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THE ECONOMIC IMPACT OF ONLINE CURATED CONTENT SERVICES IN INDIA

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frontier economics

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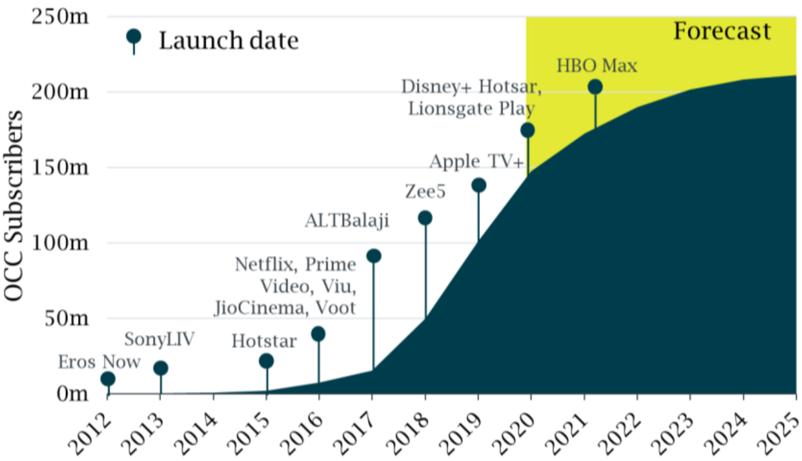
THE ECONOMIC IMPACT OF ONLINE CURATED CONTENT SERVICES IN INDIA

1. OCC takes off in India

India supports a vibrant Online Curated Content (OCC)[*] sector with consumers spoilt for choice of services. The popularity of the services, and the local content they offer, has been growing and nearly **148m** Indians subscribed to OCC services in 2020 (Figure 1).[1] In addition, **88%** of internet users in India use OCC at least once a week,[2] spending **56%** of their time on OCC services watching local content.[3]

FIGURE 1 GROWTH OF OCC SUBSCRIBERS OVER TIME



Source: Ampere

Note: OCC subscribers include any OCC subscription customers that pay a fee. Launch date is the year the service could be first used in India. Figures from 2021 are forecast

OCC related revenue is increasing. Revenue generated by India's broadcasting and online video sector increased by **159%** between 2012 and 2019, following the entry of OCC providers including, predominantly regional players such as ALT Balaji, Eros Now, Voot, JioCinema, MxPlayer, Hoichoi, Sun Direct and Zee5, and

[*] The term Online Curated Content refers to professional and curated online video content and does not include user-generated platforms such as YouTube. Alternative terms can be used to describe Online Curated Content services, including direct-to-consumer services (DTC) and video on-demand (VOD).

EXECUTIVE SUMMARY

This White Paper summarises research Frontier Economics has undertaken into the economic impact of protectionist policies in video content production. It also highlights the impact that OCC providers have in India, and the implications for policymakers who wish to encourage and reap the benefits of such investments.

Online Curated Content (OCC) services have important direct and indirect economic effects on the country's Media and Entertainment (M&E) industry. OCC providers make significant investments in Indian content in several regional languages, and the M&E industry, creating jobs and promoting local content. OCC services are in high demand from consumers, who especially prize domestic content. This drives investment by OCC providers in high-quality, Indian productions, that they then showcase to global audiences.

These investments bring benefits to the economy and society more broadly. Investments in training or infrastructure spill over to the M&E sector as a whole. They also spur tourism, enhance India's reputation and support wider social goals.

To promote made-in-India productions, policies should continue to focus on increasing the supply of investment. Some policies (e.g. tax incentives) and regulatory certainty can significantly boost investment, but others can act as deterrents.

We have found that tough policy restrictions *reduce* exports and are associated with lower investment in content.

international providers including Disney+ Hotstar (formerly Hotstar), Netflix, Amazon Prime, Viu, SonyLIV, and AppleTV+. The sector has been further strengthened by the recent launch of Starz's Lionsgate Play. Other international services are expected to be available soon. Since 2012, the revenue of OCC services has risen to **$483m (INR34bn[4])[5]**, and it is projected to rise to **$2.6bn (INR183bn)** by 2025.[6]

