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# Economic Impact of S4C

## 2007-2010

### Final Report

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## Executive Summary

S4C commissioned DTZ and Welsh Economic Research Unit (WERU) to estimate the economic impact of its activities between 2007 and 2010.

Whilst this assessment is primarily focused on the supply chain and spending patterns of S4C, and the economic implications of this it is useful to consider the policy context of these.

S4C, in focusing on its core aim “to provide a comprehensive, high quality, Welsh language television service that reflects and enriches the life of Wales”, operates a framework that is designed to drive up the quality of content supplied by the independent production sector. In doing so, S4C has been mindful to retain some stability within the sector, providing conditions so that companies are able to invest in new technology, up skill the labour force and access new market opportunities. Transparency of commissioning requirements and factors, fair trading policy and training support have all been a feature of S4C operational strategy.

Using the direct spending of S4C in Wales, together with the spending information provided by the independent sector it is possible to identify the important impact S4C has on the Independent Production sector. The Input-Output model for Wales is then used to estimate the full effect of this spending on the local economy as rounds of purchases are made through the supply chain (supplier effects). Added to these are ‘induced-income’ effects as S4C and S4C supplier employees (and so on) spend their incomes locally, thereby creating further demands on the economy resulting in further employment. The results of this estimation process are set out in table below

The Estimated Employment Impacts of S4C on the Welsh Economy 2007-2010

S4C Gross output (£m)*	100.06	102.7	104.9	104.2
<b>Employment (FTEs)</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Which then supports employment in:				
S4C	168	154	156	156
Independent production	519	570	580	585
Sub-contractors to independents	445	488	505	485
Other media and public services	170	183	185	190
Hotels, retail, wholesale	240	271	280	287
Other sectors	346	390	398	408
<b>Total FTE Impact on the Welsh Economy</b>	<b>1,888</b>	<b>2,056</b>	<b>2,104</b>	<b>2,111</b>
Note: columns may not sum due to rounding				
*Total S4C spend/turnover.				

S4C is pivotally important to the Welsh production sector. With a gross output of £105 million in 2009, the broadcaster through its spending decisions directly supports around 160 FTE jobs within S4C, and a further 1,950 FTEs across supply chain relationships. The vast majority of these are within the independent production sector and sub-contractors to the independent sector. These provide important high paid and high skilled employment opportunities in Wales, in keeping with Welsh Assembly Government aims<sup>1</sup> of enhancing the

<sup>1</sup> Economic Renewal: A New Direction July 2010



knowledge economy, with higher skills, more innovation and better jobs within the creative industries, one of six new target sectors. In terms of Gross Value Added (GVA), the impact of S4C on the Welsh economy is estimated as £85 million in 2009, rising to over £88 million in 2010.

In addition to these quantifiable economic impact effects, as S4C spends most of its income on the Independent Sector in Wales, the broadcaster has a significant impact on the vitality of this sector. S4C's operational policies and its decisions determine the extent to which the Welsh sector is able to respond to wider market opportunities.

Key developments that S4C has introduced are summarised as Infrastructure, Skills Development and Social Impacts.

In terms of the infrastructure developments, by investing in improved, more efficient networks, S4C suppliers benefit from enhanced market access as the network enables them to supply S4C, other production companies and other broadcasters with higher quality output in HD. This acts to remove barriers to trade and wider market access.

Keeping abreast of technological developments, and raising the standards of output means that S4C suppliers are guided to up skill and invest in areas that are demanded by the market. S4C's support and transparency in this technological transition removes some of the risks to businesses investment. This enables the Welsh creative industry to access wider markets, engage in co-productions and international sales.

By requiring suppliers to show a commitment to training and up skilling, S4C is directly driving a skills improvement in the sector. This is seen by investment at HEI<sup>2</sup> level in relevant degree courses and the income dedicated to CPD<sup>3</sup> development.

S4C is pivotally important to the Welsh production industry. The current economic climate is difficult and uncertain, and given the dependencies of companies to S4C (60% of sector turnover comes from S4C), a cut in spending<sup>4</sup> will have a direct impact on the Welsh creative industries. The extent to which businesses are able to absorb this reduction in spending is unclear. A reduction in activity will have both economic and social impacts.

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<sup>2</sup> Higher Education Institutes

<sup>3</sup> Continual Professional Development

<sup>4</sup> E.g. in response to the Coalition Government's Comprehensive Spending Review and funding decisions of DCMS

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## 1. Introduction

S4C is a public broadcasting authority that was established by the 1980/81 Broadcasting Acts and first went on air at 6.00pm on Monday 1 November 1982.

S4C's main objective is to provide a television service of a high quality<sup>5</sup>. S4C's core aim<sup>6</sup> is *"to provide a comprehensive, high quality, Welsh language television service that reflects and enriches the life of Wales"*.

In addition to this core aim, S4C activity and decisions impact the culture and creative industries. In order to better understand this impact and the changes that occur in the sector S4C has commissioned DTZ and WERU to estimate the economic impact of its activity on the Welsh economy over the last three years.

This study uses the same methodology as the previous economic impact review that the team completed for the period 2002-2006, while applying contemporary data<sup>7</sup>. Whilst this means that a direct comparison with 2002-2006 is not possible, it does provide S4C with an account of how the Welsh sector has developed since 2002, but particularly from 2007 to 2010.

The specific stated objectives are:

- Estimate the primary impacts of S4C on the Welsh economy.
- Examine S4C's supply chain
- Examine the qualitative impacts of S4C activities in Wales,
- Consider the effects of the digital switchover in 2009/2010 and other technological developments on the broadcasting sector in Wales.

The findings of the research are contained within this report.

The report follows the following structure

Section 2 Background Policy Developments

Section 3 Methodology

Section 4 Quantitative Economic Impact

Section 5 Qualitative Impact

Section 6 Summary and Conclusion

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<sup>5</sup> Section 204 Communications Act 2003

<sup>6</sup> As set out in the S4C Corporate Plan 2010

<sup>7</sup> The economic modelling framework has been updated to reflect the current economic structure, and new survey data has been used.

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## 2. Background

S4C is critically important to the Welsh production sector. In 2006 it was estimated that S4C supported over 2,000 full time equivalent (FTE) jobs in the Welsh economy, and generating an estimated £87 million of additional value added impact to the Welsh economy.

As identified by a recent Hargreaves report, S4C is pivotally important to the Welsh creative industries. In conducting this economic impact assessment, and given the impact that S4C has on the independent production sector, it is important to consider the broadcaster's policy and strategies. This puts into context some of the observations that are made about the sector, since the 2002-2006 review.

