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Economic Impact of the UK Screen Industries

A Report submitted to
the UK Film Council and the
National and Regional Screen and Development Agencies

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Cambridge Econometrics
Covent Garden, Cambridge CB1 2HS, UK
Tel 01223 460760 Fax 01223 464378
From abroad Tel +44 1223 460760 Fax +44 1223 464378
Email khs@camecon.com
Website http://www.camecon.com

CONTENTS

GLOSSARY

calibration methods	Calibration is a process of adjusting the parameters of a given explanatory model so as to match a data set. It is typically non-statistical and is therefore quite distinct from empirical estimation which is a process whereby the parameter values of a model are determined jointly by a prior specification and a related observed data set, thus allowing for hypothesis and reliability testing on parameters. Calibration may involve the determination of parameters in relationships that have no directly observable characteristics or at least where observation is not an easy or available option for the modeller. As an example, input-output coefficients may be calibrated to reflect prior views of external links and to incorporate additional (partial) survey-based information. Typically the calibrated model would involve parameter adjustment until the chosen model specification in simulation achieved an exact match with a particular set of observations.
final demand	Final demand is the demand for a good or service originating from sources other than firms within the region of interest. The components of final demand are: households, investment, government, changes in inventories (ie building or shedding of stocks) and exports.
GDP	Gross domestic product (GDP) is a measure of economic activity. It is calculated by adding the total value of the output of goods and services of a country or region.
intermediate demand	Intermediate demand is the demand for goods and services required in the production process, ie the demand from firms for the goods and services provided by other firms.
location quotient	A location quotient compares the distribution of an activity to some base or standard. For example, it might compare the concentration of screen industry employment in a region with the concentration for the UK as a whole.
marginal propensity to spend	The marginal propensity to spend is the proportion of extra income that is spent (rather than saved).
multiplier	A multiplier is used to assess the dynamic impact of an industry. It measures the direct effect of expenditure on an industry, the indirect effect on suppliers of inputs to the industry, and the induced effects from incomes and spending. The multiplier measures the eventual increase in income resulting from the initial boost to expenditure.
scenario	A scenario is one run of the model in which a set of changes was implemented. The scenario results are compared to a baseline forecast to assess the impact of the changes implemented. In this study a series of scenarios were run in which changes were applied for each region and each screen industry, eg a scenario for the London TV industry.
screen industries	Screen industries refers to the four screen industries: film, TV, corporate video and advertising.
screen sectors	Screen sectors refers to the four screen industry activities: pre-production, production, post-production and distribution.
turnover	Turnover is defined as total sales and work done.

value added output	Value added output measures the contribution of an industry to economic activity. It approximates to total turnover minus inputs purchased. Wages and salaries account for a large proportion of value added output.

EXECUTIVE SUMMARY

The scope of the study

This report sets out the findings of the Economic Impact of the UK Screen Industries study, commissioned by the UK Film Council and a group of National and Regional Screen and Development Agencies[1] and undertaken by Cambridge Econometrics and Optima. The study assessed the size and analysed the economic impact of the screen industries in the UK, disaggregated by nation and region, focussing on the economic multipliers that may be associated with the various screen industries.

Five screen industries have been identified:

- Film
- Television
- Corporate video
- Commercials/Advertising
- Interactive

This study is concentrated on the full value chain for each of the screen industries distinguishing the following four activities (or sectors):

- Pre-Production
- Production
- Post-Production
- Distribution/Exhibition

The outcome of the study is:

- a common analytical framework and suitable data for comparing the screen industries with other UK industries based on a tailored version of Cambridge Econometrics multi-sectoral model of the UK economy and its countries and regions
- comprehensive regional and national economic multiplier estimates for the screen industries that are consistent with the overall UK economic multipliers for these industries
- an embodied software tool that delivers the above and provides the basis for an improved understanding of the inter-regional dynamics of the screen industries and that thereby assists the UK Film Council and the national and regional development agencies with the development of their strategies to grow and strengthen the industries.

1 These include DCMS, East Midlands Media, Northern Film & Media, Film London, North West Vision, Screen South, Screen West Midlands, Screen Yorkshire, Codeworks, NIFTC, PACT, SEEDA, NWDA, EMDA, One North East, SWRDA, LDA, Advantage West Midlands, South West Screen, EEDA, Invest Northern Ireland, Screen East, Yorkshire Forward, GLA, Scottish Screen.

Method of approach

The study builds on a comprehensive review of the methodologies involved in multiplier analysis and on previous work undertaken in the area of creative industries. Based on a substantial survey of screen industries activities undertaken between May to November 2004, the team built estimates of the economic size, workforce strength and geographical clustering of the industry in the UK in the base year of 2002. The team used published information, judgement and the survey data to produce a disaggregated set of accounting flows for the selected screen sectors. It embodied this information in a fully articulated economic model to estimate the economic contribution, and full dynamic multiplier impacts, of the screen industries across the full screen industry value chain. This work reflects the most up-to-date research practice in the area of economic impact analysis, utilising a reputable national and regional economic model, Cambridge Econometrics' MDM, to place the screen industries in context and allow for comparative analysis.

Literature review findings

There is a large and extensive range of previous work in the area of economic impact analysis of sectors with similar character to the creative industries reviewed in this report or dealing with similar requirements. However, these studies differ in methodology, in the type of data used and range through different sectors and regions. All previous economic multiplier studies have been more limited in scope than the current study, often using full calibration methods rather than mixed survey approaches, and/or constraining themselves to just one spatial area of interest. However, the studies are broadly supportive of an approach that distinguishes full-accounting flow analysis as being the route to understanding interdependencies between consumption and production flows, and in expressing the benefits of articulating a detailed value-added chain. There are, however, no corresponding studies that can be readily used to directly compare results with those obtained in the current study.

