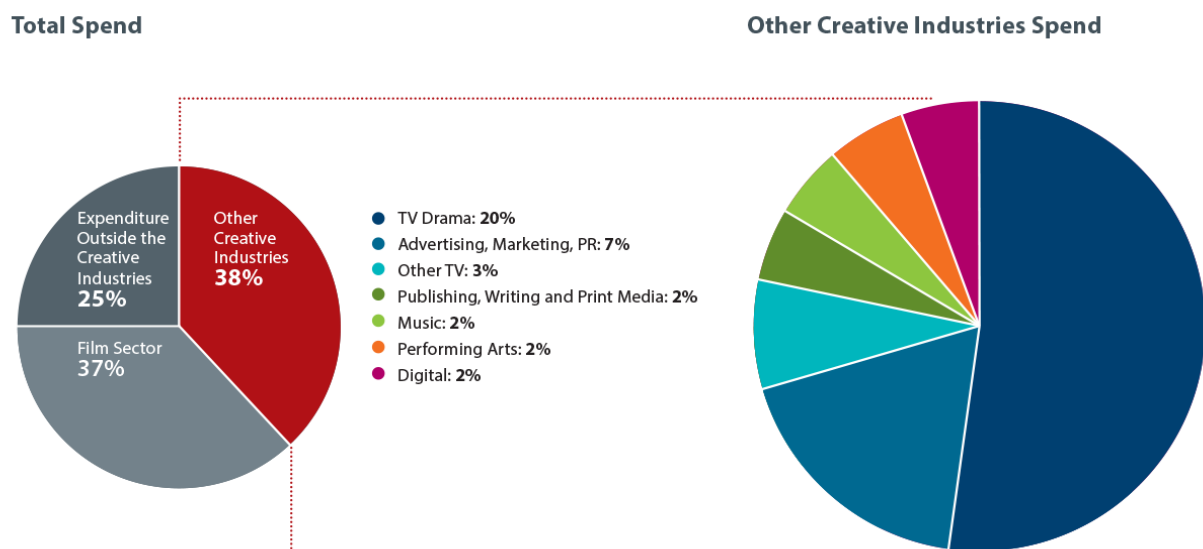
To provide policymakers and stakeholders with new evidence that would further encourage and justify public interventions to support the production sector, SPI developed a methodology to identify the scale of this impact. This report represents the conclusions of that work.

The positive economic effect generated by the expenditure of Screen Productions has long been accepted. The quantitative proof that they generate economic value is delivered by analysing how budgets are spent in the sector and the wider economy. These studies identify the direct, value chain and spillover impacts, which represent the primary economic benefits of production frequently referred to as standard economic effects, including those derived from multipliers.

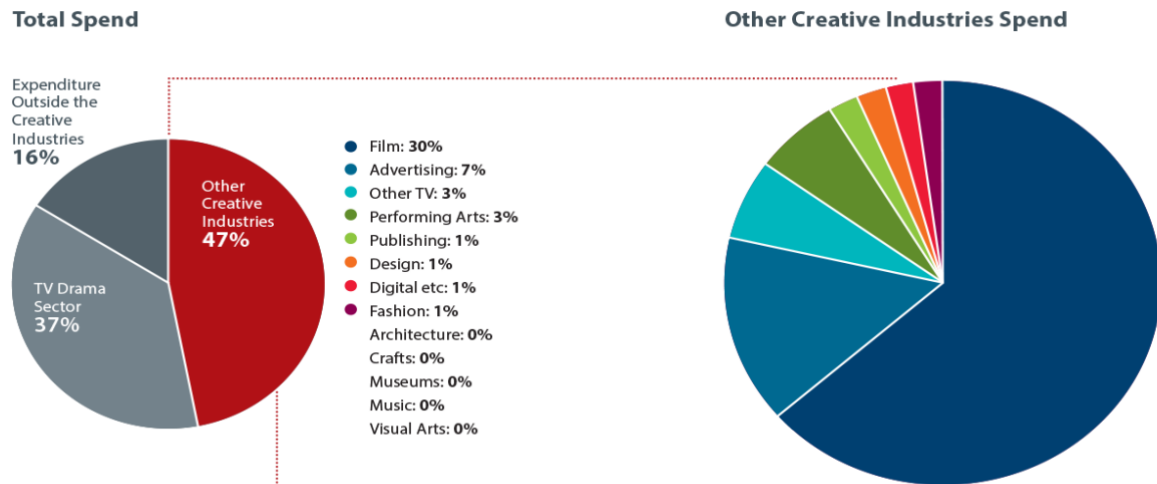
The study identified an additional facet of the economic benefits that extends beyond the normal multiplier impacts. It provides more detail on the economic value of Screen Production, derived from analysing production expenditure according to the industry or supply chain sector into which the money is spent: the “Ripple Effect”.