This section sets out some of the main changes that S4C has introduced since 2006, and draws out some of the implications of these policy developments, which are later reflected in the economic impact findings.

### Industry Overview

There have been a number of major changes to the operational environment of S4C and the Welsh television sector as a whole since the publication of the report in 2007. These include the adoption by S4C of numerous policies relating to fair trading, procurement, outsourcing and content, in addition to the creation of a training framework. Industry-wide developments include the digital switchover, the increase in online services and the use of the internet to view television programmes, and the publication of a review of the Welsh creative industries.

Professor Ian Hargreaves was jointly commissioned by the Deputy First Minister and the Minister for Heritage to conduct an independent review of the Welsh Assembly Government's activities in the field of the creative industries. The resulting report, *The Heart of Digital Wales: a review of Creative Industries for the Welsh Assembly Government*<sup>8</sup>, highlights the importance of the creative industries to the Welsh economy, and sets out a number of recommendations for future action.

Within this review, attention is paid to the role of television, and specifically, the public sector broadcasters. Hargreaves states that, in addition to the BBC,

*"S4C is likewise of pivotal importance to the Wales creative industries sector... Without S4C, Wales may well not have any independent television companies at all."*

### S4C Policy Developments

S4C's core aim is "to provide a comprehensive high quality, Welsh language television service that reflects and enriches the life of Wales"<sup>9</sup>. Four supporting aims are identified in the 2010 Corporate Plan:

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<sup>8</sup> Published March 2010

<sup>9</sup> S4C Corporate Plan 2010

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- Manage the process of digital switchover
- Launch S4C in High Definition
- Fulfil the requirements of the Content Strategy
- Operate within S4C's statutory and public framework

As a public body the S4C Authority is subject to the provisions of the EU public procurement regime. S4C adopted a Fair Trading Policy in 2008 to ensure that S4C's dealings with stakeholders and suppliers are conducted in accordance with relevant legislative and regulatory requirements, and the fair trading principles are outlined in the policy. Fair trading has been defined by the S4C Authority as:

- To conduct S4C's affairs in a manner that is fair and reasonable at all times;
- To ensure fair competition in relation to S4C's procurement activities;
- Not to act in ways that impede competition or create negative impact upon competition; and
- To ensure that S4C's policies and processes operate in such a way that encourages fair competition, and to ensure that such policies and processes are also fair and transparent<sup>10</sup>

The Procurement Policy Statement, first published in December 2008, sets out the procurement methods adopted by S4C in delivering its Procurement Strategy; its core elements are designed to ensure that:

- S4C maintains its key aim of promoting excellence;
- S4C obtains services and supplies that represent best value thereby ensuring the most efficient use of public money;
- S4C operates best practice, minimising administrative burden;
- S4C promotes diversity and avoids waste; and
- S4C promotes contestability in order to continuously assess the market place<sup>11</sup>

Since 2007 S4C has completed its outsourcing programme in order to improve the broadcaster's flexibility and dynamism. There is now no in house production function<sup>12</sup> and S4C's commercial arm has also been outsourced<sup>13</sup>. This move has created additional work opportunities for the Welsh television production sector, making content exploitation and brokering deals for co-financed production within the production sector's control for the first time.

For example, Apollo was offered a contract to produce an equestrian challenge show for young people, based on a format that Parthenon (partner in Cymru International who was

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<sup>10</sup> S4C Fair Trading Policy, 2008

<sup>11</sup> S4C Procurement Policy Statement, 2010

<sup>12</sup> Other than some in-house programme promotions work

<sup>13</sup> S4C commercial arm, incorporating sales, sponsorship, advertising and co production brokering activities, was outsourced in 2006

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awarded a contract for some of the commercial activities) had developed and was distributing. The series has sold to France, and dubbed into French. It has also sold into the Middle East including the main Dubai sports channel and Content Union Middle East. The Welsh language version was also used as a pilot to pitch for sales and the format is likely to be sold to Canada and Australia. This type of relationship has created work opportunities for the sector and raised the profile of the content produced in Wales.

In understanding the importance and value of securing additional funding, S4C works closely with Creative Business Wales to help secure potential funding. In addition, S4C has introduced<sup>14</sup> a new policy for reviewing exclusive windows of transmission, with the aim of ensuring that any barriers to the exploitation of commercial rights are removed, enabling companies to maximise these opportunities.

S4C's Content Strategy encourages production companies to look at new and innovative solutions to developing content that appeals to and suits a wider and international market. The benefits of these international co-productions are fourfold. Firstly the funding leverage is greater; secondly Welsh companies are exposed to different editorial approaches, thirdly it exposes Welsh production companies to a wider market and fourthly reduces the risks from initial investment.

These policy changes are designed to ensure that the independent sector are exposed to both market competition and a larger market, with the explicit aim of promoting excellence, and in doing so helping the sector respond to wider opportunities.

The digital switchover and move towards High Definition broadcast have had far reaching impacts on the activities of S4C. S4C's Content Strategy 2009 – 2013 was devised specifically for the bridging period between the beginning and the end of digital switchover, and build on the creative excellence strategy implemented in 2004. The 31<sup>st</sup> March 2010 saw the last Welsh transmitter change from analogue to digital, with S4C becoming a fully stand-alone Welsh language channel, without any English language Channel 4 programming. As S4C is now a solely Welsh language channel, the Content Strategy focuses on four sections of the day: morning, afternoon, peak hours and late evening, each with appropriate content requirements.

S4C's High Definition Policy states that the broadcaster will continue to increase the number of hours commissioned or acquired in High Definition, with 100% of all programmes commissioned for transmission envisaged to be sourced in High Definition standard by 2012. The High Definition Guidelines for Producers recognises the training needed to meet this target, making reference to the Skillset Cymru Training Framework.

S4C has strived to offer the maximum notice of technological developments that impact the production sector and the supply chain. For example, S4C first published its HD Policy in August 2006, nearly six years before the broadcaster expected all programmes to be commissioned to HD standards.

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<sup>14</sup> In 2009



This practice is designed to ensure that the production industry has time to respond to the knowledge, technological, training and funding implications of developments, trying to achieve as much stability in the sector as possible.

S4C also organised in depth broadcasting engineering training for staff to help with transition to HD. The bespoke training that S4C arranges for its staff has also been extended to the wider industry at much reduced rates as the training provider is able to secure a critical mass of participants, and achieve economies of scale from this co-ordinated approach.

An example of this is the October 2009 Understanding HDTV Seminar. Historically, this type of seminar has typically only been available in London, at an individual participation cost of around £1,200. However, as S4C were able to commission a bespoke training day and offer a limited guaranteed contribution for an allocation of places, the seminar was extended to the industry at a cost of £150 per participant, and was delivered in Cardiff.