Survey findings for film, TV, corporate video and commercials

The survey work reached the following conclusions related to the size and character of the screen industries value-added chain:

- Turnover accounted for close to £20bn in 2002, of which over two-thirds (£13.4bn) is TV-related, £3.5bn is film, and the rest (£2.8bn) is in commercials and corporate video.
- Over half of turnover (£10.5bn) is concentrated in production, about a quarter £5.4bn in distribution and exhibition, with the remaining approximately evenly distributed between post-production(£2.1bn) and pre-production (£1.7bn).
- Two-thirds of sales to firms is accounted by London screen industries (£8.7bn) reinforcing the view of the dominant and specialised role of London, and reflecting the concentration of the headquarters of the UK's main broadcasters and of many of the major film and TV production companies and film distributors and exhibitors.
- By far the largest regional turnover outside of London is located in Scotland (£1.2bn). This reflects the strength of Scotland's indigenous TV activities, the volume of location production in Scotland, the expansion in BBC activities following Scottish devolution, and the presence of call centres of major TV platforms in Scottish towns.
- Across the range of regional specialisations is the notable specialisation of film in the South East, and TV-related activity in Scotland and Wales.

- Multi-sectoral working is wide-spread with close to 50% of firms operating in more than one sector, ranging from 35% of firms in the South East to 67% in Northern Ireland.
- 108,000 people are in permanent employment, of which almost 85,000 (78 per cent) were in full-time employment and the rest part-time. Over half of jobs are in the TV industry. Almost two-thirds of all permanent jobs are in London (71,500) with the South East (8,100) and Scotland (5,700) the next largest regional employment bases.
- Freelancers are a substantial source of supply, with some 3.8m days of freelance services purchased by the screen industries in 2002.
- The industries purchased about £11bn of goods and services in addition to employment costs and freelance services.
- Gross corporate receipts were £4.7bn in 2002 and capital investment of close to £650m (3.3% of turnover) was made.

UK companies carried out location shoots worth £832m in 2002, of which £511m was for TV and £260m for films.

Multiplier analysis findings

A summary analysis of regional economic multipliers is presented in Tables 1 and 2 below and model the effects of a one-off boost to final demand over four years in one region in the form of an export boost. The regional multipliers in Table 1 show the dynamic impact in the region in which the boost to demand was made; the UK multipliers in Table 2 show the dynamic impact on the whole of the UK of the boost to demand in one region for the four screen industries of film, TV, corporate video and advertising.

The following broad results were obtained for the four screen industries: film, TV, corporate video and advertising:

- The regional multipliers are highest in those regions with a strong representation of supporting services.
- The regional multipliers tend to be higher, when the region is relatively large, and there is a strong representation of screen-industry activities within the region, as notably for London.
- Larger multipliers are associated with a strong representation of supporting industries within the region, both those industries that provide direct inputs to screen industry activities, and financial & business services, communications, publishing, food, construction and distribution, hotels & catering.
- London ranks highly for each of the characteristics which underpin large regional multipliers. There is so much screen industry activity concentrated in London that it far outstrips the UK average while in all other regions screen industry activity is below the UK average.
- In the scenarios for London, a high proportion of the boost to final demand for each screen industry is satisfied by production within London rather than by imports from other regions.

TABLE 1: REGIONAL DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	LO	SE	EE	SW	WM	EM	YH	NW	NE	WA	SC	NI
	(£ increase in value added output per £1 increase in export sales)											
Film	1.1	1.0	0.9	0.9	0.8	0.8	0.8	0.9	0.8	0.8	0.9	0.8
TV	1.1	1.1	1.1	0.9	0.9	0.9	0.9	1.0	0.9	0.8	0.9	0.8
Corporate video	1.2	1.1	1.0	0.9	0.8	0.8	0.9	1.0	0.9	0.8	0.9	0.8
Advertising	1.2	1.2	1.0	0.9	0.8	0.9	0.9	1.0	0.9	0.8	0.9	0.8

Note(s) : Multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.
Figures in the table have been rounded to one decimal place.

Source(s) : Cambridge Econometrics.

- In the South East the regional multipliers for each of the four screen industries are also greater than one. In the South East, the representation of the film industry is relatively high; it ranks second to London and is above the other regions by a high margin. The representation of corporate video and advertising is also relatively high in the South East. However, there is a relatively low concentration of TV activities. The regional multipliers are high because the South East is a large region, has relatively high concentrations of most screen industries and also has a high representation of supporting industries, especially financial & business services.
- The only other cases in which the regional multipliers are greater than one are for both TV and advertising in the East of England and for TV in the North West. Despite having relatively low concentrations of TV and advertising activities, the economic impact on the East of England is boosted because it is a relatively large region and has a high representation of supporting services such as financial & business services and communications.
- In the North West, the representation of TV activities is relatively low (despite the presence of Granada). However, the North West is the third-largest regional economy, and its representation of some supporting services, such as distribution, matches the national average.
- The regions with the smallest regional multipliers are Wales, Northern Ireland and the West Midlands. In Wales, there is a relatively high representation of TV activity, and also corporate video and advertising. In Northern Ireland TV activity is relatively well-represented. In the West Midlands, the concentration of screen industry activities is relatively low. However, in all three regions the dominant impact is that inputs for supporting goods and services are imported from other regions, especially London and the other regions in the south of England.
- The UK multipliers (see Table 2) are smallest when the leakages from the UK economy are larger. In all cases the UK multipliers are higher than the regional multipliers as they capture the UK-wide effects of the increase in screen industry expenditure. The UK multipliers lie in the range 1.4-2.5 and so indicate that a £1 increase in final demand in the specified screen industry in that particular region boosts value added in the whole UK economy by £1.40-£2.50.