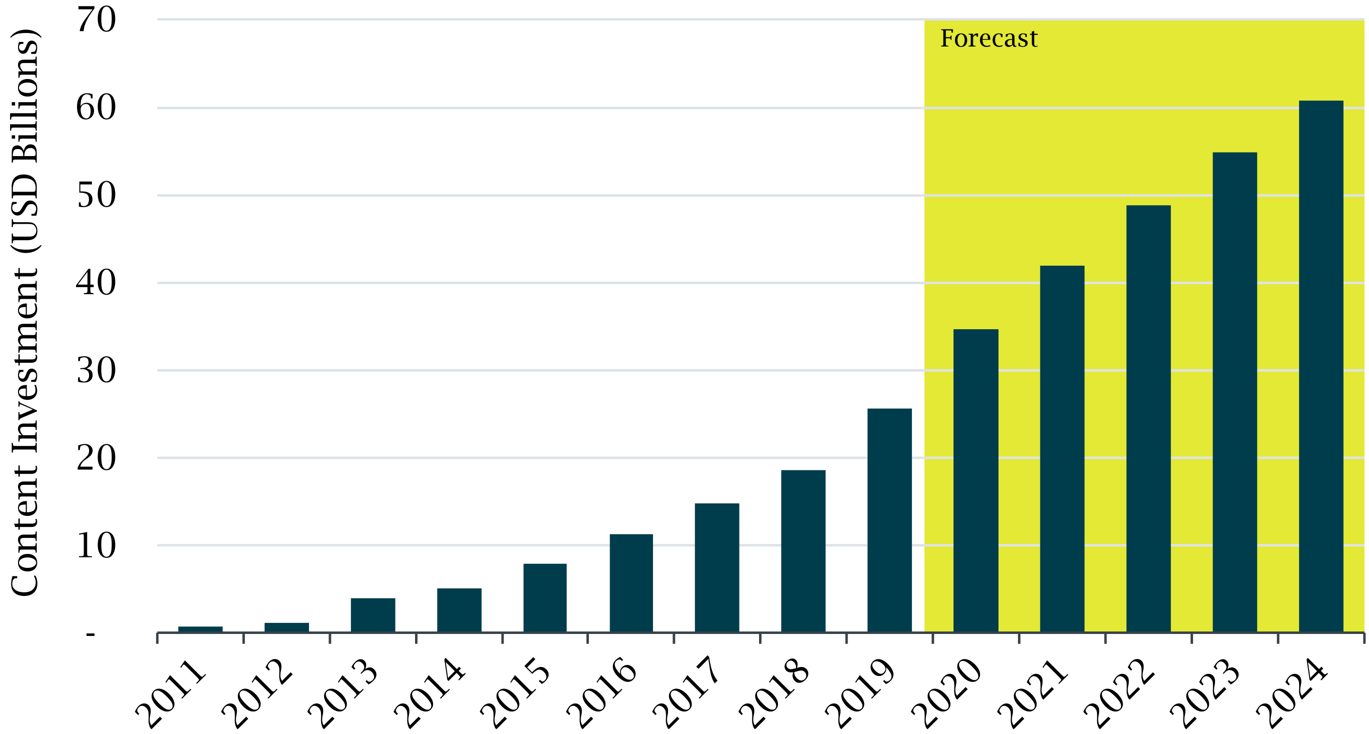
The popularity of OCC also helps fuel demand for the internet in terms of increased data usage, increased speeds[7] and more connections.[8] [9] This brings additional benefits associated with better internet connection such as, higher productivity and increased connectivity. India is a mobile-first market and internet penetration is on the rise for a number of reasons, including the government's Digital India initiative. This has benefitted OCC services, but OCC services are also encouraging people to use the internet more. Research has shown that the proportion of the Indian population using the internet has almost tripled since the entry of OCC providers in 2012, mainly due to the government's initiative, but in part due to demand for OCC services drawing people to increase their internet usage; **34%** of Indians now use the internet (compared to **12.5%** in 2012).[10]

GLOBAL INVESTMENT, LOCAL IMPACT

2. OCC services generate creative content boom

OCC providers invest heavily in content to support their services globally. In 2019, they directly invested **$25.7bn (INR1.8trn)** in OCC content worldwide, including original and licensed titles. This sum is likely to soar to **$61bn (INR4.3trn)** by 2024.

FIGURE 2 GLOBAL OCC CONTENT INVESTMENT 2011 TO 2024



Source: Ampere

The significant increase in content investment in the pipeline includes:

- The Walt Disney Company's plans to invest **$14bn-16bn (INR985bn-1,126bn)** per year in global OCC content by 2024;
- ViacomCBS's plans to ramp up investment in OCC content to **$5bn (INR352bn)** in 2024;[11]
- WarnerMedia's parent company, AT&T's, pledge to invest **$4bn (INR282bn)** in HBO Max in the three years through 2022;[12] and,
- Netflix will spend **$28bn (INR1.97trn)** a year by 2028.[13]

3. OCC services are investing in Indian content

Frontier Economics' research aligns with previous work that has found that there is strong consumer demand for local content, and this demand drives local and regional content production. OCC providers want to meet this demand and are investing in India. As a country's subscriptions grow, so do the incentives to produce content from the country. Notably, the geographic distribution of OCC investment in original titles is broadly proportionate to each country's number of global OCC subscribers, and as subscriber numbers continue to grow in India, so will investment in local and regional content. There is already evidence that there have been large investments in made-in-India content by OCC services, as they compete to offer the high-quality, local content that consumers demand.

- Netflix invested **$405m (INR30bn)** to develop its roster of original and licensed Indian content through 2019 and 2020.[14] It will roll out its biggest roster yet of Indian films and shows, releasing **40** local productions over the coming year.[15]

- Disney+ Hotstar launched in 2015 (initially as Hotstar), with a library of over **35,000** hours of content in seven regional languages and live streaming coverage of sports, including cricket.[16] In 2020, Disney+ Hotstar commissioned **234** episodes of *Selfie with Bajrangi* for streaming, a huge commitment to a Hindi language animated series, that first started on India's Disney Channel.[17]

- In 2016, Prime Video stated it would invest **$300m (INR21bn)** in India in order to create original content.[18] To support this, in 2020 Prime Video announced they were doubling down on their investment in Indian original content, building on the **15** pieces of original content already released with seven more titles.[19]

- Viu invested in **80** Viu original titles in 2019. This included productions from India, Hong Kong, Malaysia, Thailand, Indonesia, the Philippines and the Middle East.[20]

- In 2018, Eros Now announced plans to invest **$70m (INR4.9bn)** in over **100** pieces of original Indian content.[21]

- In 2020, Zee5 planned to invest in, and release, **80** original shows across Indian languages, adding to the **100** original programmes already on their platform.[22]

- ALT Balaji plans to invest in **35** pieces of original content for launch in 2021, setting aside **$21m (INR1.5bn)** to invest in the Indian creative economy.[23]

- Starz's Lionsgate Play has announced its first Indian original series, *Casual*, which will begin production in 2021.[24]

It is important to note that leading providers invest in local content, and the local industry, not only for their OCC services but for all their channels, including linear and theatrical distribution. In 2019, The Walt Disney Company, NBCU, WarnerMedia and ViacomCBS collectively poured **$45bn (INR3.2trn)** into content spending and creation globally (excluding sports) across their distribution channels, which they will partly monetise on their OCC services (Disney+, Peacock, HBO Max/HBO GO and Paramount+ respectively).