Skillset Cymru, in partnership with S4C, Teledwyr Annibynnol Cymru (TAC) and the Welsh Assembly launched the Training Framework in 2008 to support the training and continuing professional development (CPD) of full time employees and freelancers in the creative media industries.

It is a pre condition of each commission awarded by S4C that companies submit a training needs analysis. The Training Framework (Skillset Cymru in particular) collates this data and other skills requirements for the Welsh creative media sector. The conclusions from this information are used to inform the sector skills agreements<sup>15</sup> and the investment made by S4C and TAC into training provision and bursaries for the sector.

The Training Framework assists companies to develop and implement their training plans, and services include the provision of high-level, professional support, a free training needs assessment and funding towards training costs for creative media companies based in Wales.

S4C and TAC invested a combined £440,000<sup>16</sup> in 2009 and 2010 into training for the Creative Media sector in Wales. Skillset project manages the work in line with the Training Framework. In 2009/10 training projects planned included a high level leadership and management programme, co production, multi media content, policy training, a professional editors' fund and a high level scriptwriting mentoring scheme. Freelancers in Wales can also apply for bursaries to attend training courses and access free individual training advice and guidance from a specialist sector training advisor.

The broadcaster also offers assistance in the form of bursaries and scholarships; to support and develop skills for young people in the fields such as of journalism, drama and music. These awards are in line with the priorities in the Content Strategy and contribute towards strengthening the content it commissions. These scholarships are often delivered through colleges and organisations such as the Centre for Journalism Studies at Cardiff University,

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<sup>15</sup> Skillset Strategic Skills Assessment for the Creative Media Industries in Wales, January 2010

<sup>16</sup> Additional funding is leveraged from other sources, see section 5.2 for detail



Royal Welsh College of Music and Drama and the National Film and Television School. This partnership working has helped to ensure that talent is identified and nurtured.

These key policy and strategy developments will have had direct and indirect impacts on S4C's supply chain, and specifically the production industry. In particular, the policy developments seek to ensure that S4C's transmitted output is of high quality. In striving to achieve this fundamental aim, S4C instils a quality criterion on the Welsh production sector that supplies it. By investing, training and working to meet S4C quality requirements, the production sector are driven to achieve the quality standards demanded by the international broadcasting industry. S4C's supportive training and production strategy (removing commercial barrier to sales, advance warning of technology developments etc) provides a relatively stable environment in which companies are given time to evolve and fully respond to the commercial, technological or other opportunities available.

This report tries to unpick these qualitative and quantitative impacts to illustrate how S4C operational practices impact on the production sector.

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### 3. Calculating Economic Impact

This report assesses the impact of S4C’s activities on the Welsh economy in terms of employment. This has been estimated by WERU through the application of the Input Output Model. The research team are grateful to both S4C and the independent production sector for providing the detailed information that has made this modelling process possible.

This section sets out the methodological approach to estimating the economic impact of S4C. Further detail can be obtained from [www.weru.org.uk](http://www.weru.org.uk)

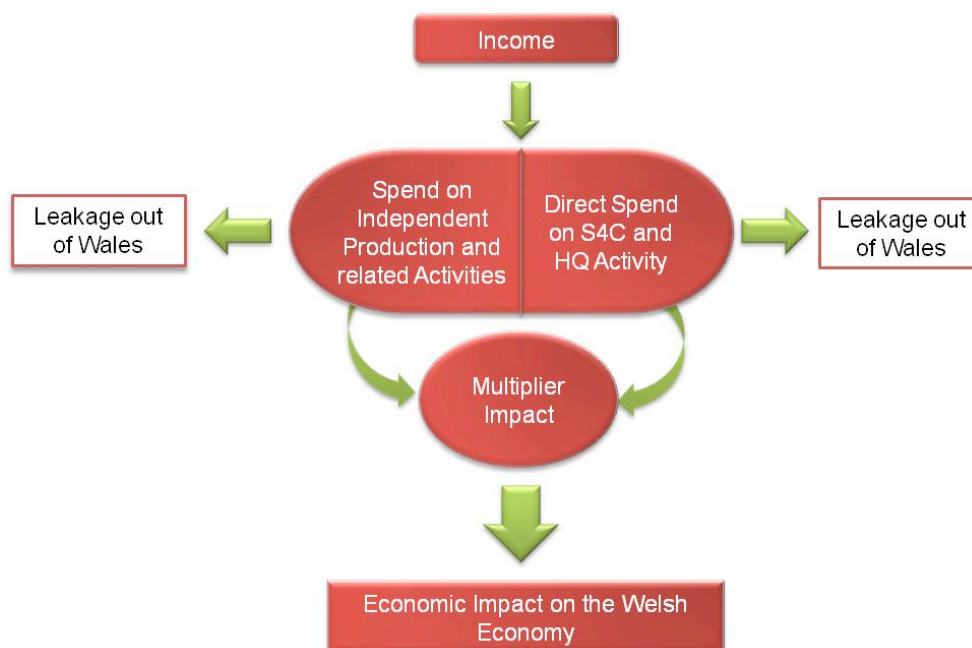
#### 3.1 Methodology

The economic impact estimated here uses the same methodology provided in the 2007 S4C report that related to 2002 - 2006. However, as the economic modelling framework and survey data has been updated, direct comparison with 2002-2006 is not possible.

The methodology is explained briefly in this section, with further detail in the Appendix 1. The diagram below simplifies the main components of an economic impact assessment, and shows that the Total Economic Impact on the economy is driven by three main components:

- a) Income from S4C (level of S4C Spend)
- b) How this is used (and how much leaks out of Wales)
- c) Multiplier Impacts

**Figure 3.1 Calculating the Economic Impact**



Each of these main components is described below.

## Income

S4C receives income from the DCMS, advertising revenue etc. which is then spent on its own staff and headquarter activities and on the independent sector and related activities, which in turn provides programme content (see also Table 4.1). Successive rounds of spending also impact upon other Welsh sectors, although, as the Welsh economy cannot supply all the inputs required, some are 'imported' which represents leakage from the economy (*i.e. Income spent outside Wales on goods and services*).