- The impact on the UK economy tends to be smaller the larger the leakages from the UK economy as the UK multipliers tend to be lower when there is a greater proportion of inputs to the increased activity imported from outside of the UK and when the proportion of the increased income that is spent is lower.
- For film, the largest UK multipliers are for the South West, Wales and Scotland. In all these regions the proportion of the increased demand satisfied by imports from outside of the UK is relatively low. In addition, a relatively large proportion of the increase in incomes is spent reflecting low average earnings in these regions. Because the leakages from the UK are relatively low for the South West, Wales and Scotland the boost to the UK economy is relatively high.
- The lowest UK multipliers for the film scenarios are for Northern Ireland, London, the East and West Midlands. In Northern Ireland and London the largest proportion of increased inputs is imported from outside of the UK. In the case of Northern Ireland the proportion of imports from outside of the UK is relatively high because Northern Ireland is a small economy and its location makes it more dependent upon non-UK producers for imported inputs.
- In the case of the TV scenarios, the largest UK multipliers are for the East of England, the South West and Yorkshire & the Humber, due to a relatively high propensity to spend from increases in incomes. The lowest multipliers are for the North East and Wales with lower propensities to spend.
- There was a mixed impact on employment in the regions following a boost to demand. In general, the scenarios in which the largest increase in value added output occurred also saw the largest increase in employment. The employment increase was below the average in the scenarios for which demand was boosted in London. In London, productivity (value added output per worker) is relatively high, indicating the higher-skill, higher value-added and less labour-intensive nature of activity in the region. Therefore, because productivity is relatively high, when output in the London screen industries was increased, relatively few new jobs were created.
- For each of the screen industry scenarios for London, around 15 jobs per £1m increase in demand were created within the region, thus a £200m increase in US film

TABLE 2: UK DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	LO	SE	EE	SW	WM	EM	YH	NW	NE	WA	SC	NI
	(£ increase in value added output per £1 increase in export sales)											
Film	1.8	2.0	2.1	2.4	1.8	1.8	2.0	1.9	2.1	2.4	2.5	1.6
TV	1.9	2.0	2.3	2.2	2.0	2.1	2.4	2.0	1.8	1.8	2.1	2.2
Corporate video	2.1	2.0	2.1	2.0	1.6	1.4	1.6	1.6	2.1	2.2	1.7	1.9
Advertising	2.1	2.5	2.3	2.2	1.5	1.4	1.7	1.8	1.9	2.1	2.2	2.0

Note(s) : Multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.
Figures in the table have been rounded to one decimal place.

Source(s) : Cambridge Econometrics.

production would generate around 3,000 jobs in London. Around one-third to one-half of these jobs were in the London screen industries, with the rest of the London economy benefitting from the remaining increase in jobs as activity in other industries was boosted. The boost to employment spread across the other UK regions was similar in scale to that in London so that, for each of the screen industry scenarios for London, around 30-40 jobs per £1m increase in demand were created in the UK as a whole (this includes the impact in London).

- The East Midlands is most responsive in employment to the boost to demand because productivity (value added output per worker) is relatively low. Around 30 jobs per £1m increase in demand were created within the region, and 50-70 jobs in the UK as a whole (including the impact in East Midlands). There was a relatively high response of employment in the South East that may in part be due to a strong representation of film distribution and exhibition which is relatively labour-intensive and relies greatly on part-time employment.
- On average, tax revenues are boosted by 20p for every £1 increase in final demand. Of all of the regional scenarios, those for London and Wales yielded the smallest impact on tax revenues. In regions with relatively high average earnings, such as London, a larger proportion of the increase in income from employment would be taken as tax. However, in the London scenarios this effect was not sufficient to offset the relatively low impact on output and employment overall. The largest impact on tax revenues was for the East of England scenarios in which revenues were boosted by the relatively strong employment impact along with high average earnings in the region.

The interactive media industry

The interactive media industry is a rapidly developing set of activities, the boundaries of which are not yet clearly defined. Using Skillset estimates of employment of some 44,000 in the industry in 2004, of which 72% is located in the wider South East, the study estimates turnover to be £8.6bn.

Policy conclusions

It is of interest to consider whether there are policy implications coming out of this study. The multipliers analysis provides the first empirically based account of the full range of effects associated with changes in external demand for each of the component sectors of the UK screen industries. In particular it articulates the full economic effects within and between regions. It therefore provides a tool for informing policy discussions about how these industry links might better work in the future, and how regional boosts coming from the levers used by government to promote UK-based screen industry activity might generate better regional and national gains for the economy as a whole.

The policy implications need to be well thought through. For example if the objective is to get more output for the national economy, then that might suggest a policy of simply directing spending more to those sectors in those parts of the UK, such as in TV in Yorkshire and the Humber or advertising in the South East, where the national output multipliers are largest. But this would be potentially not the most advantageous use of the findings.

The regional multipliers show how the supply chains operate through all regions to transfer a demand shock in a progressive wave, with every region operating as an open

economy. There is evidently a particular structural importance to the south of England. The largest impact of a simulation involving uniform boosts of final demand across all regions is that demand is disseminated through the value-added chain strongly back to the wider South East (WSE) economy. This is mainly focussed in London, and the immediately proximate parts of the South East and East of England. This suggests that for the WSE regions long-term policies designed to encourage investment in a 'deepening' of the screen industry linkages and thereby to boost the size of the national multipliers, may be better directed to enhancing the existing clusters of activities that strongly characterise the London and WSE. This would see less leakage of economic benefits outside the UK. These are strongly associated with specialisation in the WSE and enhanced links to finance and distribution.

For regions outside the WSE, the regional multipliers for the screen industries are generally small and rather below the average for other sectors in the rest of the UK economy. This suggests there is potential for indigenous development of screen industries capacity in these regional economies. The WSE economy and its specialist niches have perhaps the strongest case for supplying enhanced financial and distribution links, given the global character of screen industries competition in these areas. But there are important potential advantages from more joined up activities in the regions outside the WSE, mediated by improved links to the financial and distribution services offered by the WSE. There would be multiplier benefits if niche developments in the regions outside the WSE were broadened so as to increase the regional, and thereby, the national multipliers. Clustering of activities is likely to be a sensible way to achieve this in these regions. Clustering in turn will make a better use of the entrepreneurial, workforce, property and natural resource endowments of those regions. The point is that the multipliers revealed in this study may well reflect an existing supply chain structure that is still suboptimal and under-developed for effective global competition, even though specialist niches of the industry are successful in the global market.