4. OCC services create jobs and deliver returns for the economy

The media companies offering OCC services create jobs directly in the production sector across multiple lines of business. These lines include OCC services, feature film, TV content production, distribution of pay TV channels and the licensing of consumer products. In addition, according to research, on average **60%** of production costs are spent outside the specific M&E sector in the general economy to support media companies investments, for example on catering, hospitality, construction and legal services.[25] This spending broadens the employment benefits and the media sector's contribution to the Indian tax base.

- Investment in content and production is a significant engine of growth, both within the M&E industry, and the wider economy. The "employment multiplier" measures the amount of direct, indirect and induced jobs created in the area through investment. The multiplier for the creative economy in India means that for every new M&E position created, **2** jobs are created in other sectors of the economy, as a result of the ensuing demand for input. In India, there are **0.85m** workers directly employed in the OCC sector, which supports employment for a further **1.8m** workers.[26]

- The Indian M&E sector created **INR1.75trn** of revenue in 2019, with the digital and OCC sector creating **INR218bn** worth of revenue[27] and supporting **92,000** jobs.[28] This is expected to grow in the future supporting further employment in the sector.

5. Indians are finding local content they demand on OCC services

Frontier Economics surveyed 1,000 internet users in India and found that Indian consumers demand a diverse array of content, both Indian and international, and that so far OCC services are delivering content consumers want and love.[29]

Consumers feel it is important that OCC services provide Indian content. Indian consumers use their OCC services to watch local, and regional, Indian content. More than half the programming they stream is from India. This content includes the IPL which in 2017, Disney+ Hotstar acquired the digital rights for in a **$2.4bn (INR163bn)** deal lasting through 2022, an unprecedented investment in Indian sport.[30] OCC services are meeting the demands from consumers as fans have since embraced IPL streaming, and cricket was an important driver for subscriber growth in 2020.[31]

56% OF HOURS WATCHED ON INDIAN OCC SERVICES WAS LOCAL CONTENT [32]

70% OF INDIANS CONSIDER IT IMPORTANT THAT THEIR OCC OR TV CONTENT SERVICES PROVIDE LOCAL CONTENT [33]

80% OF CONSUMERS ARE SATISFIED WITH THE AMOUNT OF LOCAL CONTENT ON THE OCC OR TV SERVICES THEY USE [34]

61% OF INDIAN VIEWERS THINK THAT THEIR OCC SERVICES PROVIDE EITHER A GOOD LEVEL, OR THE BEST LEVEL OF CONTENT THAT IS MADE SPECIFICALLY FOR PEOPLE IN INDIA.[35]

6. OCC providers bring Indian content to the global stage

International and local OCC providers are in a position to expand the reach of Indian content to every part of India, and a global audience. OCC services offer unprecedented scale and reach to diverse viewers, including niche audiences that have long sought to watch Indian content from their home on a different continent. By meeting this demand, from both Indian populations living around the world and new interested consumers, OCC services are supporting local producers, Indian exports and promoting the country's artists and culture.

- Netflix's Indian animation *Mighty Little Bheem* has been watched by **27m** households worldwide and has followings in the USA, Brazil and Mexico. Rajiv Chilaka, Chief Executive of the animator that creates *Mighty Little Bheem,* says that Netflix provided the platform for the content to be shared within India and globally.[36]
- Two-thirds of Netflix's *Sacred Games* viewers came from outside of India.[37]
- One-third of viewers of Prime Video's second Indian original series, *Breathe*, came from outside of India.[38]

This trend benefits consumers and producers alike. Global consumers are better able to find the Indian content they enjoy; and producers can increase the export value of their content.

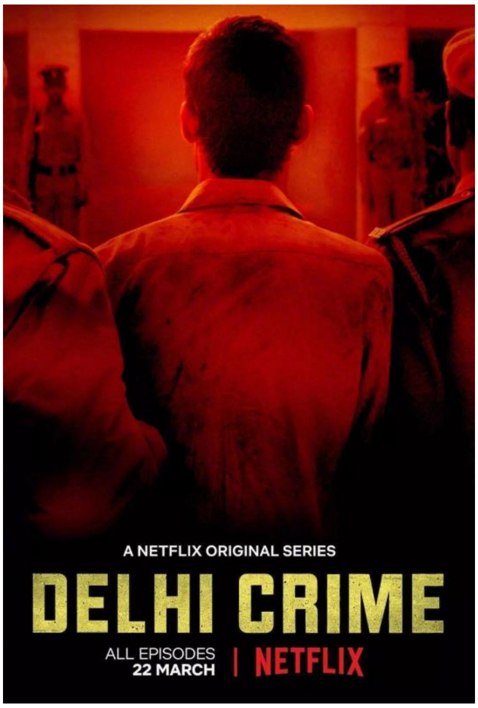
The recent COVID pandemic has highlighted how OCC providers can support investment in content creation and distribution. As traditional theatrical distribution was shut down during the pandemic, OCC providers invested to distribute the content on their services, and thereby bring it to global audiences. For example:

- Amazon Prime Video released *Gulabo Sitabo* and six other Indian produced films as part of Amazon's Prime Video subscription.[39] *Gulabo Sitabo* was not only watched in **4,000** cities in India in its first week of release, but also in **180** countries globally.[40]

- Disney+ Hotstar stuck to its April 2020 launch as the COVID pandemic began to take hold and, in response to COVID related cinema closures, soon created the “Disney+ Hotstar Multiplex” to offer direct-to-streaming premieres of Indian films, including *Dil Bechara*, *The Big Bull*, *Lootcase*, *Khuda Haafiz*, *Laxmmi Bomb*, *Bhuj: The Pride of India*, *Sadak 2*, and *Mookuthi Amman*.[41] The service is also the exclusive streaming home for some of the biggest Indian films and filmmakers;[42] and

- Netflix released a number of made-in-India titles including *Ludo*, *Torbaaz*, *Raat Akeli Hai* and *Bombay Rose*.[43] According to Netflix “*India has the highest viewing of films on Netflix globally*” in 2020.[44] And the director and producer of *Torbaaz* noted that the film “*received an excellent audience response in India, but to receive overwhelming responses globally from countries like Pakistan, Afghanistan, Bangladesh invigorate the fact that fighting terrorism through reforms resonates with the global audience”.* [45]

CASE STUDY OCC CONTENT INVESTMENT IN INDIA: *DELHI CRIME*



Delhi Crime is a Netflix Indian original series. It was filmed in India using local cast, crew and production teams.