Table 3.1 S4C Revenue by Source, 2007 to 2010

	2007	2008	2009	2010
	£m	£m	£m	£m
	Actual	Actual	Actual	Forecast
DCMS	94.39	98.44	101.36	101.65
Programmes/Airtime sales	5.07	3.89	3.15	2.35
Publishing/merchandising	0.43	0.17	0.31	0
Multiplex exploitation	0	0	0	0
Other income	0.15	0.17	0.103	0.22
Total	100.05	102.69	104.94	104.22

Source: S4C 2010  
Note: Columns may not sum due to rounding

S4C is a broadcaster which commissions its outputs from independent production companies, and this is where the largest share of its budget is spent. These independent companies then employ people to produce programme outputs. In making these outputs, the independent production sector also has to purchase other goods and services. For example, they will subcontract the services of freelancers and hire equipment. These individuals also purchase goods and services from the media and broadcast sector and from other sectors in the Welsh economy, and so on throughout the supply chain. The Input Output (I-O) model developed by WERU traces these successive supply chain effects (induced effects) in order to estimate the total economic impact of S4C spending decisions.

DCMS funding is determined by changes in the Retail Price Index (RPI). In 2002 the DCMS grant was set at £81.4m increasing to £90.85m in 2006. In 2009 it was £101.36m and £101.65m for 2010. As the number of channels has proliferated in the digital age it has been increasingly more difficult to sell airtime for advertising. As a result such revenue has declined, as Table 3.1 shows. Income from merchandising has also diminished as a result of the same competitive pressure.

## Modelling

### a) Supplier Effects

This report estimates the economic impact of S4C spending on the Welsh economy from 2007 to 2010, using financial information for each year supplied by S4C. As S4C is a commissioner, it was also necessary to gather information from suppliers in order to establish how much of their spending was retained in Wales (**and how much leaks out of Wales**) and to identify any changes in these patterns over time. The economic impact arising from spending on the supply chain is known as the supplier effect.



#### **b) Induced Income Effects**

To the supplier effect must be added induced income effects. When employees spend their wages and salaries in their locality on goods and services, they make a demand on the economy. These induced income effects must be added to the supplier effects to calculate the total indirect effect of S4C.

Detailed financial information was sought from the whole of the Independent production sector in Wales. The information from each company was combined to create an aggregate sector showing purchases made from other Welsh sectors.

#### **c) Multiplier Effects**

This information was then placed into the Input-Output Table for Wales, which traces purchases and sales between different sectors of the Welsh economy. This Input- Output Table then provides the framework for estimating the impacts of these trading relationships in Wales, and then allowing the effect of S4C to be estimated.

Hence, in estimating the economic impact, three key elements were required:

- S4C Spend
- Supplier purchasing patterns
- Input-Output model (how various sectors interact with each other inside Wales)

## **3.2 Summary**

In estimating the economic impact of S4C for each of the years 2007 to 2010, detailed figures were provided to us by S4C. This information was used to report the direct impact of S4C (e.g. direct employment and total headline spending) and then was used to model 'indirect' economic impacts of S4C in each of the years.

In order to understand the impact of changes in S4C spending on the economy, a detailed understanding of S4C suppliers was required. Information from a broad range of S4C suppliers was gathered to build a picture of how the Independent Production sector operates in terms of buying and employment patterns. The Input Output Table for Wales was then used to trace successive spending rounds within the economy, so that the impact of S4C for the years 2007 to 2010 could be estimated.

Further detail of the methodology and the 2007 Input Output Tables for Wales can be found in Appendix 1 and at [www.weru.org.uk](http://www.weru.org.uk)

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## 4. The Economic Impact of S4C

In 2007 DTZ and WERU reported the estimated economic impact of S4C spending on the Welsh economy between 2002 and 2006. This report repeats that exercise using the same methodology, for 2007 to 2010, but applying new survey data to an updated model of the Welsh economy. These impacts are reported in terms of FTE jobs. However, this measure on its own does not provide a full appreciation of the economic significance of S4C, since it ignores the type of skills, the levels of incomes and the quality of the technical demands made; all of which have economic value. A quantitative assessment that relies solely on the nature and magnitude of trading relationships will always be incomplete. However, estimating the quantitative impacts provides a benchmark in assessing the economic significance of broadcasting activities, and provides a framework for understanding the consequences of change.

Some of the qualitative impacts of S4C are explored in Section 5. These should be considered with both the policy impacts described in Section 2 and the economic impact described here.

### 4.1 Spending In Wales

The level of economic impact associated with a given spend is determined by the embeddedness of an activity, and S4C is part of an industry whose economic importance is enhanced by its close local linkages. This report focuses on the nature and magnitude of these trading relationships, and plots these impacts in successive years from 2007 onwards.

#### S4C Spending In Wales

In the three years to end December 2009 S4C had an average annual turnover of just over £103m, providing an average of 160 full-time equivalent (FTE) jobs within the organisation. As has been noted in previous reports on the sector and for S4C, directly employed individuals require a high level of management and professional skills, and are rewarded proportionately. The average gross salary<sup>17</sup> at S4C is just over £40,000. This is on a par with the average<sup>18</sup> for the industry, the UK average for managerial occupations, but higher than the Welsh average wage, reflecting an important strength of the organisation for the Welsh economy. The Creative Industries remains a priority sector<sup>19</sup> for the Welsh Assembly Government because of the higher wage employment opportunities that it provides.

Total spending from 2007 to 2009 was provided by S4C, with forecast spending for 2010. S4C also provided estimates of the proportion of spending retained in Wales.

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<sup>17</sup> Includes overtime but excluding employer costs such as national insurance and pensions.

<sup>18</sup> Skillset Creative Industry Workforce stated that the average income in TV Broadcasting was circa £38,000 in 2009. The Televisual salary survey April 2009 confirms an average industry salary of £48,200 and a terrestrial television (full time) average salary of £51,400.

<sup>19</sup> Welsh Assembly Government: Economic Renewal: A New Direction July 2010

Table 4.1 – Spending by S4C in Wales and Output

	Total spending in Wales, £m (nominal)			
	Actual	Actual	Actual	Forecast
	2007	2008	2009	2010
Direct Labour Costs	6.64	6.30	6.652	7.02
Independent production services	70.27	78.28	80.61	81.34
Other programme Costs	3.95	4.07	3.70	3.25
Cost of sales	1.09	0.73	0.06	0.03
Administration and training	0.66	0.38	0.31	0.85
Rent/lease of property	0.01	0.01	0.03	0.04
Electricity, gas and water	0.01	0.01	0.01	0.01
Maintenance & repair	0.05	0.05	0.08	0.09
Equipment hire & leasing	0.01	0.01	0.03	0.02
Transport services	0.04	0.01	0.01	0.01
Hotels and catering	0.06	0.03	0.01	0.02
Financial and business services/telecoms	0.18	0.45	0.26	0.36
Subcontracted services and labour	0.68	0.57	0.51	0.38
Sub-total	83.70	90.97	92.33	93.42
Profit/taxes/rates/imports	16.36	11.73	12.61	10.78
Total = Gross Output (£m)	100.05	102.69	104.94	104.22
S4C Staff - FTEs	168	154	156	156est

Source: S4C 2010 Note: columns do not sum due to rounding

Table 4.1 shows actual S4C expenditure in Wales for 2007 to 2009, and forecast expenditure for 2010 (reported in nominal money). Overall leakage of S4C spending outside of Wales is low, accounting for around 10 percent of total output. Between 2007 and 2010, S4C direct spending (including wages) in Wales has increased by 12 percent. Direct Labour costs (or wage expenditure) are largely retained in Wales. Typically, around 75% of S4C monies are spent on the independent television companies, which in turn spend money in Wales. Other services and inputs such as utilities, maintenance and repair and sub-contract services are sourced in Wales.

