

Deloitte Access Economics

Economic
contribution of screen
production in South
Australia

South Australian Film
Corporation

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Key findings

Deloitte Access Economics estimates that in financial year 2013-14 screen production made a **total economic contribution of \$77.2 million to South Australia's gross state product (GSP) and 754 full time equivalent (FTE) employees**, as summarised in Table i.

Table i: Total economic contribution to of screen production in South Australia, financial year 2013-14 (\$M)

	Gross operating surplus	Labour income	Value added	Employment (FTE)
Direct	10.7	34.7	38.8	515.8
Indirect	15.3	23.1	38.4	238.4
Total	26.0	57.8	77.2	754.1

Source: Deloitte Access Economics estimates. Note: GVA for direct contribution calculated net of Government subsidy of \$6.6 million as shown in Table 3.1. Due to rounding, sums for employment do not add to total.

This total economic contribution comprises a direct contribution to GSP of \$38.8 million in value added and 515 FTE employees directly employed by the screen production industry in the 2013-14 financial year. The direct contribution is made up of the gross operating surplus of the screen production industry as well as the labour income earned by employees.

One direct contribution from the screen production sector is the labour income of the approximately 150 staff who are employed by Rising Sun Pictures in their offices on Pulteney Street. While much of its work is international, Rising Sun Pictures also benefits from other parts of the South Australian screen production sector and produced visual effects as part of the *Anzac Girls* production.

The benefits are broad in nature

The jobs and investment in the screen production sector are spread across South Australia in a wide range of roles – from highly trained creative professionals working at Academy Award winning Visual Effects (VFX) houses with major international reputations to trades working on film sets. Indirectly, screen production supports other sectors including food and hospitality, accommodation, construction and professional services.

Using input-output analysis, Deloitte Access Economics has estimated the indirect economic contribution of the screen production sector to South Australia's economy at \$38.4 million in value added and 238 FTE employees in financial year 2013-14. The indirect contribution is the contribution made by the screen production sector to the broader economy through its spending in other industries. The indirect contribution of the screen production sector can be seen through projects like *The Babadook* where the film required the development of a replica house as a set for the shoot at Adelaide Studios.

Jobs and investment occurs widely across the state, especially when required for creative reasons. Productions like *Tracks* and *Anzac Girls* both used locations outside of metropolitan Adelaide, which resulted in economic benefits to regional and remote towns like Oakbank, Leigh Creek and Parachilna.

1 Background

1.1 Our engagement

The South Australian Film Corporation (SAFC) engaged Deloitte Access Economics to undertake an assessment of the economic contribution of screen production in South Australia to both the South Australian and Australian economies.

The screen production industry in South Australia includes an array of business activities across the state including projects for film, television and digital media. Distribution and exhibition were excluded from the analysis.

This economic contribution study measures the direct contribution to gross state product (GSP) of the South Australian film and television industry, as well as employment associated with the industry. Indirect and flow-on contributions to other sectors of the economy are quantified using an input-output (IO) framework.

1.2 Economic contribution studies

The direct economic contribution to gross state product (GSP) of the South Australian screen production industry is the value added created by labour and capital inputs employed directly by the industry. Direct activities related specifically to the screen production industry include project development, the actual making of content for the screen and post production activities such as editing and the addition of special effects.

The indirect contribution is a measure of the demand for goods and services produced in other sectors of the economy as a result of the direct economic activity in the screen production sector. The size of this flow-on activity is dictated by the extent of linkages with other supplier sectors of the economy. Estimation of the indirect contribution is undertaken in an IO framework using Australian Bureau (ABS) of Statistics IO tables.

The total economic activity generated by the screen production industry is the sum of the direct and indirect components. All the direct, indirect and total contributions are reported as value added, gross operating surplus (GOS) and employment.

Further detail on the approach used to measure the economic contribution of South Australian screen production is provided in Appendix A.

1.3 Methodology

The methodology used to measure the economic contribution of the South Australian screen production industry was based on the methodology which Deloitte Access Economics used to measure the size of the film and television industry for Australian Screen Association.