The series was a success, both in India and globally, and became the first ever Indian series to win an Emmy award in 2020 for Outstanding Drama Series. Netflix continued their investment in India by renewing the show for a second season.[46] *Delhi Crime* is inspired by, and follows, the December 2012 investigation by the Delhi Police into the horrific gang rape of a young woman, which reverberated across India and the world. The series highlighted and confronted important domestic social issues that connected to a lot of viewers. Writer and director, Richie Mehta said, *“I hope that we’ve been able to provide context, catharsis and open once again a difficult conversation that must be had about the forces that enabled this brutality.”*[47]

A Netflix spokesperson said *“Delhi Crime is an important story told with sensitivity and responsibility, and we are honoured to help bring this series to Indian and global members. It is honest and emotional and powerful. Shows like this bring a much-needed lens to the lived reality of women around the world. Watching this series is an affecting experience, and we are sure it will be as meaningful of an experience for Netflix audiences as it was for us.”*

INVESTMENTS BRING WIDER ECONOMIC BENEFITS

7. OCC investment spurs skills, innovation and infrastructure in the M&E sector

Content investments by global OCC services, and the media companies backing them, create indirect economic benefits for the broader M&E sector. Policymakers should consider these benefits when setting the policy and regulatory environment: by supporting and incentivising investments, they enhance the capacity and capabilities of the entire sector.

- Through training partnerships, OCC services can help train and develop deep domain expertise in production, screen writing, and other functions critical to developing and growing India's creative economy. Investment by OCC providers in training and skills during content production ripples through the M&E industry as highly skilled workers shift jobs and collaborate with others. The spillover effects have been found to increase with the size of investment.[48]

- Innovations introduced to India on the back of inward investment will diffuse around the industry and be taken up by other domestic productions in India.[49] For example, Neha Sinha, director, international originals at Netflix India, said of Sacred Games that it "*changed the (video streaming) ecosystem, in terms of the way shows are written and put together in India, and is continuing to add to it*", for example it introduced the concept of a showrunner, who is the creator and lead writer of the show and takes major calls on look, feel and theme.[50]

- Investments in infrastructure, such as studio space or post-production facilities, increase the capacity and capabilities of the industry as a whole.

8. OCC investments produce broader benefits for India

OCC investments bear fruit beyond the M&E sector. More broadly, the creative industries disproportionately generate wider economic impacts through tourism, training and by projecting India's culture and influence on the global stage.

Investing in content can be a magnet for tourists who want to see where their favourite show was shot. OCC services, with their ability to bring Indian content to a global audience, are exceptionally well placed to stimulate tourism and generate wider reputational benefits for India, long after a title's initial release. Content-induced tourism is on the rise. A TripAdvisor survey suggested that **20%** of global travellers have visited a destination because they saw it in a TV show or movie.[51] Research has estimated that film tourism has the scope to generate **$3bn (INR211bn)** in India by 2022, and there is potential for up to **1m** film tourists to visit the country.[52]

OCC services are also investing across the regions in India, supporting local languages and cultures, which is helping to develop a wide range of creative talent.

HELP INVESTMENT, DON'T HINDER IT

9. Pro-investment policies can keep India's Media & Entertainment sector growing

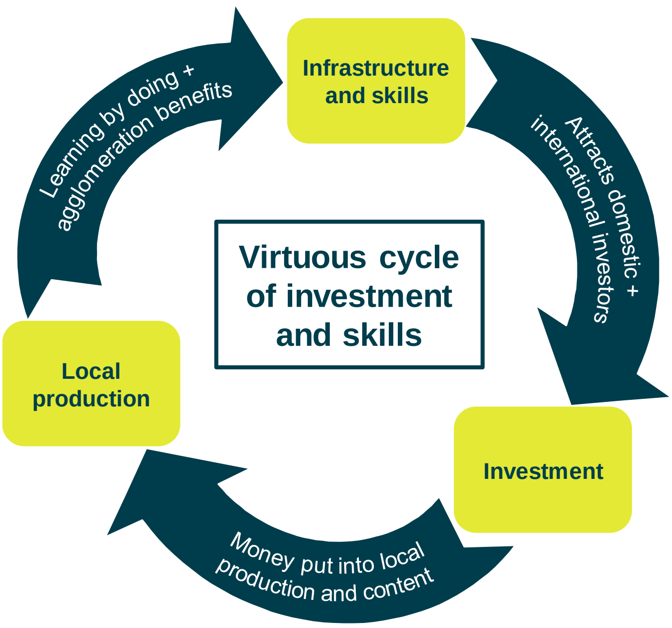
Governments benefit when they attract investment in content: this high-value-added activity makes a disproportionately large contribution to GDP, provides skilled, well-paid employment, stimulates economic growth, and supports a country's exports.

However, production of top-quality content is costly. It requires sector-specific infrastructure, state-of-the-art technology, complex production processes and large crews of highly trained specialists from many different trades. At the same time content creation, like any art form, is a risky investment.

Policies such as tax rebates or subsidies, that mitigate the risk and high fixed costs of content creation, have been found to significantly increase content investments.[53] One example of such a policy, is the Ministry of Commerce and Industry's Champion Sector Services scheme which targets 12 sectors, including the audiovisual services, through funding and support for initiatives to help the sectors realise their potential.[54] Policymakers can also ensure a strong supply of skilled, high-value workers by supporting training and education programmes, that will benefit both global and Indian providers of local content.