S4C has maintained a good record of local sourcing where possible ensuring that local economic impact is maximised, while seeking always not to compromise on quality. Since 2002-2006, whilst S4C income has increased in line with inflation (RPI Index), the proportion of S4C spend on direct staff costs has remained relatively flat, and the proportion of income spent on independent production services has increased. S4C spend on other programme costs account around four per cent of total output, reflecting the investments made in new technology and the improved network.

### Spending by the Welsh Independent Production Sector

The Welsh Independent Production sector generated an estimated turnover of £131 million in 2009, representing an annual rate of growth of eight percent between 2007-2009. This income is derived from a number of sources, including commissions from S4C (representing an estimated 60 percent of total sector turnover). Interestingly, whilst S4C spend on the independent sector has increased by an average of 4 percent between 2007-2009, the Welsh Independent Production sector has grown by 8 percent, demonstrating its success in securing

income from alternative sources. This outcome is consistent with S4C providing a policy framework that actively encourages the sector to maximise and exploit wider commercial opportunities<sup>20</sup>.

The revenue generated by the Independent Production sector is subsequently spent across a number of different areas. Table 4.2 gives the estimated distribution of spending by Welsh language programme content providers, i.e. the Independent Sector, from 2007 to 2009 (2010 forecast). The upper section of the table shows the value of estimated purchases in Wales, (excluding direct labour costs) by broad headings. Hence, in 2009, the Independents are estimated to have spent just over £54m in Wales, or 40 percent of the total turnover (excluding wage expenditure).

A large portion of money is spent on labour and production services, including payments to self-employed freelancers (directors, producers, sound and camera services etc). Some payments also go to sub-contract editing services and other media related such as post-production suppliers, and performers and presenters. However, the Independents also spend money in Wales on outputs provided by other sectors such as Construction, Finance and Business sectors, Hotels etc.

Table 4.2 – Estimated Spending by the Welsh Independent Production Sector in Wales

	£m	£m	£m	£m
	2007	2008	2009	2010
Total purchased in labour and production services	19.12	21.36	22.36	23.43
Energy, water	0.47	0.53	0.55	0.6
Hire of broadcast equipment and other media related purchases	9.27	10.36	10.84	10.4
Consumables, non-broadcast equipment	0.60	0.67	0.70	0.73
Finance and business services	0.63	0.70	0.73	0.76
Transport, post, telecoms, etc	0.33	2.16	2.27	2.3
Other items not already listed	14.12	15.77	16.52	16.9
<b>Sub-total</b>	<b>44.54</b>	<b>51.54</b>	<b>53.97</b>	<b>55.12</b>
Imports of goods and services	24.81	27.71	29.02	31.18
Direct labour costs	25.85	32.83	35.16	36.97
Other value added	7.68	14.03	13.09	14.07
<b>Gross Output/ Turnover</b>	<b>102.88</b>	<b>126.12</b>	<b>131.24</b>	<b>137.3</b>
FTEs	760	914	940	988

Note: columns may not sum due to rounding.

Not all the necessary inputs can be provided locally. Therefore, some purchases of goods and services are made outside Wales. These imported purchases do not have an impact on the local economy. These imports appear under the sub-total in Table 4.2, together with direct labour costs and other value added. The sum of these and Welsh purchases are balanced to reflect a gross turnover for the sector (£131m in 2009).

<sup>20</sup> S4C strategies introduced in 2002-2006 such as Programme Strategy, and the tendering arrangements were designed to stimulate a competitive, commercial and creative environment to secure its future and its supply chain.

When considering these imports of goods and services, it is worth noting that increasingly, Welsh based production companies generate income from sources other than S4C and operate across the UK. This has seen the Welsh sector grow in size and total employment levels increase. As Welsh companies deliver more UK-wide output, work on international co-productions and supply the international market it is not surprising that companies spend a proportion of their turnover outside of Wales to deliver these outputs. In keeping with the substantial growth seen within sector, this proportion of spend has increased since the 2006 study from circa 10% of total turnover to 20-25%.

The final row gives the number of FTEs estimated from survey data to be employed directly by the Independent sector. Over the period, the number of directly employed FTEs has increased steadily, reflecting overall growth of the sector, although it is important to note that only a proportion of these FTEs are directly linked to S4C (see Table 4.3) and not all are in Wales<sup>21</sup>.

## 4.2 The Economic Impact of S4C

As discussed above, S4C is critically important to the Welsh production sector, with commissions accounting for around 60 percent of total sector turnover. Using the direct spending of S4C in Wales (Table 4.1), together with the detailed spending information provided by the independent sector (Table 4.2) it is possible to identify the important impact S4C has on the Independent Production sector. The Input-Output model for Wales is then used to estimate the full effect of this spending on the local economy as rounds of purchases are made through the supply chain (supplier effects). Added to these are 'induced-income' effects as S4C and S4C supplier employees (and so on) spend their incomes locally, thereby creating further demands on the economy resulting in further employment. The results of this estimation process are set out in Table 4.3 below.

Table 4.3 - The Estimated Employment Impacts of S4C on the Welsh Economy 2007-2010

S4C Gross output (£m)*	100.06	102.7	104.9	104.2
<b>Employment (FTEs)</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Which then supports employment in:				
S4C	168	154	156	156
Independent production	519	570	580	585
Sub-contractors to independents	445	488	505	485
Other media and public services	170	183	185	190
Hotels, retail, wholesale	240	271	280	287
Other sectors	346	390	398	408
<b>Total FTE Impact on the Welsh Economy</b>	<b>1,888</b>	<b>2,056</b>	<b>2,104</b>	<b>2,111</b>
Note: columns may not sum due to rounding				
*Total S4C spend/turnover.				