The results of analysing a group of sample productions show that between 38% (film) and 47% (television drama) of the expenditure impacts other creative industries, as follows:

Figure 21: Impact of Film Expenditure on other Creative Industries



⁴⁹ Sponsored by the Copenhagen Film Fund (Denmark), Film i Väst (Sweden), the Netherlands Film Fund and Screenwest (Australia).

Figure 22: Impact of Television Drama Expenditure on other Creative Industries

8.5. Screen Business – The Economic Contribution of the UK Tax Relief-supported Screen Sectors (October 2018)

This report is an analysis of the UK's Screen Sector Tax Reliefs demonstrating the vital impact which production and development supported by the Screen Sector Tax Reliefs has on the UK's economy.⁵⁰

Link: <https://www.o-spi.co.uk/wp-content/uploads/2018/10/Screen-Business-Full-Report.pdf>

As the then BFI Chief Executive Amanda Nevill wrote in her Foreword:

This report demonstrates the huge value of the screen sector tax reliefs to both industry and the wider UK economy. For the first time ever, it sets out how film, video games and high-end, children's and animation television productions have flourished since their introduction - delivering nearly £8bn to the UK economy and generating over 137,000 jobs in 2016 alone, while driving further business for industries such as merchandising and tourism too. The reliefs are also of huge cultural importance - enabling talent across the screen sectors to produce the richest possible range of films, television programmes and video games, which create IP and are loved by audiences both at home and around the world.

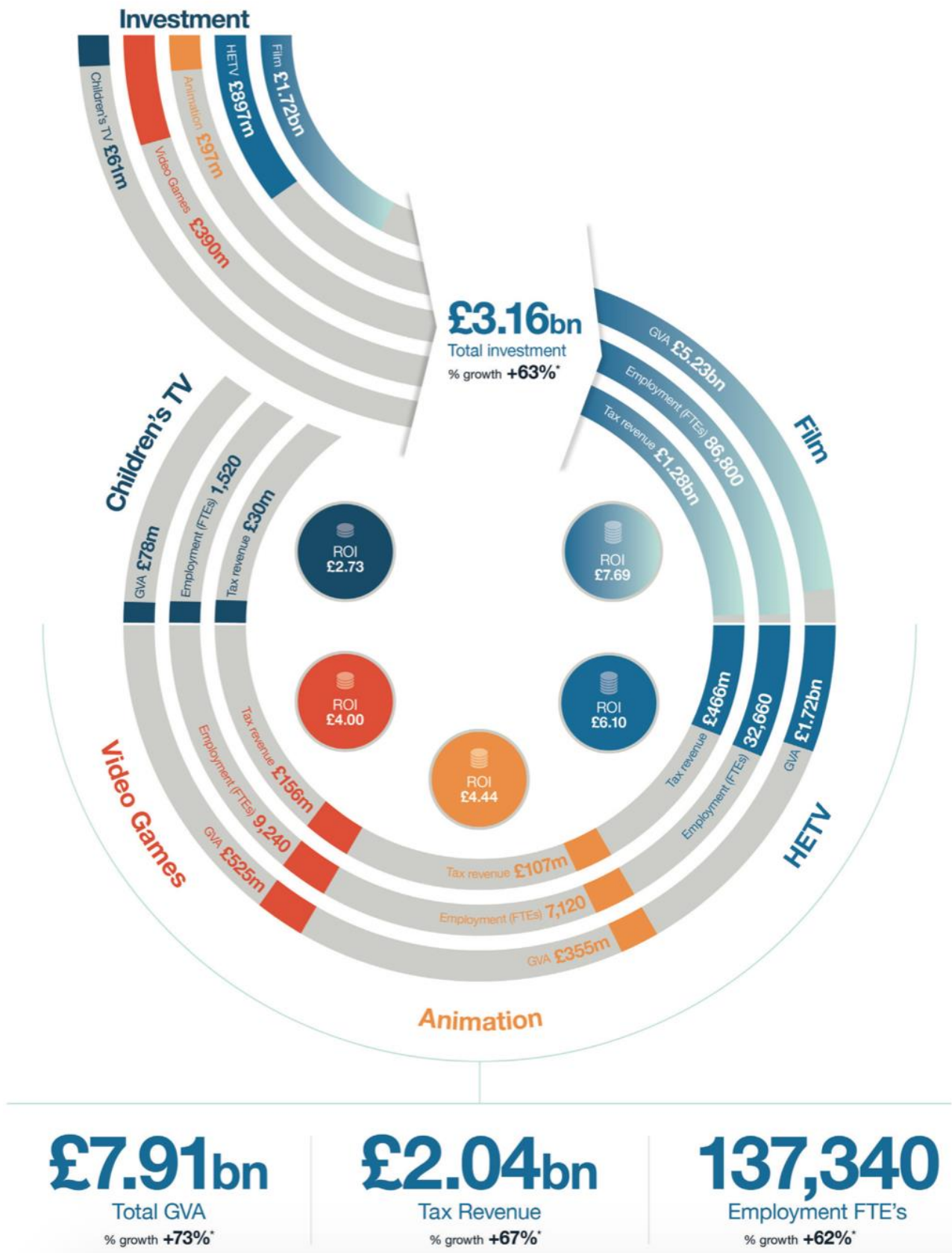
The BFI commissioned Screen Business to provide the solid evidence of success needed to attract continued public and private investment in the screen industries. The analysis is based on best practice economic modelling to capture the sector's incredible value. It will empower policymakers at every level of local, national and UK-wide government to help create the best possible conditions for future growth - including through the maintenance of the screen sector tax reliefs.