Indeed the strongest case for intervention by government in the screen industries is provided by the presence of market failures keeping the UK industry too small and inhibiting stronger vertical links. There is also the concern about equity, in particular in terms of the government's overall objective to see competitive growth but balanced regional development.

There is a strong argument that the UK film industry produces benefits (cultural benefits, externalities, additionality) that, without aid, are likely to be under-provided by the current UK market. While this study has no direct evidence to offer on these aspects of suboptimality, it does provide some support for a concern about the relative lack of value-added 'capture' by the UK screen industries. If the observed spending flows from final demand for screen industries output in 2002 are symptomatic, then this suggests a departure point for a fuller enquiry at least into supply chains. There are relatively high economic leakages from the London economy to abroad, and this it seems is likely to be associated with the global competition faced by the UK screen industries. In this sense the suggestions that there is a lack of commercial structures for dealing with the exceptional risks of film production, imperfect information, barriers to entry into international distribution, and market domination are all in accordance with the evidence on scale and rather poor linkages coming out of this study. The relatively 'low' regional multipliers, certainly for those regions peripheral to the major centres in and around

London, suggest that the scale of development needs increasing and more substantial vertical supply chains are required - to link production up the value chain to creative conception and financing, and to link down the value chain to distribution. This would be a sensible objective for a policy designed to both increase the level of activity, and to get better returns on that final demand that is attracted by government-backed initiatives.

The particular value of the current study is that it provides a clear picture of how any regionally directed spending or support arrangement would currently flow in its economic effects across the regions, but the study also facilitates an understanding of how changes in supply chains could change the economic benefits and contributions of the component screen industries to the national outcome. This is its particular value for policy.

1 INTRODUCTION

This report sets out the findings of the Economic Impact of the UK Screen Industries study, undertaken by Cambridge Econometrics and Optima for a consortium led by the UK Film Council. The study assessed the size and analysed the economic impact of the screen industries in the UK, disaggregated by nation and region, focussing on the economic multipliers of the various screen industries.

Chapter 2 is a review of previous studies which aimed to provide helpful information for this study. It includes studies of the screen industries, of the more wider defined creative industries and of other economic sectors in the UK, the UK regions and abroad.

Chapter 3 discusses the results of the survey of the four UK industries, film, TV, corporate video and commercials/advertising undertaken between March and November 2004. These are the amalgamated results of two surveys: the survey results using a full questionnaire were supplemented by the results of a second survey using a shorter version of the questionnaire.

The survey of companies and freelancers active in the UK screen industries was designed and carried out by Optima - a joint venture between David Graham and Associates Limited and Oliver & Ohlbaum Associates Limited. Optima used the survey results, official data from ONS and other sources to prepare the industry data that was the basis for the multiplier modelling and analysis.

The methodology used in the surveys and a description of the process of undertaking the surveys are detailed in Appendices B and C. The methodology used for the interactive media industry survey is described in Chapter 5. The questionnaires used in all three surveys may be found in Appendix F.

Chapter 4 discusses the results of analysis undertaken using the screen industry input-output model developed by Cambridge Econometrics for this work and reports on the summary economic multipliers of the screen industries and their inter-regional dynamics. The methodology used for the multiplier analysis undertaken for this project is described in Appendix A, while Appendix D discusses the accuracy of the model results.

Chapter 5 discusses the interactive media industry, presenting a literature review of the sector and the results of a survey of firms in two UK regions, the North East and the South East. The chapter also includes a short discussion of the value of the multiplier of the interactive media industry. The questionnaire used for the survey of the interactive sector is included in Appendix F.

Chapter 6 draws conclusions from the study.

In the rest of the introduction the definitions of the screen industries and their full value-chain are presented. For each screen industry, the value-chain includes four aggregate sectors: pre-production, production, post-production and distribution. The full survey aimed at informing the full value-chain of the screen industries.

TABLE 1.1: SCREEN INDUSTRIES VALUE CHAINS - FILM

Pre-Production	(	**Production**	)	**Post-Production**	**Distribution/Exhibition**
	Cast	Location	Film and Sound		
Rights	*Wardrobe*	*Stage and studio*	*Camera*	*Editorial*	*Laboratory and film*
IP creation	Costume design	Rental	Equipment rental	Editor	Film developing
Rights acquisition	Costume manufacture	Labour	Equipment sales	Production office	Duplication
	Costume rental	Equipment	Equipment repair	Outside broadcast units	Titles/opticals
Planning	Cleaning		Camera operation		
Writing		*Locations*	Cranes/cherrypickers	*Post-production*	*Cinema distribution*
Direction	*Make-up*	Freight transport	Still photographer	Audio	Film distribution
Casting	Make-up	Location management		Film	Advertising sales
Acting	Hair	Specialised location catering	*Sound*	Video	Cinema exhibition
Talent agents			Equipment rental	Subtitling	
	Props	*Set*	Equipment sales	Dubbing	*Secondary distribution*
Professional	Props rental	Set production	Equipment repair		Video and DVD manufacture
Publicity	Props sales	Set construction	Sound recording	*Music*	Video and DVD sales and rental
Insurance	Animal handlers	Set decoration	Sound mixing	Music composition	TV sales
Legal		Rigging/scaffolding		Music recording	
Accountancy			*Lighting*	Music publishing	
		Electrical	Equipment rental	Lyricist	
		Gaffer	Equipment sales	Music clearance	
		Best boy	Equipment repair		
		Grip		*Special effects*	
		Grip equipment	*Animation*	Stunts	
		Dolly/cranes	2D animation	Pyrotechnics	
		Generator rental	3D animation	Computer graphics	
				Model making	