The first line of Table 4.3 gives the gross output (or total S4C spend in Wales) of S4C for each of the 4 years. S4C's direct activities support jobs (and incomes) in other sectors of the economy. These impacts tend to be concentrated in the Independent and related sectors (as

<sup>21</sup> Whilst S4C has contributed to the growth of the sector, not all the employment in the Welsh Independent Production sector can be attributed to S4C.

we have already shown in Table 4.2), but they also spread through to other sectors in Wales. For example, in the making of outputs for S4C, demands are made on hotels, catering and retail industries, and in other services sectors (including business services, recreation and education). The table shows how many FTE jobs are linked to this demand.

The final row of Table 4.3 gives the total FTE impact of S4C on the Welsh economy. In 2009 S4C is estimated to have supported 2,104 FTE jobs in Wales, remaining fairly stable in 2010. Throughout relentless economic<sup>22</sup> and technological turbulence<sup>23</sup> and uncertainty, S4C has provided security in the 'employed' part of the sector, essential to create a flourishing climate of investment in people, skills and technology.

In terms of Gross Value Added (GVA), the impact of S4C on the Welsh economy is estimated as £85 million in 2009, rising to over £88 million in 2010. A key component of GVA is gross wages, salaries, profits/surpluses. Therefore, the change in GVA closely follows the change in employment impact discussed above.

A direct comparison with 2002-2006 study is not possible because whilst the same methodology has been applied to both studies, the economic modelling framework used to assess the contribution of S4C to the regional economy has been updated to reflect a contemporary picture of the economy. Furthermore, there is a discontinuity in the time series data we have used (i.e. survey data is not directly comparable).

That said it is possible to deduce from the survey that the following structural changes have occurred:

- Average output per FTE in 2009 (deflated to 2006 money) is about 20% higher than 2006. Therefore, staff productivity has increased significantly, meaning that more outputs can be produced by the same level of employment
- The amount of goods and services imported by the independent sector has risen considerably. Contributing factors will include sector technology changes requiring the purchase of equipment (etc) from elsewhere; as well as the purchasing patterns of larger businesses with broader client bases (and a more geographically spread supply chain).

These factors combined explain the level of figures across the two studies. This does not take away from the significant levels of economic activity supported by S4C spending in Wales. Rather we expect some variation in economic impact through time reflecting changed structural conditions in the regional economy.

Importantly, what has been shown by the studies is that S4C has provided support and stability to the sector, such that companies within it have been able to secure revenue from other sources.

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<sup>22</sup> UK recession

<sup>23</sup> Digital switch over

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### 4.3 Summary

This section estimates the economic impact of S4C over the years 2007 to 2010. The estimation process used survey data from S4C and the independent production sector which was processed using the Input-Output Tables for Wales.

Currently, S4C employs 156 FTE staff, with a turnover of £104.2 million. Over the four years from 2007, its activities and spending support an average of 2040 FTEs in the Welsh economy, an a GVA impact of an estimated £85 million in 2009, rising to £88 million in 2010. A number of key observations can be made regarding the last four years:

S4C has provided support and stability to the Independent Production sector. This has been an important factor in the expansion of the sector by some 50% since 2006, and in the development of revenue streams outside Wales.

- This accounts for the rise in the numbers directly employed overall by the Independents, while sub-contract employment appears to be stable, against a background of increasing productivity overall.
- Equally, local purchasing has remained fairly stable, but with input growth being met by goods and services sourced in the UK.

## 5. Qualitative Impacts

In addition to the estimated quantitative economic effects on the Welsh economy, S4C's policy decisions and operational practices have wider impacts that cannot be directly measured through the I-O process, but are nonetheless of substantial value.

This section of the report briefly identifies the core qualitative impacts that S4C has on the creative industries and the Welsh economy.

### 5.1 Investment in Infrastructure

Through its strategy, S4C has both directly and indirectly had a significant impact on network infrastructure and educational infrastructure.

- **Technological Infrastructure: Network**

S4C has invested considerable resource in the development of the broadcast contribution Network<sup>24</sup> throughout Wales, enabling suppliers to provide live programme feeds to S4C, between themselves and to other broadcasters, at full quality. This was at the cutting edge of broadcasting requirements and has enabled suppliers to utilise a network that allows them to supply S4C and other broadcasters with superior outputs, to HD quality. On average, S4C has invested £400k per annum in this network, which has extended to North Wales, West Wales (Llanelli) and Cardiff. Without this investment, companies would be totally dependent on transmission via satellite for live programme material (of lower quality) or the manual delivery of tapes/disks. Without this infrastructure investment, S4C suppliers would be disadvantaged within the UK and international market.

The compression standards that S4C introduced for contribution from 2008 (Codec Jpeg 2000 Compression) are now used by many others in UK broadcasting, and has superseded the older technologies used.

- **Technological Infrastructure: Capital Investment**

By communicating clear commissioning intent, S4C has offered clarity to the industry in planning their investment in technology. S4C has been explicit in setting out to the sector what proportions of commissions will be expected at different technological standards.

Key examples include wide screen, High Definition TV and compression technology. By staying close to EU best practice, S4C ensures that its supply chain is capable of competing at an international level. If S4C was not abreast of the technological developments, and communicated these to their supply chain, the gap that would develop between the standards demanded by S4C and the international market, would act as a market barrier to Welsh companies from accessing other markets. Given the speed of technological developments, this gap could become significant and potentially insurmountable.

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<sup>24</sup> The investment was made to realise operation improvements and efficiencies to S4C, relative to the previous network.



S4C are also involved in the technical liaison groups for Cyfle (training provider) and TAC, informing investment priorities for companies and helping them up skill. S4C has also arranged seminars and briefings and opened out in house staff training to the sector to raise awareness and develop skills and better understand S4C's requirements.

- **Education**

The strength of the sector and its requirement for a highly skilled workforce has necessitated the development of industry skills. Student educational choices and university provision is an early indicator for the economic needs of the sector. This is evident in Wales with the strength of provision being provided by Welsh HEIs. In particular, Aberystwyth University Media Studies Course, Newport International Film Studies, Cardiff University School of Journalism and Glamorgan University Creative and Cultural Industries.

In addition to the demand pull, S4C has been influential in helping to shape the content of emerging courses to ensure that they are at the cutting edge of industry needs (for example, supporting Glamorgan University on the content of new courses) and by indirectly doing so by directing industry standards. S4C also provides and funds one degree level sandwich course student placement each year within the Broadcast and Distribution unit. These students are invariably sourced from Wales's universities. S4C also works closely with Skillset Media Academy to ensure that the skills of the sector develop.

## 5.2 In house and within-Sector Skills Development

Standards:      Technological Expectations  
                         Employment Policies

Both of these areas have necessitated that the industry invest in skills development. S4C has facilitated specialist provision of training in relation to changes in technology policies and helped the sector to up skill over time.