The Indian government (MIB) has adopted a "light touch" content regulation framework for OCC, including elements of self-classification and industry self-governance. This policy supports the case for investment by providing stability and confidence in the regulatory environment. However, the introduction of new regulations, or the extension of legacy economic regulations that were designed for a different media era, have the potential to disrupt the sector and risk harming incentives to invest.

India's existing policy framework, encourages investment in the M&E sector and underpins a virtuous circle of content creation and skills development.[55] Catalysing investment in infrastructure and skills enhances the industry's capacity and capabilities. This in turn makes it an increasingly attractive location for new investment.



These policies can nurture the growth of self-sustaining "creative hubs of local production" with firms incentivised to locate and concentrate activities in India to the benefit of the country's economy.[56] For example, Netflix's Post-Production Partner program is profiting post-production firms such as Aradhana Films, AUDIOMAGICK, Prime Focus Technologies and Sound & Vision India. The collaborative scheme aims to improve the quality of post-production work including dubbing, audio description, scripting, and quality control.[57]

Policies that discourage or constrain foreign investment and market entry can disrupt this virtuous cycle. New regulations, that alter the self-governance regime for OCC services, can likewise disrupt investor confidence in the sector. Instead of the local M&E sector enjoying rising investment, cutting-edge infrastructure and ever-higher skill levels, heavy-handed policies may stifle creativity, and hamper innovation and growth opportunities in the long run.

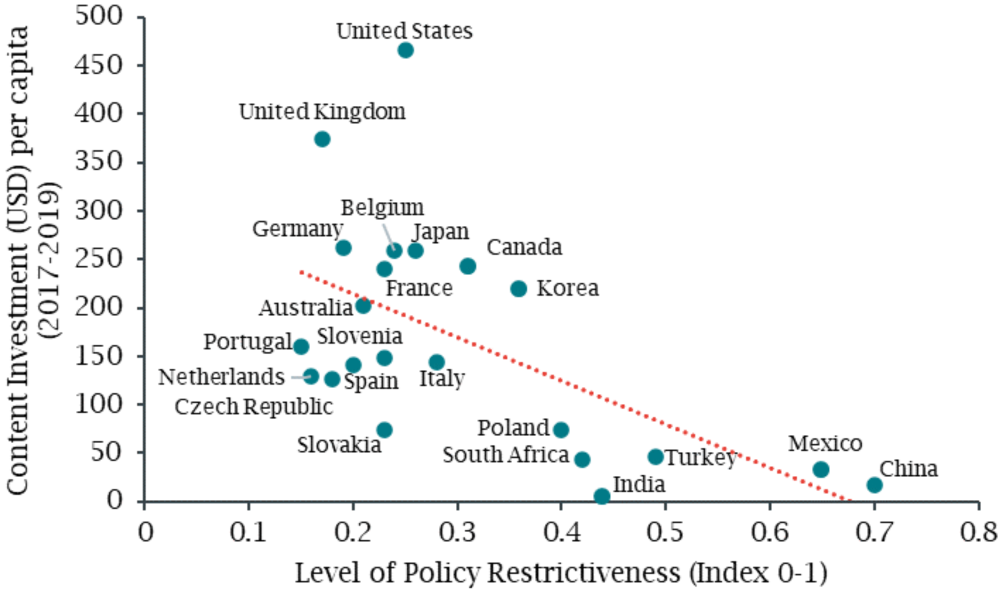
10. Our research finds that protectionist policies can hurt the economic potential of local M&E industries

Protectionist policies intended to shield local companies from international competition could result in local industries that are inward-looking, less innovative and less able to produce high-quality content that is in demand internationally. Many countries have cultural policies aimed at promoting local content, but some come at a cost and prove ineffective at achieving the goals they pursue. Our analysis, which examined the relationship between protectionist policies and AV (M&E) trade (i.e. licensing content internationally), found that higher levels of protectionist policies (for example the introduction of content quotas), ***lead to reductions in AV (M&E) exports.***[58] This implies that countries with higher levels of protectionist policies are less able to monetise their content in international markets, or show off and promote their culture to audiences around the world.

11. Put up barriers and you may put off investors in content

Countries that have greater policy restrictions tend to have lower levels of investment in content. While there are many other factors at play,[59] Figure 3 below is consistent with the hypothesis that more protectionist policies discourage content investment (at least for the countries selected). The result of lower content investment is inevitably lower employment and skills development in the sector.

FIGURE 3 RESTRICTIVE M&E POLICY CORRELATES TO LOWER INVESTMENT (SELECTED OECD COUNTRIES AND CHINA)



Source: Frontier analysis of Ampere and OECD data

Note: All values of content investment are nominal. . For each country, content investment data includes investment by commercial and public broadcasters and also by selected VOD services where spend can be disaggregated by country. Excludes any investment in sports rights. Countries were selected based on data availability and include OECD countries and China. The level of policy restrictiveness is the OECD's broadcasting-specific Services Trade Restrictiveness Index (STRI), which captures the level and range of non-tariff barriers in services trade within the sector. The STRI is a widely used measure of policy restrictions on services used by academics and policymakers. The STRI is an index between zero and one attributed to each country, where zero would imply no policy restrictions, and one the highest possible policy restrictions.

OCC CAN HELP INDIA'S MEDIA & ENTERTAINMENT INDUSTRY CONTINUE TO FLOURISH

India has a vibrant film, television and video on-demand industry which brims with potential. OCC services make a significant and growing economic contribution within that sector. Consumers are increasingly subscribing to OCC services and, as a result, the services are delivering the content made in India that consumers want and love. OCC services are also India's "shop window" to the world: offering international audiences a diversified menu of in-demand Indian content.