This report updates key data in the industry to estimate the economic contribution of the industry in 2013-14. ABS data for the production sector was utilised, however, the data is based on old information and as such has been updated using growth rates estimated by Deloitte Access Economics. These growth rates have been estimated using data from the SAFC, as well as Screen Australia and ABS.

1.4 Structure of the report

This report is structured as follows:

- Chapter 2 provides information on the screen production industry in South Australia, including information about its history and the role of the South Australian Film Corporation
- Chapter 3 provides the results of the contribution modelling of the screen production industry
- Appendix A provides more detail on the methodology used and the typical limitations of economic contribution studies.

2 Screen production in South Australia

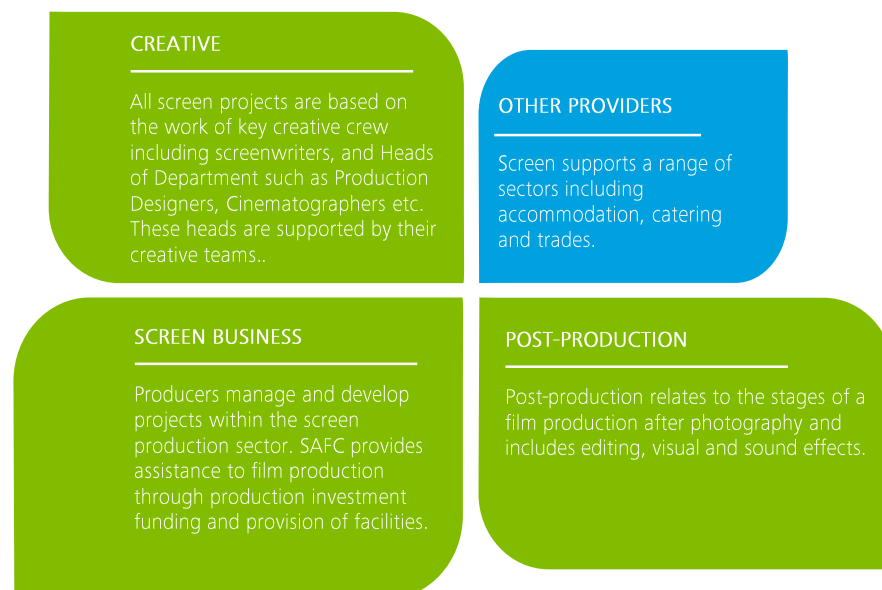
This chapter provides a background to the South Australian screen production industry; its history and the role of the SAFC.

2.1 The screen production sector in South Australia

Around the world, screen production is a sector with a strong reliance on a range of different providers which are integrated to deliver a particular production according to a standard production model, which has been described as the Hollywood mode of production. Lampel & Shamsie (2003) describe the development of films in the current era as being based around studios which are 'network hubs', as opposed to the hierarchical modes of production more common in previous eras¹.

The screen production sector includes a range of different players which each are involved in the production of screen projects. These include creatives (e.g. the director, the cast), producers and the production companies which finance and develop projects, post-production houses which deliver services after a project has been filmed. Indirectly, the screen production sector also supports a wide range of service providers across other sectors of the economy.

Figure 2.1: Screen production sector and indirect providers



2.2 Establishment and history of screen production in South Australia

A basic screen production industry has existed in South Australia since the commencement of television broadcasting by NWS-9 in 1959.

However, the development of the film industry was driven by the Dunstan Government. It was a project with which Premier Don Dunstan was deeply personally connected. Dunstan wrote in his memoir, *Felicia*:

¹ Lampel & Shamsie (2003), 'Capabilities in Motion: New Organizational Forms and the Reshaping of the Hollywood Movie Industry', *Journal of Management Studies*, vol 40, p 2199.

The film industry in Australia, virtually dead since it had been strangled by Hollywood in the twenties, and still under Hollywood sway with their effective control of distribution, and power to dump films into Australia, had shown some signs of revival in Melbourne and Sydney, with the production of some Australian, albeit lightweight ventures which had made a profit. South Australia had no film industry, and no skilled operation. I was intent on creating a film industry here.²

The development of the film industry in South Australia commenced with the passage of the *South Australian Film Corporation Act 1972* which empowered SAFC to undertake and support film production within South Australia³.