TABLE 1.2: SCREEN INDUSTRIES VALUE CHAINS - TV

Pre-Production	(	**Production**	)	**Post-Production**	**Distribution**
	Cast	Location	Film and Sound		
Rights	*Wardrobe*	*Stage and studio*	*Camera*	*Editorial*	*TV Distribution*
IP creation	Costume design	Rental	Equipment rental	Editor	Channel management
Rights acquisition	Costume manufacture	Labour	Equipment sales	Production office	Airtime sales
	Costume rental	Equipment	Equipment repair	Outside broadcast units	Platform management
Planning	Cleaning		Camera operation		Playout
Writing		*Locations*	Cranes/cherrypickers	*Post-production*	Transmission
Direction	*Make-up*	Freight transport	Still photographer	Audio	
Casting	Make-up	Location management		Television	*Secondary distribution*
Acting	Hair	Specialised location catering	*Sound*	Video	Video and DVD manufacture
Talent agents			Equipment rental	Subtitling	Video and DVD sales and rental
	Props	*Set*	Equipment sales	Dubbing	TV programme sales
Professional	Props rental	Set production	Equipment repair		
Publicity	Props sales	Set construction	Sound recording	*Music*	
Insurance	Animal handlers	Set decoration	Sound mixing	Music composition	
Legal		Rigging/scaffolding		Music recording	
Accountancy			*Lighting*	Music publishing	
		Electrical	Equipment rental	Lyricist	
		Gaffer	Equipment sales	Music clearance	
		Best boy	Equipment repair		
		Grip		*Special effects*	
		Grip equipment	*Animation*	Stunts	
		Dolly/cranes	2D animation	Pyrotechnics	
		Generator rental	3D animation	Computer graphics	
				Model making	

TABLE 1.3: SCREEN INDUSTRIES VALUE CHAINS - CORPORATE VIDEO

Pre-Production	(	**Production**	)	**Post-Production**	**Distribution**
	Cast	Location	Film and Sound		
Planning	*Wardrobe*	*Stage and studio*	*Camera*	*Editorial*	*Distribution*
Writing	Costume design	Rental	Equipment rental	Editor	Video and DVD manufacture
Direction	Costume manufacture	Labour	Equipment sales	Production office	
Casting	Costume rental	Equipment	Equipment repair	Outside broadcast units	
Acting	Cleaning		Camera operation		
Talent agents		*Locations*	Cranes/cherrypickers	*Post-production*	
	Make-up	Freight transport	Still photographer	Audio	
Professional	Make-up	Location management		Television	
Publicity	Hair	Specialised location catering	*Sound*	Video	
Insurance			Equipment rental	Subtitling	
Legal	*Props*	*Set*	Equipment sales	Dubbing	
Accountancy	Props rental	Set production	Equipment repair		
	Props sales	Set construction	Sound recording	*Music*	
	Animal handlers	Set decoration	Sound mixing	Music composition	
		Rigging/scaffolding		Music recording	
			Lighting	Music publishing	
		Electrical	Equipment rental	Lyricist	
		Gaffer	Equipment sales	Music clearance	
		Best boy	Equipment repair		
		Grip		*Special effects*	
		Grip equipment	*Animation*	Stunts	
		Dolly/cranes	2D animation	Pyrotechnics	
		Generator rental	3D animation	Computer graphics	
				Model making	

TABLE 1.4: SCREEN INDUSTRIES VALUE CHAINS - COMMERCIALS/ADVERTISING

Pre-Production	(	**Production**	)	**Post-Production**	**Distribution**
	Cast	Location	Film and Sound		
Planning	*Wardrobe*	*Stage and studio*	*Camera*	*Editorial*	*Advertising sales*
Writing	Costume design	Rental	Equipment rental	Editor	Media buying
Direction	Costume manufacture	Labour	Equipment sales	Production office	Airtime sales
Casting	Costume rental	Equipment	Equipment repair	Outside broadcast units	
Acting	Cleaning		Camera operation		*TV distribution*
Talent agents		*Locations*	Cranes/cherrypickers	*Post-production*	Playout
Campaign management	*Make-up*	Freight transport	Still photographer	Audio	
Account management	Make-up	Location management		Television	*Cinema distribution*
	Hair	Specialised location catering	*Sound*	Video	Film developing
Professional			Equipment rental	Subtitling	Duplication
Publicity	*Props*	*Set*	Equipment sales	Dubbing	Advertising reel compilation
Insurance	Props rental	Set production	Equipment repair		Advertising reel distribution
Legal	Props sales	Set construction	Sound recording	*Music*	
Accountancy	Animal handlers	Set decoration	Sound mixing	Music composition	
		Rigging/scaffolding		Music recording	
			Lighting	Music publishing	
		Electrical	Equipment rental	Lyricist	
		Gaffer	Equipment sales	Music clearance	
		Best boy	Equipment repair		
		Grip		*Special effects*	
		Grip equipment	*Animation*	Stunts	
		Dolly/cranes	2D animation	*Pyrotechnics*	
		Generator rental	3D animation	Computer graphics	
				Model making	

2 LITERATURE REVIEW

2.1 Introduction

The purpose of this review is to identify any lessons that may be helpful for the present study with regard to

- theoretical methodology
- gathering or estimating regional data

It is clear that lessons from other countries about regional data may not always be transferable. For example, economic data are normally available in greater detail in countries with a federal structure than they are in the UK. Certainly US states, for example, have far richer data sets than UK regions.

Coverage of the study

The screen industries identified in this study are:

- Film
- TV
- Corporate Video
- Advertising
- Interactive

2.2 Screen Industry Impact Studies

Introduction

Many of the studies reviewed here assess the economic impacts of creative industries, rather than of the narrower screen industries. It is in fact difficult to find studies that look specifically at screen industries. Nevertheless, although creative industries have a far broader scope than screen industries, there is sufficient overlap for the methodology employed by these studies to help in the refining of our methodology.