The combination of these reliefs with our renowned and distinctive creativity, world-class skills and sophisticated facilities and infrastructure allow the sector to thrive. It is the BFI's mission to maintain and improve this globally competitive environment for the future. We will use the evidence Screen Business provides in order to do so as effectively as possible. This includes working with government and industry partners to support individuals with creative talent from any background through a programme of skills and training, building tomorrow's workforce, and investing in screen clusters across the nations and regions to grow production capacity.

⁵⁰ Commissioned by the British Film Institute and written by SPI with Nordicity

The screen sectors are a huge economic asset to the UK and support our screen talent to deliver content enjoyed worldwide. This report helps to prove so irrefutably. With the maintenance of the screen sector tax reliefs and continued investment in nurturing diverse creative talent, skills and infrastructure by both government and industry alike, we have every confidence they will remain so in future.

Figure 23: Tax Relief-Supported Impact in 2016



Source: British Film Institute. *Growth 2013-2016 for film, HETV and animation

9. APPENDICES

9.1. Appendix One: Acknowledgments

9.1.1. Study Authors

The team assembled by SPI in for this project included the following company executives:

- **Leon Forde** is managing director at SPI
- **Kayleigh Hughes** is a research analyst at SPI
- **Jonathan Olsberg** is executive chair of SPI
- **Joe Stirling Lee** is a research analyst at SPI.

The SPI team was enhanced by a number of experts in the global Screen Production sector, to whom many thanks are due:

- **Colin Brown** (New York) is a global media and entertainment business analyst and advisor
- **Steve Clark-Hall** is a UK-based film and television producer
- **Jess Conopia** (Los Angeles) is a screen sector policy and film commission expert
- **Howard Reed** is director of the UK economic research consultancy Landman Economics
- **Neil Watson** is a UK-based independent policy advisor specialising in the film industry.

9.1.2. About Olsberg•SPI

SPI provides a range of expert consultancy and strategic advisory services to public and private sector clients, specialising in the worlds of film, television, video games and digital media. Formed in 1992, it has become one of the leading international consultancies in these dynamic creative screen industries. With its trusted insight and track record the firm has a diverse client base that includes:

- Multi-national public authorities
- National governments, including culture and economics ministries
- National film institutes and screen agencies
- Regional and city development agencies and local authorities
- National and regional tourism agencies
- Studios and facilities companies
- Independent companies at all points of the screen business value chain
- National and international broadcasters
- Trade associations and guilds
- Training and skills development organisations
- Publishers and conference organisers.