It is a pre condition of each commission awarded by S4C that companies submit a training needs analysis. This has encouraged the sector to actively consider its own skills needs and to respond to these. The training plan in turn help to inform the sector skills council on the skills priorities for the sector and ensuring that training budgets are allocated to the right areas to ensure the maximum economic and business impact.

Training              Leverage of Additional Funds (SSC and ESF)  
                         Economies of Scale  
                         Competitiveness

In 2009 alone a total of £1.2 million was invested in the S4C, TAC and Skillset Training Framework. Of this funding 36% was from S4C and TAC, 19% from DCELLS, 30% for Skillset and 5% directly from employers. This funding enabled nearly 500 individuals to access 27 courses, and gain over 9,000 hours of continual professional development (CPD) training. The major proportion of the S4C and TAC funding was offered under open and competitive tendering processes.

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## 5.3 Creative Industry Leverage

However, S4C has a wider impact on the size and scale of the creative industries, which can be expressed across two main areas; Co-Production and Knowledge Transfer.

### **Co- Production**

Co-produced content involves a Welsh production firm teaming up with one or more funding parties or production partner to deliver the project brief. There may be multiple versions of the content to suit each broadcaster's requirements. S4C offers funding through a licence to broadcast, and this can be matched with funding from the other parties which boosts programme budgets. Higher quality and enhanced budget can ensure the delivery of better output than would otherwise be the case. Co-production also has a positive impact by opening up international markets and raising the profile and track record of companies, which then help in securing additional commissions. As shown in the economic impact assessment, the rate of growth amongst the Welsh independent sector has been greater than the increase in spending by S4C.

### **Knowledge Transfer and Spinouts**

Production companies are of the view that working with S4C has enabled them to develop skills and experiences which facilitates their expansion both within the production sub-sector, and also across other areas of the creative industries such as event management, PR and marketing. This enhances the footprint of this important sector in Wales and the resilience of companies to economic uncertainty.

In addition, the merchandising rights that are commercially exploited by companies (e.g. Sain) enables further economic benefits to be accrued from these sales, supporting wider expansion of the creative industry sector.

### **Commercial Investments**

S4C, through its commercial subsidiaries, is able to invest in companies and technology that contribute to the broadcaster's overarching objectives, such as supporting access to S4C across different platforms, enhancing access to Welsh language programming, co-funding of Welsh language programmes (including through co-productions) and supporting the development of the Welsh creative industries. This also provides opportunities to lever additional funding to support sector development. For example, in 2008 an S4C subsidiary invested £6million in INUK Networks. The investment formed part of a £9.5m investment round for the company, with the balance of the investment being provided by Wesley Clover. The investment enabled INUK, based in Abercynon South Wales, to develop its IPTV technology platform. It also helped to safeguard numerous high skilled jobs in the company. INUK has since been acquired by US based MOVE Networks, but retained its local base in Abercynon. Move Networks are now utilising the technology to provide IPTV services to customers in various parts of the world. This illustrates how an S4C investment helped to preserve high skilled employment and support the sector's technological developments.

S4C's commercial arm also provides investment funding in programme productions as part of co-production or co-funding arrangements. Examples include *Hannah's Helpline*, *Igam Ogam* and *Islands*.

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#### Case Study: Leverage Effect

Dream Team TV started around 15 years ago, focusing on sporting coverage for S4C. Over the years, Dream Team have employed numerous independent Welsh cameramen, utilised Welsh production facilities and raised the profile of a number of Welsh sporting events, such as the Cardiff Half Marathon which have all contributed to the economy.

Over the years Dream Team TV has expanded and now has two offices, one in Gwynedd and the other in Cirencester. Dream Team TV generates income from a number of broadcasters, and S4C's proportion of total revenue has diminished as the company has expanded into new markets. That said Dream Team is clear that S4C's initial commissions and support (including training) were critical to the success of the company.

This provides a clear example of how S4C initial support has enabled a Welsh firm to develop and expand, drawing in additional income from new markets.

#### Case Study: Co Production

Green Bay is a classic example of a company that has capitalised on the opportunities which has become available. The company is outward looking, has an established relationship with National Geographic and has successfully attracted capital investment. The company has sought to access new and wider markets, has secured investment from Finance Wales, has received the benefit of the Talent Attraction Scheme and in 2008 were recognised as a Wales 100 fastest growing media company. Their series, Rivers, an international co-production has been a success, both in terms of viewer feedback and international sales, which has seen the Creative Business Wales IP fund recoup their investment.

## 5.4 Social Impact

In addition to the core remit of providing Welsh language programming, S4C plays an important role within the culture and heritage of Wales. This is evident in four main areas:

- Securing the Welsh language by providing demand for high quality Welsh language employees (both direct employment, in-direct supply chain employment and ancillary services such as training courses)
- Regional Distribution Impact – seen through the economic value of the supply chain across the Welsh hinterland, and especially in areas where other high skilled, highly paid employment opportunities are low.
- Profile: Raising the profile of Welsh events (e.g. Cardiff Half Marathon, local shows ) and playing an ambassador role to show case Welsh talent (e.g. international sales, films etc)
- Community: Sponsorship, scholarships and local events. For example, as part of the latest series Y Porthmon, community charity events were held at each stopping point, with the local community invited to take part, and raise money for local charities.

## 5.5 Summary

These qualitative impacts are important and seen through a number of measures and strategies adopted by S4C.

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Therefore, in addition to the direct and measurable impact- S4C provides a vital stimulus to raise investment in infrastructure (technology, education and skills) which enables the sector to compete at a national and international level. This has been shown by both the individual successes of companies, but also the growth seen in the sector as a whole. The role of S4C in the communities is important. Hubs of creative industries exist in parts of Wales because of S4C, and these businesses are important to those local economies, playing a redistributive role, as well as much needed employment opportunities in high skilled sectors.

Fundamentally, S4C's existence is to provide a comprehensive high quality, Welsh language television service that reflects and enriches the life of Wales. In doing so, and through its activity and policies, S4C has important, economic and social impacts on the Welsh economy.

## 6. Overall Conclusions

S4C is pivotally important to the Welsh production sector. With a gross output of £105 million in 2009, the broadcaster through its spending decisions directly supports around 150 FTE jobs within S4C, and a further 1,950 FTEs across supply chain relationships. The vast majority of these are within the independent production sector and sub-contractors to the independent sector. These provide important high paid and high skilled employment opportunities in Wales, in keeping with Welsh Assembly Government aims<sup>25</sup> of enhancing the knowledge economy, with higher skills, more innovation and better jobs within the creative industries, one of six new target sectors.