The first film produced by the SAFC was *Sunday Too Far Away*, starring Jack Thompson as a striking shearer during the 1950s. The film won several awards at the Australian Film Institute awards. The SAFC went on to produce a suite of films through the late 1970s and 1980s, including *Picnic at Hanging Rock*, *Storm Boy* and *Breaker Morant*.

Following the development of the Hendon Studios in 1980, the SAFC supported both film and television production with soundstages, production facilities and production areas. From the mid-1990s, the SAFC shifted from a model of supporting screen production by directly producing films to providing financial and operational support to film producers other than the SAFC.

2.3 Investment in Glenside and Adelaide Studios

In 2008, the South Australian Government announced the investment of \$48 million to develop a new hub for the South Australian screen production industry at the historic Glenside mental hospital site. Adelaide Studios opened in 2011 and include two sound stages, a Dolby Premier 7.1 Mixing Theatre, ADR and Foley Studios and dry hire edit suites, as well as a 100-seat screening theatre.

In recent years, the SAFC has supported feature film productions including *Wolf Creek 2*, *Oranges and Sunshine*, *The Babadook*, *Tracks* and TV productions including *Anzac Girls*, *Deadline Gallipoli* and *Danger 5*. Many of these productions used the Adelaide Studios facilities.

While there is significant private investment in screen production projects by producers, broadcasters and private investors, federal and state governments play a significant role in the screen production sector across Australia. There is a federal screen production agency (Screen Australia), as well as agencies in every state and territories across Australia which mirror the role which is played in South Australia by SAFC. These agencies are Screen NSW, Film Victoria, Screen Queensland, ScreenWest, Screen Tasmania, ScreenACT and Screen Territory.

These agencies are reflected in support agencies for screen production in most developed countries around the world. The typical activities of these agencies are detailed in SAFC's annual report. SAFC's activities include:

- 'Screen practitioner development and support
- Script and project development
- Production investment funding, cash flow loans and incentives.
- Operation of production and post-production facilities.
- Marketing South Australia's [in SAFC's case] unique locations, professional crew and state of the art facilities both domestic and international markets⁴.

The main model for Federal Government support for the sector is through the producer offset and a production funding program. Both programs are operated by Screen Australia.

² Don Dunstan (1981), *Felicia*, p 209.

³ *South Australian Film Corporation Act (1972)* s 10-11.

⁴ South Australian Film Corporation (2013), Annual Report.

The producer offset is a refundable tax offset which applies to 40 per cent of the qualifying Australian production expenditure for a feature film and 20 per cent of qualifying Australian production expenditure for programs other feature films (e.g. television productions). In addition to receiving the producer offset, projects can receive funding through dedicated Screen Australia programs, such as the Feature Film Production program. Screen Australia's Feature Film Production program will provide up to \$2 million to fund up to 65 per cent of the total budget for a project (including the Producer Offset), in typical circumstances. Special circumstances are considered for low-budget films and for films seeking completion funding.

Of the state programs, South Australia's model for providing support for projects is similar to other models. Like Screen Australia, the South Australian Government provides investment through programs such as the Screen Production Investment scheme and the Revolving Film Fund. In addition to these programs, the South Australian Government also provides payroll tax rebates and assistance with developing projects. The state agencies also provide in-kind assistance through the provision of government-owned facilities, though cost recovery does occur.

Our consultation with the screen production industry found that the competition for projects to obtain funds for projects was very strong and that the comparative values of the incentives offered by each jurisdiction were important to decision making.

Professional facilities and a critical mass of skilled workers in the industry were seen as important as government incentives. Several of the stakeholders who Deloitte Access Economics consulted with praised the Adelaide Studios facilities highly, and one said that the ability to use Adelaide Studios had proved decisive in choosing to locate a project in South Australia.

Case study – The Babadook

The Babadook is an Australian psychological horror film about a single mother who, plagued by the violent death of her husband, battles with her son's fear of a monster lurking in the house but soon discovers a sinister presence all around her. The film starred Essie Davis, Noah Wiseman and Daniel Henshall.