Olsberg•SPI has expertise in all areas of the fast-moving global creative sectors, and the firm's services span:

- Strategy and policy development for the creation and management of healthy and sustainable national and regional screen sectors
- Advising on the creation and implementation of fiscal incentives for the screen industries
- Research projects on all aspects of the value chain – including mapping and economic impact studies
- Business development for content companies
- Strategic development of studios, including business planning and feasibility studies

- Acquisition and divestment advice for owners of SMEs
- Evaluations of publicly funded investment schemes
- Creating prospectus-style funding proposals
- International cost comparisons for film and television productions
- Advising on inward investment and exports for national and regional public bodies
- Identifying and measuring the cultural value of a productive screen sector
- Analysing workforce skills, diversity and related best practice strategies
- Assessing the value of tourism generated by a nation or region's film and television output and developing strategies to maximise future impacts
- Providing strategic advice for screen commissions, including business and marketing plans.

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9.2. Appendix Two: Production Expenditure Valuation Methodology

A forensic analysis of global data was undertaken to estimate global Screen Production spend in 2019. This involved reviewing over 100 data sources and building a detailed data model.

While there are considerable data on feature film production activity around the world, the information on how much is being spent on television production, either directly or through licensing of rights, is patchy. Where reliable data were non-existent, assumptions were made on television production based on a conservative multiple of film productions, since the two spending totals tend to be correlated. It was also found that the licensing of first-run non-sports programming generally correlates to the level of television production.

One particular data gap relates to the proportion of the global licensing total that is spent co-financing and pre-buying rights to new films and shows being produced by others, rather than on catalogue titles produced in previous years. Based on published figures for the UK, France and Canada, it was determined that at least 20% of licensing spend was allocated to new film and TV production, a percentage that we then applied uniformly across the globe (see below for more details).

Double – and even triple – counting becomes an issue when evaluating a Screen Production sector characterised by international co-productions as well as substantial television investment in third-party productions. Numerous companies and countries can potentially lay claim to the same “original” production. And what might be included in the production budget of one company’s ledger could be accounted for as licensing activity in another.

To address this issue, the individual country totals only reflect spending by that country. The French total, for example, isolates the financial investment by French companies on French productions and on co-productions where France is the majority partner. It does not include spending on minority co-productions, nor does it include foreign investment in French productions. This chosen methodology means that in countries such as Canada, the UK, Australia and New Zealand where there are noticeably high levels of inward investment, local numbers represent a fraction of total production activity that actually takes place in that country.

Key steps in the methodology and the various assumptions made are as follows.

9.2.1. Data Sources

The bulk of the data used for the assessment come from US Securities & Exchange Commission (SEC) filings for the 2019 fiscal year, from annual reports from major film, television, technology and telecoms companies around the world, as well as from surveys published by organisations such as the MPA, the European Audiovisual Observatory (EAO), the British Film Institute (BFI), the Centre National Du Cinéma Et De L’image Animée (CNC) in France, the Associazione Nazionale Industrie Cinematografiche Audiovisive Multimediali (ANICA) in Italy, the Instituto de la Cinematografía y de las Artes Audiovisuales (ICAA) in Spain, the Spitzenorganisation der Filmwirtschaft (SPIO) in Germany, the Canadian Media Producers Association (CMPA), Screen Australia, the New Zealand Film Commission, India’s Federation of Indian Chambers of Commerce and Industry (FICCI), the Korean Film Council, the National Film & Video Foundation (NFVF) in South Africa, the Instituto Mexicano de Cinematografía (IMCINE) in Mexico, Agência Nacional do Cinema (ANCINE) in Brazil, and the Instituto Nacional de Cine y Artes Audiovisuales (INCAA) in Argentina.⁵¹

Where there were geographical and statistical gaps to be filled, published figures by a wide variety of media sector analysts were examined, including IHS Markit, Ampere Analysis, Oxford Economics, Statista, Arab Cinema Centre and Media Partners Asia. Any subsequent

⁵¹ See bibliography for links

data gaps were filled using extrapolations based on a combination of observable industry patterns, conservative assumptions and market intelligence.