S4C Gross output (£m)*	100.06	102.7	104.9	104.2
<b>Employment (FTEs)</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Which then supports employment in:				
S4C	168	154	156	156
Independent production	519	570	580	585
Sub-contractors to independents	445	488	505	485
Other media and public services	170	183	185	190
Hotels, retail, wholesale	240	271	280	287
Other sectors	346	390	398	408
<b>Total FTE Impact on the Welsh Economy</b>	<b>1,888</b>	<b>2,056</b>	<b>2,104</b>	<b>2,111</b>
Note: columns may not sum due to rounding				
*Total S4C spend/turnover.				

In addition to this very visible economic impact, S4C has secured through its policies and strategies an environment of relative stability. S4C has done this through the transparency of policy relating to technological developments, and support for companies in investing in appropriate technology and skills developments.

Insisting that the quality of outputs remains abreast of wider industry requirements helps the Welsh production sector access wider markets, capitalising on S4C active support for co-production, use of rights reassignment and international sales.

Over the last three years, the Welsh independent sector has grown at a faster pace than S4C spend (which is linked to RPI), suggesting that companies have been successful in securing additional revenues from wider markets.

The current economic climate is difficult and uncertain, with government departments reviewing budgets<sup>26</sup> and spending commitments. Given the dependencies of companies to S4C (60% of sector turnover comes from S4C); a cut in spending (as a result of reduced DCMS income) will have a direct impact on the Welsh creative industries. The extent to which businesses are able to absorb this reduction in spending is unclear. A reduction in activity will have both economic and social impacts.

<sup>25</sup> Economic Renewal: A New Direction July 2010

<sup>26</sup> Results of the Comprehensive Spending Review will be published in October 2010



## Appendix 1 Detailed Methodology

### Quantitative Methodology

In order to undertake an analysis of the economic significance of an activity, industry or an individual organisation, it is necessary to separate direct economic effects from those which are indirect. Direct economic consequences are associated with the activity itself whilst indirect effects are felt in the rest of the local economy dependent on how, when and where monies are spent.

The first task of this assessment was to estimate the direct employment effects of S4C activities from 2007 to 2009 (forecast 2010), using detailed information provided by S4C. The direct spending associated with S4C's operational activities also has indirect consequences determined by how the money is spent. For example, when S4C spends money on financial services in Wales, this generates demand for inputs from other Welsh industries, such as business services and other goods and services, and so on. These are 'supplier' effects, and their economic importance is linked to the level of local sourcing for the particular sector, and then the levels of local sourcing of suppliers, and so on. Clearly, some of the demands made by S4C and its suppliers (as is the case for other broadcasters in Wales) cannot be fulfilled locally, so these must be imported. An example of this might be the hiring of more unusual media-specialised technical equipment.

Other economic impacts can be estimated which are over and above these supplier effects. For example, in 2009 S4C provided 156 full time equivalent jobs (FTEs) within its organisation. A high proportion of the disposable income associated with these jobs is spent locally, further adding to local demand. Similarly, some proportion of employment in local suppliers (media and non-media related) will be supported by S4C spending, and some of this will be local. These are 'induced-income' effects, and must be added to the 'supplier' effects to assess the total indirect consequences of the direct local economic activities. As is the case with direct effects, indirect effects can be categorised in terms of output, incomes and jobs.

There are two broad requirements for the estimation of these indirect or multiplier consequences. First, the spending patterns of the target group (in this case S4C and the independent producers from whom it commissions outputs) must be examined. While the population of independent production companies has been experiencing consolidation, and much is known about the sector, it was not possible to examine each and every one of the companies at the level of detail that was required. It was therefore necessary to derive a sample of companies in order to shed light on differences in spending patterns arising from variations in the size and style of companies operating within the sector and then weight that information accordingly. In order to achieve this it was necessary to use a 'purposive' (rather than a random) sample. With a small and easily identifiable population the size of the sample was less important than the quality of information. Financial information derived from each company is confidential. These financial outputs were then combined to create an aggregate sector representing the buying patterns (or for modelling purposes the 'vector') which create the economic impacts which then reverberate through Wales.

The second requirement then was for a 'model' of the local economy which can estimate the impacts of these financial trading relationships in Wales (i.e. through their sales and purchasing patterns), which allows the effect of the target sector to be traced through the

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entire local economy. An Input-Output table details transactions between different sectors of the economy and beyond, and this information was transformed into a modelling framework to enable the economic significance of S4C to be estimated.

#### Model Limitations

Whilst Input-Output analysis provides a powerful modelling tool, it does have a number of limitations. The tables on which the model is based provide an estimate of the Welsh economy in one particular year, with the latest Welsh tables relating to 2007. Full survey-based Input-Output tables are only derived periodically due to the significant time and resource costs involved. In addition, the purchasing and sales patterns of industries and consumers do not change significantly enough in the short term to justify a survey-based table for each year.

The Input-Output modelling process relies on a number of key assumptions. The model is demand-driven, and will reflect the employment and output consequences of a given level of demand, without adjusting for the effect of supply on the cost of those demands. In the real world a change in the level of demand in an economy may induce change in the cost of inputs depending on the tightness of the supply of demanded goods and services in affected sectors. Input-Output analysis does not incorporate these supply-side adjustments but rather reflects an equilibrium position that might take a number of years to be resolved (the so-called long-run). In addition, the modelling process does not incorporate factors such as technology change, or economies of scale, which will change the way industries purchase inputs. However, as noted above, in the short-term, these changes are unlikely to be significant.

These caveats notwithstanding, the Input-Output approach does provide a very detailed description of an economy, and is a popular, accepted and transparent methodology useful for assessing the marginal impact or significance of industries or activities to their local economies.

#### Other Examples

The Welsh Input-Output tables are constructed by the Welsh Economy Research Unit at Cardiff Business School, and are the product of a continuing research project to develop and analyse the structure of the Welsh economy, and the way it is changing over time. These tables have been used as the basis for a range of impact studies of different industries in Wales, for example, tourism, arts and cultural industries, the forestry industry, the higher education and further education sectors and the steel industry. They have also been used to estimate the effect of broadcasting in Wales. More information about these studies and the Welsh Input-Output project can be found at [www.weru.org.uk](http://www.weru.org.uk).

#### Qualitative Methodology

One last caveat in the context of this particular study relates to the handling of 'lumpy' revenue and spending occurring in the individual companies which inform the modelling. In connection with this, some companies may do well in one round of commissioning at the expense of other companies with the overall impact of the sector directly emanating from S4C, year on year, being constrained to S4C's direct commissioning budget. The quantitative method can only model the impact of this spend.

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