Defining the screen industries

This review of the literature has found that this study of the screen industries faces several problems, of which the first is how to define the sector. There is no consistent definition either of creative industries or of screen industries. The difficulty of defining the boundaries of 'screen industries' is not just a matter of determining what counts as a screen industry, but also which screen industry-related activities should be included (for example games software based on films). The issue is important because, on the one hand, the credibility of any study is undermined if the boundaries are wider than the audience considers reasonable, while on the other hand, any impact estimate is understated if the boundaries are drawn too tightly. There is sometimes uncertainty over whether a screen industry's product produced by a non-screen industry should be assigned to the screen industry. A key tool in this respect is the well-established

'product/industry' distinction adopted in economic statistics: a product may be classified as screen industry-related (eg film merchandise such as a toy or shirt) even if the industries in the value chain that supply the item are not part of a conventionally-defined screen industries sector (in the case of the shirt these would be retailing and clothing manufacture and in the case of a toy these would be retailing and manufacturing nes).

Creative industries are not easily defined within the classifications used for economic analysis. However, despite these limitations the economic classifications provide a useful framework for consistent economic analysis and so many studies use statistical data grouped according to the Standard Industrial Classification (SIC) and Standard Occupational Classification (SOC). These classifications do not map directly to creative and screen industries and this should be noted when interpreting any statistical analysis that employs them.

Multiplier analysis

Many of the studies reviewed, both national and regional, only employ evaluation methods using basic descriptive statistical techniques. That is to say, they simply take data from national surveys or ones undertaken by the authors, and break the results down. As a consequence these studies only produce direct-impact evaluations of the screen industries. It is important for the purposes of our project to look at studies that go beyond basic descriptive techniques and attempt to evaluate the multiplier effects of the industry.

In addition to the contribution of the screen industries' own activities to the local economy, multiplier analysis takes account of the impact of these activities on suppliers to the screen industries, and of the incomes and expenditure of those employed by the screen industries and suppliers. There are three types of impact:

- direct impact of an increase in demand on the activities of the screen industries
- indirect impact on suppliers of goods and services to the screen industries of the increase in demand for inputs to the screen industries
- induced impact from higher employment (in the screen industries and its suppliers) which boosts household income and expenditure on goods and services

It should be remembered that estimating multiplier effects accurately can be difficult not least because account has to be taken of leakage from the sector or the geographical area.

Measuring employment

The fragmented nature of the Screen and Creative Industries makes it difficult to make accurate and robust estimates of their contribution to the local economy. Our study of the value-chain will look at many different types of activity within the industry: pre-production, production, post-production and distribution. This range and diversity of activity may present considerable challenges to the task of assessing economic impact. The difficulty of assessing the contribution of free-lancers, those in part-time, temporary or self-employment, will also present problems. Many studies convert these types of employment into full-time equivalents, but this may result in an underestimation of their true contribution. Capturing the significance of these types of employment is also hampered by the unreliability of national data sources in providing regional data for self-employment and freelance workers.

National Studies

Creative Industries Mapping Document

The rapid growth of the creative industries was reflected in the first publication of this report by the Department of Culture Media and Sport (DCMS) in 1998. The report was updated and revised in 2001. DCMS defines the creative industries as 'those activities which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and creation of intellectual property'. In order to ensure comparability over time the study classified the creative industries according to SIC codes:

- Advertising
- Architecture
- Art/Antiques Trade
- Computer Games, Software, Electronic Publishing
- Designer Fashion
- Film
- Music and the Visual & Performing Arts
- Publishing
- Radio & Television

Many national and regional studies that followed the publication of the Mapping Document adopted these definitions, as this allowed regional comparisons of the industries to be made. Of the nine classifications outlined in this report, three are relevant to our present study on the screen industries: Computer Games, Software & Electronic Publishing; Film & Video; and Radio & Television.

- Computer Games, Software, Electronic Publishing
  - the economic impact of the industry is hard to capture accurately as the software industry is involved in virtually all areas of industry and non-industrial activities. The industry's impact is also hard to capture because of the blurring of boundaries between providers and users.
  - the ONS estimates that the industry had a turnover of £36.4bn in 1999. The UK is the world's third-largest gaming market after the US and Japan.
  - in 1998 the industry exported goods and services to the value of £2.76bn. UK companies in this industry derive about one-third of their revenues from exports; and small and medium firms show the strongest export performance.
  - employment is growing rapidly in the sector and there were an estimated 555,000 employees working in the industry in 2000.
  - the services side is concentrated in areas where other high-tech industries are also concentrated, notably the south of England, the Midlands and Scotland, the software side having a specific presence in Cambridge. Areas with good access and transport links, for example along the M4 Corridor, have attracted a high degree of concentration.

- Film & Video
  - the pre-production-to-distribution chain is a complex one and many activities, both cultural and non-cultural, are centrally or strongly associated with the various stages in the chain. These activities range from writing and producing, to catering and transport, to video rental and cinema exhibition.
  - in 1998 value-added was estimated to be £1.5bn and turnover totalled £3.6bn. Although production companies account for 86% of film and video businesses, the production segment of the value chain accounts for just 27% of total value-added and 41% of turnover.
  - in 1999 the film industry generated exports totalling £653m while imports totalled £375m. In the five years to 2001 the exports of the UK's audiovisual industry rose by 80%. But there has been a decline in the number of UK films achieving wide release: distribution is dominated by US companies.
  - there has been little recent growth in the employment level of the industry. The ONS estimates that in 2000 there were 33,000 employee jobs in film and video activities, and a further 11,500 were self-employed. Employment tend to be concentrated in London (41% of workers) and the southern and eastern counties of England (10% and 9% respectively).
  - the structure of the industry is dominated by small enterprises, with 91% of firms having fewer then 10 employees.