Economic disparities across the globe mean that the majority of Screen Production financing activity is concentrated around a relatively small group of powerhouses in each region. Building on the data from those top producing territories a reasonable picture of what occurs across the rest of that region was created. In Europe, for example, the EAO found that the top five countries – Germany, France, Spain, Italy and the UK – accounted for 53.6% of production activity. This market share was used to determine a figure for the other 31 countries. Similar exercises were performed for Latin America, South East Asia and sub-Saharan Africa.⁵²

9.2.2. Currency Conversion

Wherever possible, data were expressed in local currencies. When converting those numbers to a unifying US dollar figure, the average rate for the last three years was used to even out variance in data years.

9.2.3. Data Years

All data reflect spending over a twelve-month period during one of the last three years, with the majority of data from 2019. In the case of the US, which draws almost entirely on the detailed quarterly and annual filings to the SEC by 16 different media companies, the figure represents film and television spending in 2019. The same year applies for the data from France and the UK. Annual reports for Australia, New Zealand and Canada span 2018 and 2019. For almost every other country, the applicable year was 2018 – with a few countries such as Japan and Nigeria, where data from 2017 were used.

9.2.4. US Production Data

The bulk of the US production spending data are derived from the 10-K annual filings to the SEC for 2019 by the major studio conglomerates: Walt Disney, Comcast, ViacomCBS, AT&T, Discovery, Netflix, AMC Networks, Lionsgate, Amazon and Alphabet. In addition, we looked at the 20F filing for 2019 by Sony, plus the annual reports for MGM and Entertainment One. In most cases, such reports break down separate figures for production spending and licensing spending; where those companies are involved in theatrical film production, film spending is separated from television production spending.

Walt Disney closed its \$71.3 billion purchase of 21st Century Fox assets on 20th March, 2019. This means there are almost three months of production activity from both Fox and Hulu (now a fully-owned part of Disney) that is not accounted for in the Disney figures. We added that back into the 2019 spending total.

To account for the large number of independent feature films that are made in the US but then fail to find distribution, the film submission figures for the 2020 Sundance Film Festival were examined. Those submission figures for these lower budget features are broken down between US and international films (which we also added into our global figure). Using budget calculations published by analyst Adam Leipzig for these dramatic and documentary feature submissions, we were able to derive a number for the independent film sector.⁵³

For the big tech companies – Apple, Amazon, Alphabet and Facebook – film and television production is not a large enough part of their overall operations to be separated out in their

⁵² See appendix for more details on this and all other extrapolations

⁵³ *Sundance Infographic 2020: By the Numbers*. Cultural Weekly, January 22nd 2020 / *Sundance Infographic 2019*. Cultural Weekly, January 23rd 2019 / *2020 Sundance Film Festival: 118 Feature Films Announced*. Sundance Institute, December 4th 2019 / *2019 Sundance Film Festival: 112 Features Announced*. Sundance Institute, November 25th 2018

financial reports. We were able to deduce some figures, however, based on executive comments made to investors and the media.

While Amazon notes the cost of its produced and licensed video content in its 10-K filing, that number includes the cost of both its video and music expense. We made the assumption that video constitutes 75% of this figure – and then added in an amortisation assumption (see below).

In February, Alphabet CFO Ruth Porat told investors during an earnings call that YouTube’s “content acquisition” costs run around \$8.5 billion.⁵⁴

An executive familiar with Facebook’s programming budget for Watch reported to the website *The Information* that while the company was pulling back from buying rights to live sports its spending on originals and talk show content would rise to around \$1.4 billion in 2019. It should be noted that this content spending figures includes news, sports, gaming, partner deals, clips programmes, etc., with “originals” just an unspecified portion of that total.

A report in the *Financial Times* declared that Apple was spending \$6 billion on content production for its Apple TV+ subscription service.⁵⁵ However, that figure was not separated out into production years. Using available information on its slate for 2018 and 2019, we were able to apportion an amount to each of those years.

Our estimate for the content budget of Quibi, the short-form video subscription service, is based on media interviews with its founders. The number was then split between 2019 and its 2020 launch year based on the number of months in operation.