India's successful OCC sector is enabled by a positive, supportive and stable policy and regulatory environment, which partly relies on elements of self-classification and industry self-governance, and is open to investment. India, therefore, benefits from new employment opportunities, higher economic output, increased exports, a more competitive skills base, and expanding sector infrastructure as a result. This, in turn, creates conditions to attract new investment. To promote made-in-India productions, and take them to the global stage, government policies should focus on facilitating investment into the industry.

[1] OCC subscribers counts the number of paid subscriptions there are to OCC services in India. These are often used by more than one person usually within the same household.

[2] Results are from an online consumer survey of 1,000 Indian internet users ("Kantar Survey"). The survey, designed by Frontier Economics, was conducted by Kantar between 30th November and 14th December 2020. See technical annex for further detail. Question: *How often do you watch Online video subscription services (OCC) which offer professionally-produced full length movies, shows or series on online video services on demand for a regular fee?* Base: *All respondents (1,000)*

[3] Kantar Survey, Question: *When you watched your Online video subscription service (OCC) last week how many hours did you spend watching local content from your country?* Base: *Respondents who watched subscription OCC at least once a week (875)*

[4] The average 2019 USD-INR exchange rate has been used to convert USD figures into INR. OECD Exchange Rates.

[5] Ampere, Subscription OCC revenue in 2019, extracted October 2020

[6] Revenue in the Indian Video Streaming (OCC) segment is projected to reach $1.2bn (INR85bn) in 2021 and to show an annual growth rate (CAGR 2021-2025) of 20.27%, resulting in a projected market volume of $2.6bn (INR183bn) by 2025. Statista, *Video Streaming Market Forecast – India*, March 2021

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[10] World Bank Data from the International Telecommunication Union (ITU) World Telecommunication/ICT Indicators Database. Records individuals using the internet as a percentage of the population. Most recent data is from 2019. Internet users are individuals who have used the Internet (from any location) in the last 3 months. The Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV etc.

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[32] Kantar Survey, Question: *When you watched your Online video subscription service (OCC) last week how many hours did you spend watching local content from your country?* Base: *Respondents who watched subscription OCC at least once a week (875)*

[33] Kantar Survey, Question: *Considering all TV and video services you use, how important is it that your TV and video services provide the following types of content on a scale of 1-5*? Scale; 1 = Not important to me at all, 2 =

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somewhat unimportant, 3 = neutral, 4 = quite important to me, 5 = Very important to me. The content types were content that includes people like me, represent where I live, is made in your country, is relevant to my life, is made by people from your country. The result shown here is an average across the content types. Base: *All respondents (1,000)*

[34] Kantar Survey, Question: *Considering all TV and video services you use, on a scale of 1-5, how satisfied are you with the amount of TV and video content that is made specifically for people in your country and in your language?* Scale; 1 = Very unsatisfied, 2 = somewhat unsatisfied, 3 = Neutral, 4 = somewhat satisfied, 5 = Very satisfied. Base: *All respondents (1,000)*

[35] Kantar Survey, Question: *Thinking about each of the different TV and video services that you watch, how well do they provide content that is made specifically for people in your country for example, telling stories about people in your country, or with actors or presenters from your country?* Scale: 1 = Does not provide any content that is made specifically for people in my country at all, 2 = Does not provide enough content that is made specifically for people in my country, 3 = Provides some content that is made specifically for people in my country, 4 = Provides a good level of content that is made specifically for people in my country and 5 = Provides the best possible level of content that is made specifically for people in my country. Base: *All respondents that use the services at least once every 3 months (968)*

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[58] This analysis examines the relationship between protectionist policies and audiovisual (M&E) trade. An econometric model was used that simultaneously estimates how different factors impact the level of audiovisual (M&E) trade between countries. This was done in order to correctly isolate the impact of trade restrictiveness on audiovisual (M&E) exports (as measured by the OECD's Services Trade Restrictiveness Index). Alternatively, if India were to reduce its level of policy restrictions in the broadcasting sector to the average (median) level in the OECD, the modelling suggests that broadcasting exports could increase by 59%. See technical annex for further detail.

[59] Factors that affect the level of investment in a country include the existing capital stock in the sector, the level of income of a country and the level of public investment.

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TECHNICAL ANNEX

ECONOMETRIC ANALYSIS OF THE RELATIONSHIP BETWEEN PROTECTIONIST POLICIES AND AUDIOVISUAL TRADE

Frontier Economics carried out a quantitative econometric assessment of the impact of protectionist policies on trade in AV services. The econometric modelling found that higher levels of protectionist policies lead to reductions in AV exports.

METHODOLOGY

In order to quantify the impact of cultural restrictions on AV trade, Frontier Economics conducted an econometric analysis of the relationship between policy restrictions in the AV sector and international trade within that sector. Policy restrictiveness is measured by the Organisation for Economic Co-operation and Development's (OECD) Services Trade Restrictiveness Index - STRI. A "gravity model" was used to estimate the relationship.

Gravity models are based on the premise that trade between pairs of markets, is affected by each market's size and the distance between them. Hence the term "gravity model", borrowed from planetary gravity: just as planets are attracted to each other in proportion to their sizes and proximity, so trade gravitates to geographically close and big economies.

The analysis models the factors that affect trade between different markets. As well as size (measured by GDP) and distance, these include:

- common language (markets with common languages trade more for example UK and Canada);
- historical ties (Brazil and Portugal);
- shared border (Argentina and Paraguay); and,
- the degree of protectionist policy will also determine trade (markets with protectionist policies will, all else equal, export and import less).

EXECUTIVE SUMMARY

This technical annex provides further detail on the methodology used in the analysis for the White Paper, 'The Economic Impact of Online Curated Content services in India'. The White Paper summarises the impact of protectionist policies in video content production and highlights the economic impact of Online Curated Content (OCC) providers.

Two distinct pieces of original research were conducted for the study:

1. Econometric analysis of the relationship between protectionist policies and audiovisual (as known as Media & Entertainment) trade; and

2. A consumer survey.

The gravity model approach allows the estimation, at a high level, of the impact of a market's policy restrictions, compared to a less restrictive environment. That is to say, it allows the estimation of the 'elasticity' of services trade (imports and exports), with respect to a change in the level of policy restrictions.