The Babadook has been critically acclaimed, winning Best Feature Film and Best Direction at the 2015 AACTAs, as well as winning Best First Feature in the 2014 Village Voice Film Poll and the Best First Feature Award from the New York Film Critics Circle.

Directly employing local staff, as well as contributing to construction, catering and other sectors.

The Babadook was a co-production between Causeway Films and Smoking Gun Productions and had a budget of approximately \$2.7 million, of which \$1.8 million was spent in South Australia. The film employed 95 South Australian crew, as well as dozens of South Australians as supporting cast and extras.

The principal photography for the film was undertaken in South Australia over seven weeks. *The Babadook* was filmed at a range of locations around Adelaide but it was most notably the first feature film production to use the Adelaide Studios facilities at Glenside.

The producer of *The Babadook*, Kristian Moliere, told Deloitte Access Economics that for creative reasons it was imperative that the house used as a set in the film was custom designed in order to allow for to meet the requirements of the script and flexibility for the shoot. As a result, the production invested \$100,000 on a purpose built house interior set at Adelaide Studios to build the house, employing a range of local Adelaide suburban tradespeople, as well as spending on set designers and crew.

Post-production for the film by South Australian businesses Kojo and Best FX, which received revenue of over \$620,000 from the film. South Australian businesses in the catering and accommodation sectors benefited substantially from spending on the project, with \$87,000 being spent across these sectors by the film.

Cost and capability of South Australian crews were critical in choosing South Australia

Mr Moliere told Deloitte Access Economics that along with support from the SAFC, the key factors in choosing South Australia as a destination to produce *The Babadook* were the relatively low cost of production, the variety of locations within an easily accessible distance and the capability and quality of South Australian cast and crews.

According to Mr Moliere, maintaining the high standards of South Australian crews through a robust pipeline of regular work underpinned the security of the screen production. He highlighted the prospects for television production as being a strong opportunity for the future of the industry,



3 Economic contribution of South Australian screen production

3.1 Direct economic contribution

The direct economic contribution captures the value added created by labour and capital inputs. Value added (output after deducting the value of intermediate inputs) is the most appropriate measure of an industry's economic contribution to GDP. Industry value added can be calculated directly by summing the returns to the primary factors of production; labour and capital; as well as production taxes less subsidies. The value added of each industry in the supply chain can be added without the risk of double counting across industries.

Gross operating surplus (GOS) is a measure used in the national accounting framework to assess the returns to capital. It essentially represents the operational profits of the industry. Financial aspects are not included in measuring GOS.

The direct economic and employment contribution of the South Australian screen production sector in 2013-14 is shown in Table 3.1. The direct economic contribution totals approximately \$38.83 billion in value added, with \$10.7 million returned as GOS and \$34.7 million as labour income. Approximately 515 FTE employees are directly employed across the industry. The total value added is net of \$6.6 million in production subsidies paid by the federal and state governments.

Table 3.1: Direct economic contribution of screen production in South Australia, financial year 2013-14 in \$M

Operating	Totals
Revenue	108.2
<u>less</u> Costs	97.6
= Gross operating surplus	10.7
Sector wages	34.7
<u>less</u> Subsidy	-6.6
Total value added	38.83
Employment (FTE)	515.8

Source: Deloitte Access Economics estimates

Case study – Rising Sun Pictures

Rising Sun Pictures is a visual effects company based in Adelaide. Rising Sun develops effects for feature film and television clients globally.



Founded in 1995, Rising Sun has now undertaken over 100 film projects and is one of Australia's leading visual effects companies and the only major visual effects company based outside of Sydney. Rising Sun Pictures has achieved considerable critical success, most recently through the nomination of its visual effects supervisor Tim Crosbie for an Academy Award for Best Achievement in Visual Effects for the film *X-Men: Days of Future Past*.

In 2011, RSP's sister company Cospective won the Academy Award for Scientific and Technical Achievement for their remote collaboration visual effects software called cineSync. This tool has been used by many international films including the Academy Award winning film *Birdman*, *Avatar*, *The Dark Knight* and *Twilight*. RSP were also part of the *Gravity* team which won an Academy Award for Best Visual Effects in 2014.