9.2.5. Factoring in 2019 Production Uplift

Based on the financial reports by US-based studio conglomerates and streaming services, it is clear that film and television production spending increased by 28% from 2018 to 2019. Not every country that reported 2019 figures experienced a similar jump; the UK saw a decline in domestic film and television production last year; while in France, a 4.8% increase in television production investment was cancelled out by a similar drop in film production spending. Elsewhere, however, there were uplifts: Canada grew 8.1%; Australia saw a 16.9% increase; Italy jumped 31% and Denmark surged 49%. In China, Baidu increased its production spending by 16.6% while Alibaba Pictures increased its year-on-year film and television investments by 33.4%.

Where only data from 2018 (or earlier) was available, a uniform 20% increase was applied over the previous year’s television production spending to derive a 2019 estimate that fully accounts for the global increase in production.

9.2.6. Assumptions Regarding Regional Sub-Totals

According to a 2017 report by the EAO, the “big five” European countries (Germany, France, Spain, Italy and the UK) accounted for 53.6% of the overall spending across all 36 countries in its analysis of data from 2007-2016. This percentage split was used to determine production volume for the other countries, a list of 31 made up of the remaining EU Member States plus Bosnia & Herzegovina, Iceland, North Macedonia, Montenegro, Norway, Russia, Turkey and Switzerland.

Based on regional reporting, we assumed that the economies of Mexico, Brazil and Argentina comprise 85% of the total Latin American audiovisual market.

⁵⁴ *Alphabet Discloses YouTube Ad Revenues Of \$15.15 Billion, Cloud Revenues Of \$8.92 Billion For 2019*. CNBC, 3rd February 2020

⁵⁵ *Apple Splashes \$6bn on New Shows in Streaming Wars*. Financial Times, 19th August 2019

Similarly, we assumed that sub-Saharan Africa (minus South Africa) represents 50% of the Nigerian film and television sector.

9.2.7. Film and Television Spending

In the US, companies spend 2.29 times as much on television production as they do on theatrical feature films. In Canada, the corresponding ratio is as much as 5.56. However, in other countries where both sets of figures are reported, that multiple is lower: 1.88 in the UK (a figure that excludes television productions that cost lower than £1 million per episode); 1.59 in France; 1.68 in Australia; 2 in both South Africa and Argentina; and as low as 1.31 in Mexico and around 1.4 in China. In choosing a conservative multiple, SPI opted for a multiple of 1.8.

9.2.8. Licensing and Television Production Costs

The most granular separation of costs between licensing and production can be found in the financial reporting by US media conglomerates and streaming services. Based on those reports, the licensing of programming accounts for 96.1% of total TV content spending. By comparison, the corresponding figure in China, based on analysis by IHS Markit in 2017, is 93.8%. The US percentage was applied to determine additional spending on licensing rights in countries where reported data could not be sourced.

To avoid any double-counting that might arise when a production budget includes television investment that might also be considered licensing spending in another report, we decided to remove 21% from that licensing spend. This is the average contribution by television networks to a European film's budget.

In the case of the UK, the reported figures for film and television spending in 2019 were subtracted from the declared content budgets for ITV and the BBC (minus sports and current affairs) to derive the licensing spend. We did not include Sky's production spending since this is now included as part of Comcast's financial reporting in the US.

9.2.9. Separating Library Rights from Total Licensing Spend

After removing sports rights from the licensing spending totals, the next challenge was determining what percentage of that licensing number is made up of third-party spending on new films and first-run television shows in the form of pre-sales, advances, minimum guarantees and co-financing contributions. Knowing that percentage ensures that our global production total excludes the cost of licensing library rights to augment programming catalogues.

In the UK, we know from Ofcom's 2019 *Media Nations UK Report* that third parties contributed 20.4% of the TV production budgets of first-run UK-originated programming (excluding news and sports) that was commissioned in 2018 by public service broadcasters.

We then tested that 20% figure against the detailed television financing data provided by both the CNC for France and the CMPA for Canada in their respective screen sector reports for 2019. Applying that 20% yields numbers that correspond well with the reported figures for how much of French and Canadian television spending is comprised of pre-sales and co-production contributions from third parties. We then applied that 20% number, which errs on the side of caution, to the licensing spend calculations across the globe.