- Radio & Television
  - official figures for radio and television turnover in 1998 were £10.591bn, increasing to £12.136bn in 1999. Advertising is the dominant source of revenue for commercial channels; even though subscription revenue has been growing at a much faster rate.
  - in the year to September 2000 advertisers invested £522m in commercial radio. Commercial radio is successful only at the local level. At the national level, the BBC still holds the lead.
  - ONS figures for international exports showed a small fall from £444m in 1998 to £440m in 1999. The largest volumes of exports of television programmes were to the rest of the EU and the US, amounting together to 64% of the television industry's exports. The EU is also the largest market for radio programmes export, £653,000 in 2000.
  - the audiovisual industry employed 116,000 workers in 2000, with freelancers accounting for 35% of the total. More than one-half of the audio-visual industry workforce is employed in London and more than one-tenth elsewhere in South East England. The remainder is distributed fairly evenly throughout the UK.

Not all employees in the creative industries are in creative occupations, since creative organisations may employ administrative, technical, managerial, etc staff not directly engaged in the creative process. Conversely, some employees in companies not classified as 'creative' may be making products or providing services for creative/cultural activities. Therefore, one approach to getting a better measure of the creative sector is to calculate not just the number of creative enterprises (as identified by their SIC codes), but also the number of people in creative occupations (as revealed by SOC codes). DCMS defined the creative industries in both sectoral (SIC) and occupational (SOC) terms. Even this approach, however, does not capture the range of

creative/cultural products or services produced by people in occupations not classified as creative (and vice versa). Moreover, the definitions of creative enterprises or occupations on which these data sources are based restrict the scope of evaluation. Furthermore, the data sources are unreliable for small sample sizes; and these are typical of the regional and sub-regional levels.

The Cultural Industries Sector: its definition and character from secondary sources on employment and trade, Britain 1984-91

This study, Pratt, A. C. (1997), undertaken before the DCMS had published the Mapping Document in 1998, aimed to develop practical definitions of the Cultural Industry, by using existing secondary data on employment and trade. The study notes that there is a logical case for attempting an analysis of output in relation to employment, but argues that the problems of disaggregating data in both activity and spatial dimensions make this difficult. Consequently Pratt relies on trade statistics for the initial estimates of the cultural industries' contributions to the economy. The trade data analysis, in its turn, was constrained by two weaknesses in the data sources (the Balance of Payments and the Census of Employment). First, it is difficult to capture accurately the considerable contribution of the Cultural Industries to the services sector. Second, much of the output of cultural industries falls under both invisible and visible earnings, and this makes it difficult to disaggregate the contribution by individual cultural industries. Despite these data difficulties the report makes the following estimates.

- In the computer games industry the invisible component of earnings (royalties) has become more significant over time.
- In 1993 net invisible earnings for film were £100m, while TV was in deficit by £115m.
- Film and TV invisible earnings amount to less than 0.1% of the sector's visible earnings.
- Employment data were more helpful in generating an account of the Cultural Industries and allowed a greater degree of disaggregation and thus a more robust assessment of the contribution of the industries. Pratt examined both the Census of Employment and the Census of Population. He argued that the Census of Population is more reliable because it is population-based and does not rely on sampling. This is a particular advantage for making estimates of the numbers of self-employed and freelance workers, who make up a large part of the cultural industry. Nevertheless, he used the Census of Employment because it is more easily available. The reminder of the study looked at employment trends in the industry, but the figures and analysis presented there have been superseded in more recent studies.

Regional Studies

London

Creativity London's Core Business

This report, GLA (2002), assessed the economic value of London's creative industries in 2002. The analysis was based on the definitions of the creative industries in the DCMS Mapping Document, and therefore it includes three industries (Computer Games, Software & Electronic Publishing; Film & Video; and Radio & Television) that are relevant to our current study (except that Photography was included in Film & Video).

The study also followed the DCMS in the data sources it used to estimate the value of the industries. Thus it used SIC definitions to gather data for jobs in companies in the creative industries and then combined these data with data gathered under SOC definitions for creative jobs in companies outside the creative industries. However, the report emphasises that all job numbers given for industries are broad-brush estimates, due to the imprecision of the SIC and SOC coding for creative industries and occupations.

The study does not contain any description or discussion of its methodology.

The report examine both the supply-side structures and spatial distribution of creative industries in London, but it focuses its attention on creative industries as a whole, more than on the individual industries. Nevertheless, it does provide some estimates relevant to the industries with which we are concerned within London.

- Between 1995 and 2000 employment in London's Film Video, & Photography industry grew by nearly 4½%, while over the same period TV & Radio employment grew by 2½%.
- TV & Radio was one of London's most productive sectors in 2000; second only to Financial services.
- London's audiovisual industries enhance the capital's global reputation.
- Their access to facilities gives London's audiovisual industries supply-side advantages over the rest of the UK.
- Creative industries in London are strongly clustered; Hammersmith and Fulham are dominated by the BBC at White City, and the City is dominated by software and computer games companies. Hounslow has seen the fastest growth in the creative industries of all London boroughs, with growth of 173% between 1995-2000; largely driven by TV & Radio, and Computer Games.
- Between 1995 and 2000 total output of TV & Radio in London grew by almost 9%; Film Video, & Photography output grew by just over 21½% and Computer Games, Software & Electronic Publishing output by 20½%.
- Between 1995 and 2000 employment in TV & Radio grew by 2½% (with 35,700 employees in 2000). Employment in Film Video, & Photography grew by 4½% to 31,400, while Computer Games, Software & Electronic Publishing grew by 12½% to a total of 117,800.

Film and Broadcast Sector in London, the East and the South East of England

This study, Olsberg/SPI (2001), was commissioned by the London Development Agency to map the companies active in the film and broadcast sector across the three regions: London, the East of England and the South East, (the three regions where the vast majority of activity in this sector is conducted).

A further purpose of this study was to design a co-ordinated strategy and a set of initiatives to maintain and develop the film and broadcasting sector as a successful growth cluster across the three regions.