International business contributing to the local economy

Like much of Rising Sun Pictures' work, *X-Men: Days of Future Past* was an international production based in the United States. However, the company also delivered work for *Anzac Girls* (also profiled), as well as South Australian-based productions *Deadline Gallipoli* and *The Water Diviner*.

Based on Pulteney Street in the CBD, Rising Sun Pictures currently employs approximately 180 staff, with this number cycling up and down depending on the project load which the company is delivering. The company has annual revenues of approximately \$15 million.

Rising Sun Pictures' co-founder Tony Clark told Deloitte Access Economics that the city location meant that their young and creative staff could contribute to the city's cultural life – as well as making a strong contribution to local cafes, bars and restaurants. During one major project, staff spent \$160,000 on the company's account at a local café.

Skilled staff from overseas and developing a skill base in Adelaide

Rising Sun Pictures was founded by South Australians and around half of its staff are originally from South Australia, but as a result of local shortages in the skills that Rising Sun Pictures demands, the company has been hiring staff from interstate and countries overseas. While the attraction of skilled migrants to South Australia has helped create a critical mass of local talent, the combination of the need to pay global prices for talent and bid for global projects has left Rising Sun Pictures heavily exposed to shifts in the level of the Australian dollar, especially against the US dollar, as well as downturns in the global economy. Rising Sun Pictures received a grant from the South Australian Government in 2009, which allowed it to renew its infrastructure following the global financial crisis.

Rising Sun Pictures is currently investing in expanding the local skills base in the visual effects sector through a partnership with Flinders University to develop the Graduate Certificate and Industry Certificate in Creative Arts (Visual Effects). Students spend 10 weeks in an intensive training program working in Rising Sun Pictures' studio.

3.2 Indirect economic contribution

The direct contribution of South Australian screen production captures the value added created by labour and capital inputs. However, intermediate inputs generate flow-on or indirect contribution via the activity created in other sectors. The size of this flow-on activity is dictated by the extent of linkages with other sectors of the economy. To measure the South Australian screen production sector's economic contribution, Deloitte Access Economics used analysis of the input-output (IO) structure of the economy.

The IO structure of the economy is estimated by the ABS which publishes tables reporting the inputs and outputs of specific sectors of the economy. By utilising these, Deloitte Access Economics can

calculate the relationship between the total and direct economic contribution of the industry. The ratio of the total to direct activity is referred to as a sector multiplier.

The gross output multipliers use direct gross value added to estimate the total value added, labour income and gross output (these concepts are discussed in greater detail in Appendix A). The indirect contribution is estimated using these multipliers minus the direct contribution.

The indirect contribution is outlined in Table 3.2. The screen production sector is estimated to have generated an indirect value added of \$38.4 million to the South Australian economy, with around 238 FTE employees indirectly employed and a wage contribution of \$23.1 million.

While this study is focused on the indirect economic contribution of screen production to the South Australian economy, our analysis also found that there was an indirect economic contribution made by screen production to the national economy outside of South Australia (for example, through the purchase of goods and services from interstate). These figures are detailed in Table 3.2.

Table 3.2: Indirect economic contribution of screen production in South Australia, financial year 2013-14 (\$M)

Economy	Gross operating surplus	Labour income	Value added	Employment (FTE)
South Australia	15.3	23.1	38.4	238.4
Whole of Australia (inc South Australia)	22.2	31.5	53.7	347.6

Source: Deloitte Access Economics estimates

Case study – Anzac Girls (Screentime)

Anzac Girls was a television series produced for the Australian Broadcasting Corporation (ABC) which aired in 2014 and was produced in the 2013-14 financial year. It was based on the true story of young military nurses from Australia and New Zealand, who ‘experienced horror, heartbreak and triumph caring for the original ANZACs at both Gallipoli and the Western Front’. The series was produced by Screentime, an Australian television production company based in Sydney.



Filmed across South Australia, based at Adelaide Studios

The total budget for *Anzac Girls* was \$9 million produced over six hours, of which around 58 per cent was spent in South Australia. The project received \$330,000 in production investment from SAFC, as well as support through the producer offset from Screen Australia. The project was filmed at locations across South Australia, including at Adelaide Studios but also on location at sites in Adelaide and regional areas including Oakbank, Maslin Beach and Myponga.