DATA

The main dataset, including distance, GDP and other variables is from the Centre d'Études Prospectives et d'Informations Internationales (CEPII).[1]

Bilateral services trade data is from OECD EBOPS[2] and is reported for a number of different sectors.

The magnitude of trade restrictions in broadcasting can be measured using the OECD's STRI created by OECD.[3] To create the STRI, the OECD collects experts' responses to questions on trade restrictions from each market in the dataset. The answers are then assigned a score and weighted based on expert judgement. Weighted scores are then added up to give a market level score. This measure is calculated on a sector-by-sector basis for each market, including the broadcasting sector, and is widely used by academics and policymakers. However, there are some limitations of the STRI measure:

1. the measure does not distinguish between restrictions facing traditional broadcasters and online video service (OCC) providers, and the scores are mostly driven by traditional broadcasting restrictions; and,
2. the STRI questionnaire contains mostly binary questions that cannot capture perfectly the significance of the restrictions in practice.

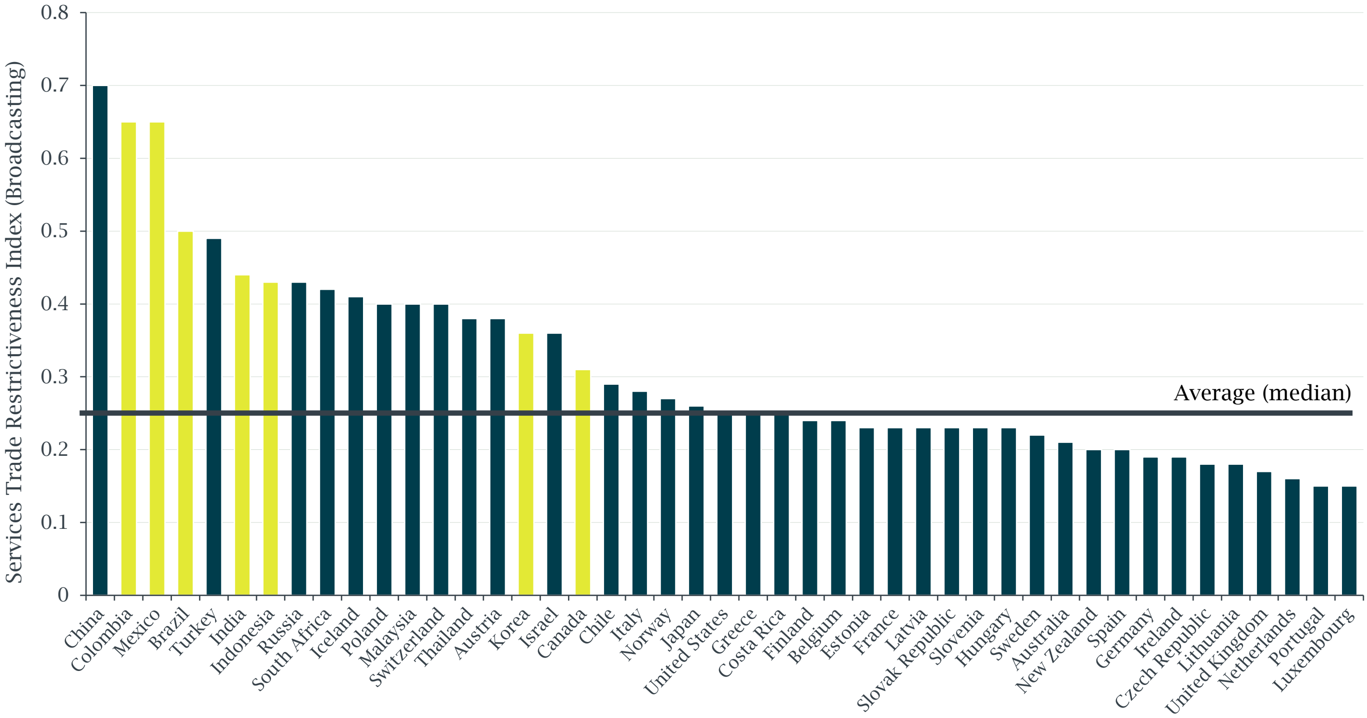
Despite this, the STRI is the most appropriate and recognised measure for such analysis. The figure below shows the 2019 broadcasting STRI for all 46 markets for which data is available.

[1] http://www.cepii.fr/cepii/en/bdd_modele/presentation.asp?id=8, dataset originally developed for HEAD, K., T. MAYER AND J. RIES, 2010, "The erosion of colonial trade linkages after independence" Journal of International Economics, 81(1):1-14.

[2] https://stats.oecd.org/Index.aspx?DataSetCode=TISP

[3] http://stats.oecd.org/Index.aspx?DataSetCode=STRI

FIGURE 1 BROADCASTING STRI BY MARKET



Source: OECD STRI 2019 – Broadcasting sector

Note: Markets highlighted are those for which market specific white papers were produced. Argentina and Taiwan are not included as the OECD STRI data is not available for these markets.