9.2.10. Amortisation Assumptions

In their annual and quarterly financial filings to the SEC, US media and entertainment companies report investment numbers that are net of accumulated amortisation estimates for all films and television shows that have been released in theatres or premiered on a network or streaming service. In cases where that precise amortisation number is declared as part of the SEC filing, as happens with Netflix for example, we factored that into our totals. In cases where

the percentage is unknown, we applied an industry average of 60% to the net production costs of affected titles.

9.3. Appendix Three: Economic Impact Methodology

The methodology for estimating the economic impacts of Screen Production at a global level involved the following stages of research.

9.3.1. Data Gathering

The first phase of the methodology involved data gathering to find as many recent studies of the economic impact of Screen Production across as many countries and territories as possible, using a literature search. Studies were included in the meta-analysis of output and employment impacts subject to the following criteria:

- They were from 2015 or more recent, unless no recent studies for the country or territory exist – in which case studies back to 2010 were considered for inclusion;
- They included analysis of output and/or employment using a direct/indirect/induced impact framework, and multipliers;
- Where multiple studies of a given country or territory by the same authoring organisation existed, only the most recent study was included – unless there was a significant change in methodology or scope between successive studies, in which case the old study and the new study were included.

This approach produced a total of 47 studies across six continents, creating a database of economic multipliers.

The findings on economic impact of Screen Production and employment in the screen sector value chain from the 47 studies were used to construct a table of multipliers for each country. The estimation of multipliers for each country proceeded as follows:

- Where there is one study for a particular country, that study was used to assign the multiplier
- Where there is more than one study for a particular country, the studies were averaged
- When no study exists for a particular country, an imputation was made using an average of countries that are in the same region, or at a similar level of GDP per head, to that particular country.

After the multipliers were allocated, any values for multipliers that are substantially out of line with the majority multipliers for similar countries were revised to be closer to the average.

9.3.2. Sourcing the Direct Economic Impact Data

The data on **direct economic output** were taken directly from the estimates of global Screen Production sector output, as outlined in Section 3.1 of this Study.

The data on **employment** in the screen sector value chain were taken from the studies used for the meta-analysis, using a consistent definition of the screen sector value chain across different studies (including exhibition and distribution as well as production). The employment figures were checked for consistency with the economic output figures estimated in Section 3.1 and adjusted upwards or downwards if implied labour productivity in the Screen sector is found to be implausibly low or high.

The majority of employment studies focused on FTE employment in the screen sector value chain rather than headcount.

9.3.3. Applying the Multipliers

The headline results for total output and total employment – which include indirect and induced output and employment, in addition to the direct economic impacts – are calculated in the first instance using a global “composite multiplier” which is a weighted average of the multipliers for all the different countries constructed. As a check on the estimates using the

composite multiplier, results are also presented using multipliers estimated at the regional level using data on the geographic location of global Screen Production (i.e. where the production takes place, rather than where the funding for global production comes from).

The global weighted average multiplier for output in the Screen Production sector is estimated to be **2.27**, while the multiplier for employment in the screen sector value chain is estimated to be **2.71**.

The tables below show estimates for multipliers for employment and output in each region of the world using adjusted figures from this Study on the global location of Screen Production which also take account of investment flows between countries. The results presented in these tables are based on weighted averages of multiplier estimates from studies conducted in each region.

Table 10: Employment Multiplier Estimates (Screen Sector Value Chain) by Region

Region	Multiplier (Type 2)
North America	2.65
Asia	3.72
Europe	2.27
Latin America	2.94
Africa & Middle East	2.61
Oceania	3.37
Global	2.71

Note: the Type 2 multiplier is defined as follows: (Direct output + Indirect output + Induced output) / Direct output

Table 11: Output Multiplier Estimates (Screen Production Sector) by Region

Region	Multiplier (Type 2)
North America	2.34
Asia	2.37
Europe	2.09
Latin America	1.90
Africa & Middle East	2.51
Oceania	2.98
Global	2.27

Note: the Type 2 multiplier is defined as follows: (Direct output + Indirect output + Induced output) / Direct output. Output estimates are all converted to US dollars and sourced for the most recent year available (2019 or 2018 in most cases).

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