In our interview, Screentime told Deloitte Access Economics that this was a project that they could have taken to a range of different Australian locations. The factor that swayed the project in South Australia’s favour was government assistance, but particularly the availability of the Adelaide Studios facilities was decisive in their choice to produce the project in South Australia.

Support for local industry, from post-production to accommodation

During filming, the project relied heavily on local South Australian suppliers, both directly in the screen production sector through demand for editing, production and visual effects (including from Rising Sun Pictures, which is also profiled), but also indirectly through purchasing catering, accommodation, transport and logistics.

One example of a supplier which benefited directly from *Anzac Girls* was the accommodation supplier. The main accommodation provider was the Majestic hotel group, with 5 members of the main cast accommodated for 12 weeks at the Old Lion Apartments in North Adelaide. Other location providers included private rentals in and around Adelaide for interstate Heads of Departments (11 crew) as well as private accommodation at Myponga Beach in the second week of the shoot for about 65 cast and crew over four nights.

ANZAC Girls has numerous foreign sales and has been sold to Denmark, UK, USA, Croatia, Brazil, and New Zealand.

3.3 Total economic contribution

The total economic contribution of the screen production industry to the South Australian economy is outlined in Table 3.3, showing the split between the direct and indirect contribution. The total economic contribution to GSP (value added) is estimated to be approximately \$77.2 million in 2013-14, with \$57.8 million being paid in wages, \$26 million returned as GOS and 754 persons employed on a FTE basis.

Table 3.3: Total economic contribution to of screen production in South Australia, financial year 2013-14 (\$M)

	Gross operating surplus	Labour income	Value added	Employment (FTE)
Direct	10.7	34.7	38.8	515.8
Indirect	15.3	23.1	38.4	238.4
Total	26.0	57.8	77.2	754.1

Source: Deloitte Access Economics estimates

Note: GVA for direct contribution calculated net of Government subsidy of \$6.6 million as shown in Table 3.1. Due to rounding, sums for employment do not add to total.

Case study – Tracks

Tracks is a drama feature film based on the memoir of Robyn Davidson, which tells the story of her journey through the desert from Alice Springs to the Indian Ocean. The film starred Mia Wasikowska and Adam Driver.

Tracks has received strong critical praise with nominations for AACTAs in 2013 including Best Film and a Gotham Award nomination for Best Actress for Mia Wasikowska. The film was selected for the Toronto Film Festival and the Telluride Film Festival and was entered into competition at the Venice Film Festival.



Set in Western Australia – made in South Australia

While the plot of *Tracks* is largely set in Western Australia, producer Emile Sherman told Deloitte Access Economics that South Australia's facilities, including at Adelaide Studios where the production office for the film was based, as well as the extensive experience of South Australian crews in high-quality independent film production were the key factors behind the choice of South Australia.

The relative ease of film making in South Australia was also important – the ability of the SAFC to assist with cutting through government red tape at short notice was key.

Opportunities for local crew

With a total budget of around \$12 million, *Tracks* spent around \$3.7 million in South Australia. Mr Sherman told Deloitte Access Economics that once the decision was made to base the production office in Adelaide, that the office acted as the centre of gravity for the film, meaning that the first question when hiring a member of crew was whether someone was available locally.

The opportunity for South Australians to work on a high-profile feature film locally meant that they were able to gain exposure which has allowed them to gain opportunities to work on projects interstate and globally, creating a virtuous circle where the state can cement a reputation for having high quality crews with a wide experience.

Benefits to rural and remote areas

Much of the film was filmed on location on two large stations near Leigh Creek and Parachilna. Mr Sherman told Deloitte Access Economics that during the production, the economic effect on the towns was very significant with almost all accommodation in both towns booked out during filming. Ten people from the Art Department for the film went trawling through the local area for art, craft and products which could be used as part of the films – all the way down to buying kangaroo furs from a local.

Appendix A— Our methodology

Economic contribution studies are intended to quantify measures such as value added, exports, imports and employment associated with a given industry or firm, in a historical reference year. The economic contribution is a measure of the value of production by a firm or industry.