SPECIFICATION AND RESULTS

The model predicts trade from market I to market J as a function of the size of the two markets (log GDP), the STRI scores of the two markets, a series of dyadic variables X (log distance, and dummies for common language, contiguity, colonial relationship, and whether EU pair), year dummies and sector dummies.[4]

This can be written as follows:

$$\text{Trade flow}_{ijst} = b_0 + b_1 \text{logGDP}_i + b_2 \text{logGDP}_j + b_3 \text{STRI}_i + b_4 \text{STRI}_j + b_5 X_{ij} + b_6 \text{yr}_t + b_7 \text{sector}_s + u_{ijst}$$

It is possible to estimate the elasticity of trade with respect to STRI on a sector-by-sector basis and, an estimate based specifically on the AV sector was tested. However, sector specific results are not consistent across sectors and are particularly sensitive to outliers and data limitations.[5] For example, the AV sector

[4] The regression is estimated using a poisson pseudo-maximum likelihood (PPML) approach, following the Nordas-Rouzet paper. The coefficients in a PPML regression give the proportional change in the dependent variable in the same way as in an OLS regression with a logged dependent variable. In both cases the percentage change in the dependent variable for a change in variable X is given by exp(βvar*Δvar)-1. The PPML approach is argued to be better for dealing with missing observations and is described in detail in Silva and Tenreyro (The Log of Gravity, Review of Economics and Statistics, 2006. The authors use Monte Carlo simulations to compare the performance of log-linear OLS and PPML estimators).

[5] The priority was to estimate reliable parameters on the variables of interest, to describe the relationship between AV trade and STRI. Therefore a parsimonious approach was adopted to estimate parameters that were robust and stable, rather than attempt to over-specify the model to increase its overall predictive power (leading to a higher R-squared). The "AV sector only" model had an R-squared of 0.70 but the co-efficients were unstable partly due to outliers (not least the USA which has a significant impact on

estimate is strongly influenced by inclusion of the USA. Therefore, results from a pooled subsample of sectors were used as the central estimate of the elasticity of trade with respect to STRI. This incorporates service sectors such as AV, telecoms, financial, and computer, but excludes transport and construction services. This pooled specification uses the maximum amount of variation available in the data by drawing on trade relationships for similar sectors, and is less prone to influence from outliers.

The results of the pooled regression are shown in Table 1 below. The negative exporter STRI coefficient in both specifications shows that higher levels of protectionist policies (for example the introduction of content quotas), which would increase STRI, are negatively associated with AV trade and lead to reductions in AV exports. This negative association is the key finding of the econometric analysis. The values shown below illustrate examples of what this could mean in practice for exports.

The first column includes all 14 sectors for which STRI data is available. The exporter STRI coefficient of -1.53 means that, if the STRI score is reduced by 5 percentage points and made less restrictive, trade would be increased by 8%.[6] The other coefficients, for example on GDP and distance, are comparable to other services trade gravity model estimates. The second column shows a more targeted specification with results relating to nine sectors most comparable to the sectors of interest, focusing on communications and professional services (transport, logistics and construction are excluded). The STRI coefficients become somewhat larger. The results were sensitivity tested by considering how elasticities were responsive to removing outliers, and to reweighting the components of the STRI index.

The effect of the relationship between trade and policy restrictiveness can be considered by illustrating the impact of content quotas. Introducing local content quotas for broadcast time increases STRI by 1.8 points (0.018). The exporter STRI coefficient of -2.441 in the second column means that, if for example local content quotas for broadcast time were introduced in a market (increasing the STRI score by 1.8 percentage points), AV exports would reduce by approximately 4.3%.[7]

parameter estimates). The specification chosen therefore moderates the instability in the parameters by drawing on relationships from other sectors.

[6] Using the marginal effects formula above, this is given by -1.53*-.05 = 8%.

[7] Using the marginal effects formula above, this is given by -2.441*0.018 = -4.3%.

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TABLE 1 REGRESSION OUTPUT FOR POOLED REGRESSIONS

	POOLED	POOLED SUB-SAMPLE (MAIN ESTIMATE)
Log distance	-0.591	-0.666
	[22.29]**	[14.47]**
Log GDP exporter	0.548	0.604
	[39.78]**	[26.72]**
Log GDP importer	0.612	0.61
	[33.61]**	[18.79]**
Contiguity dummy	-0.022	-0.293
	[0.37]	[3.05]**
Common language dummy	0.544	0.781
	[8.16]**	[7.53]**
Colonial dummy	0.417	0.437
	[5.27]**	[3.90]**
STRI exporter	-1.535	-2.441
	[6.51]**	[5.49]**
STRI importer	-0.923	-1.718
	[5.22]**	[6.12]**
EU pair	0.133	0.157
	[2.54]*	[1.71]
Constant	-21.9	-27.0
	[33.0]**	[23.9]**
R2	0.28	0.24
N	39232	24977

Source: Frontier Economics' analysis of OECD and CEPII data.
Note: T-statistics in parentheses, significance levels: $p<0.05$; ** $p<0.01$. *A specification of the model using only the AV sector was tested, but gave unstable results sensitive to outliers. The results from the pooled model were considered to be more reliable.*

CONSUMER SURVEY

Frontier Economics designed an online survey for at least 1,000 internet users in each of nine markets. The online questionnaires were conducted by Kantar between 30th November 2020 and 14th December 2020.

Quotas were set to ensure the sample of respondents for each market was nationally representative by age between 18 and 65, and by gender. The survey included responses for the 66-75 age group also; however, for some markets individuals aged 66-75 were slightly under represented as these users tend to be less likely to be internet users. Table 2 below, shows the number of respondents for each market by age group and gender.

TABLE 2 NUMBER OF RESPONDENTS FOR EACH AGE CATEGORY AND GENDER, BY MARKET

MARKET	TOTAL	18-24	25-34	35-44	45-54	55-65	66-75	MALE	FEMALE	PREFER NOT TO SAY
Canada	1,000	119	184	173	190	205	129	499	500	1
Argentina	1,002	166	234	214	159	152	77	500	501	1
Brazil	1,000	163	240	215	176	137	69	500	497	3
Colombia	1,000	184	240	195	188	142	51	501	498	1
Mexico	1,000	190	247	211	169	122	61	500	498	2
India	1,000	192	249	218	170	121	50	500	497	3
Indonesia	1,006	191	257	248	183	116	11	500	500	6
Korea	1,006	124	176	205	215	192	94	503	501	2
Taiwan	1,000	129	204	223	201	195	48	501	497	2

Source: Frontier Economics' Consumer Survey Results

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