Value added

The measures of economic activity provided by this contribution study are consistent with those provided by the Australian Bureau of Statistics. For example, *value added* is the contribution the sector makes to *total factor income* and gross domestic product (GDP) and gross state product (GSP).

There are a number of ways to measure GDP:

- **Expenditure approach** – measures expenditure: of households, on investment, government and net exports
- **Income approach** – measures the income in an economy by measuring the payments of wages and profits to workers and owners

Below is a discussion measuring the value added by an industry using the income approach.

Measuring the economic contribution – income approach

There are several commonly used measures of economic activity, each of which describes a different aspect of an industry's economic contribution:

- **Value added** measures the value of output (i.e. goods and services) generated by the entity's factors of production (i.e. labour and capital) as measured in the income to those factors of production. The sum of value added across all entities in the economy equals gross domestic product. Given the relationship to GDP, the value added measure can be thought of as the increased contribution to welfare.

Value added is the sum of:

- Gross operating surplus (GOS). GOS represents the value of income generated by the entity's capital inputs, generally measured as the earnings before interest, tax, depreciation and amortisation (EBITDA).
- Tax on production less subsidy provided for production. Note: given the manner in which returns to capital before tax are calculated, company tax is not included or this would double-count that tax. In addition it excludes goods and services tax, which is a tax on consumption (i.e. levied on households).
- Labour income is a subcomponent of value added. It represents the value of output generated by the entity's direct labour inputs, as measured by the income to labour.

The value of intermediate inputs can also be calculated directly by summing up expenses related to non-primary factor inputs.

Contribution studies generally outline employment generated by a sector. Employment is a fundamentally different measure of activity to those above. It measures the number of workers that are employed by the entity, rather than the value of the workers' output.

Direct and indirect contributions

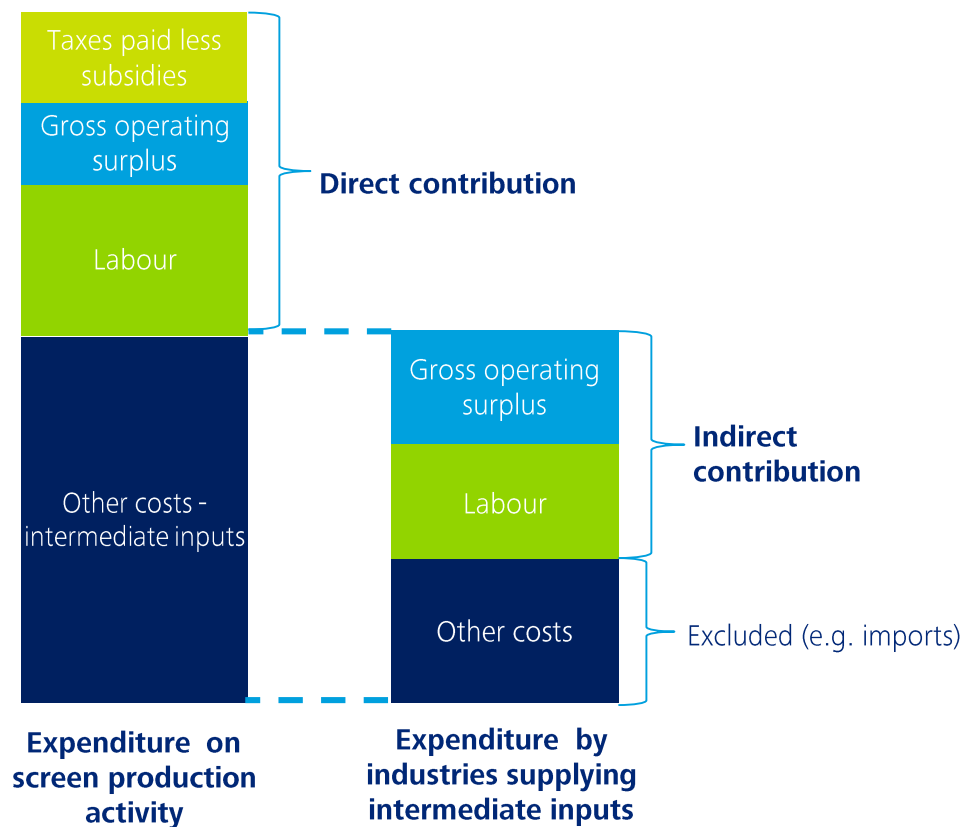
The **direct** economic contribution is a representation of the flow from labour and capital in the company.

The **indirect** contribution is a measure of the demand for goods and services produced in other sectors as a result of demand generated by the screen production sector. Estimation of the indirect economic contribution is undertaken in an IO framework using Australian Bureau of Statistics IO tables which report the inputs and outputs of specific sectors of the economy (ABS 2013).

The total economic contribution to the economy is the sum of the direct and indirect economic contributions.

Figure A.1 shows the framework used to evaluate economic activity, along with the components that make up direct and indirect economic contributions.

Figure A.1: Economic activity accounting framework



Source: Deloitte Access Economics.

Other measures, such as total revenue or total exports are useful measures of economic activity but these measures alone cannot account for the contribution made to GDP. Such measures overstate the contribution to value added because they include activity by external firms supplying inputs, in addition they do not discount the inputs supplied from outside Australia.

Limitations of economic contribution studies

While describing the geographic origin of production inputs may be a guide to a firm's linkages with the local economy, it should be recognised that these are the type of normal industry linkages that characterise all economic activities.

Unless there is significant unused capacity in the economy (such as unemployed labour) there is only a weak relationship between a firm's economic contribution as measured by value added (or other static aggregates) and the welfare or living standard of the community. Indeed, the use of labour and capital by demand created from the industry comes at an opportunity cost as it may reduce the amount of resources available to spend on other economic activities.

This is not to say that the economic contribution, including employment, is not important. As stated by the Productivity Commission in the context of Australia's gambling industries:⁵

Value added trade and job creation arguments need to be considered in the context of the economy as a whole ... income from trade uses real resources, which could have been employed to generate benefits elsewhere. These arguments do not mean that jobs, trade and activity are unimportant in an economy. To the contrary they are critical to people's well-being. However, any particular industry's contribution to these benefits is much smaller than might at first be thought, because substitute industries could produce similar, though not equal gains.

In a fundamental sense, economic contribution studies are simply historical accounting exercises. No 'what-if', or counterfactual inferences – such as 'what would happen to living standards if the firm disappeared?' – should be drawn from them.

The analysis – as discussed in the report – relies on a national input-output (IO) table modelling framework and there are some limitations to this modelling framework. The analysis assumes that goods and services provided to the sector are produced by factors of production that are located completely within the state or region defined and that income flows do not leak to other states.

The IO framework and the derivation of the multipliers also assume that the relevant economic activity takes place within an unconstrained environment. That is, an increase in economic activity in one area of the economy does not increase prices and subsequently crowd out economic activity in another area of the economy. As a result, the modelled total and indirect contribution can be regarded as an upper-bound estimate of the contribution made by the supply of intermediate inputs.

Similarly the IO framework does not account for further flow-on benefits as captured in a more dynamic modelling environment like a Computerised General Equilibrium model.

Input-output analysis

Input-output tables are required to account for the intermediate flows between sectors. These tables measure the direct economic activity of every sector in the economy at the national level. Importantly, these tables allow intermediate inputs to be further broken down by source. These detailed intermediate flows can be used to derive the total change in economic activity associated with a given direct change in activity for a given sector.

A widely used measure of the spill-over of activity from one sector to another is captured by the ratio of the total to direct change in economic activity. The resulting estimate is typically referred to as 'the multiplier'. A multiplier greater than one implies some indirect activity, with higher multipliers indicating relatively larger indirect and total activity flowing from a given level of direct activity.

⁵ Productivity Commission (1999), *Australia's Gambling Industries*, Report No. 10, AusInfo, Canberra, (page 4.19).

The IO matrix used for Australia is derived from the ABS 2009-10 IO tables (2013). The industry classification used for IO tables is based on the Australian and New Zealand Standard Industrial Classification (ANZSIC), with 114 sectors in the modelling framework.

Limitation of our work

General use restriction

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