The study uses a combination of desk research, interviews and analysis. Combining an analysis of database and the interviews, the study maps out the value chains of both film and broadcast and draws conclusions about the profile and the make up of the sectors.

East of England

East of England Creative Industries: Advice & Analysis

This study, Pieda (2002), was commissioned to provide advice and analysis on the creative industries in the East of England. The creative industries in this study are those defined by the DCMS Mapping Document. Pieda notes that these traditional classifications are breaking down as new technologies, especially the internet, force convergence across the sub-sectors of the industry. This convergence will make accurate assessment of the industry more complicated. The study based its findings on a combination of information derived from consultations, with creative industries champions; from a telephone survey of 300; and from data provided by the ONS.

- Computer Games, Software & Electronic Publishing is the largest of the creative industries in the East of England. Many of the main software houses are based in the region and there is also a host of small and medium-sized companies. Much R&D and teaching is concentrated around Cambridge, but the large companies tend to be based in Hertfordshire on the border with Greater London.
- The region's proximity to London has its advantages and disadvantages. London can drain away production opportunities, especially for TV where employment in the East of England is below the UK average. On the other hand, the region has many strong and productive links to the Capital's thriving audiovisual industry.
- The region is a key centre of the film industry in the UK, with no fewer than six major studios based in Hertfordshire: Elstree Studios, BBC Elstree, Leavesden Studios, EON Studios, Millennium Studios and Hillside Studios. These six, together with the temporary studio facilities at Hatfield and Frogmore amount to nearly 50% of the UK's commercial studio facilities. The East of England has the highest growth rate of any region for the number of film establishments and film is the region's fastest-growing creative industry.
- Norwich, the region's centre for television production, has both Anglia Television and BBC TV and Radio. Norwich is also a major centre for animation as it is host to the FAN animation Festival.
- In total some 74,000 people (8% of the UK total) are employed in creative industries in the East of England; which represents a growth of 64% since 1991. There are 17,821 creative enterprises, which generate exports of £95m. Taking into account the multiplier effect, the industry is directly and indirectly responsible for some 145,000 jobs, or 5.3% of the region's workforce.

The Regional Impact of Anglia Television

This report, Cambridge Econometrics (2002), was prepared for Anglia Television in 2002 by Cambridge Econometrics (CE). CE used its Local Economy Forecasting Model to produce a detailed study of the direct and indirect economic and commercial impact of Anglia Television on its region.

- Anglia Television directly contributes about £26m to the economy of the East of England, and nearly £17m to household disposable income. Its total (direct and indirect) contribution to the region's economy is around £50m.
- Since around 80% of Anglia's employees live within 15 miles of Norwich, Anglia Television is estimated to boost household spending in the region by around £16m.
- In a region of small companies, Anglia Television is one of the largest employers, with more than 400 employees (fewer than ½% of firms in the region employ more than 300 people).
- The regional employment multiplier of Anglia Television is estimated at 3; and the regional output multiplier at 1.9.
- Norwich is in the top five UK areas for UK-oriented television production, outstripped only by London, Manchester and Glasgow, and coming equal with Leeds.
- Anglia Television is the hub of an expanding media cluster in and around Norwich, and accounts for about 20% of employment in the radio & television industry in the East of England.
- Anglia Television is a strong programme-making centre.
- Anglia Television provides a design and production service to local companies wishing to advertise on the airwaves, and offers the option of sub-regional coverage for advertising.

South West

The Impact of Broadcast and Film Media on the Economy of the South West

In this study, University of Plymouth (1999), the impact of broadcast and film media on the South West was estimated by means of an input-output model of the economy of the region. This method allows analysis of the interaction of this particular industry with the rest of the economy, and permits the measurement of both direct and indirect contributions. The economic impact was measured in terms of output, income, and employment.

The study notes that estimating direct impacts is relatively straightforward, provided that precise definitions of the industry correspond to official statistics. However, this match is not easy to achieve in the case of the screen industries. The existing IO (input/output) model had to be amended to explicitly identify broadcast and film media organisations. This was done by using official employment data on the sector (from NOMIS), and information gathered by a survey undertaken by the authors. This report uses the definitions based on SIC 1992 which results in the exclusion of some activities that might be regarded as part of the broadcast and film media sector. However, using SIC 1992 definitions does have the benefits of rigour and consistency with other published data.

The response rate for the survey was 14½% and although this seems very low, the study stated that this was in line with expectations. As discussed above (Introduction to Section 2.2), the structure of employment in the sector presented problems for the evaluators. Jobs in part-time and temporary positions are weighted to give a

full-time-equivalent measure. The report concluded that figures for self-employment provided by the LFS were too unreliable for the regional level; so an estimate of these employment levels was made using the result of the survey. However, the estimates for self-employment in the sector should not be seen as robust, in view of the low response rate.

The study discussed a number of well-documented limitations to the IO approach. First, specific industries are assumed to use inputs in fixed proportions to outputs, so that if a particular sector increases its output the IO approach assigns extra inputs in the same proportion as for current production. The approach, therefore, ignores the effects of scale economies and technological progress. Second, the analysis is static and so only provides a description of the economy at one point in time. However, the report argues that the method is the most comprehensive and commonly used method for these types of impact studies. It criticises previous studies for inadequate sector definitions, inappropriate sample selection, and lack of attention to economic leakages and displacement.

The study calculates multipliers for broadcast and film media. These multipliers are high when compared to average multiplier effects in the region. Multipliers for broadcast media are substantially higher than for those of film. This reflects the high proportion of total purchases made within the region by broadcast media compared to film media. The high employment multiplier for broadcast media is also a consequence of the very high output per employee, which in turn reflects high capital intensity of the sector. The study notes that the extent of an industry's contribution to its local economy depends upon the level and nature of its own activities and on the strength of its links with other parts of the local economy.

The region hosts two national broadcasting units of the BBC: natural history, and features.

There is a major film studio in the region, at Cheltenham.

Plymouth houses the TSW film archives.

- There were more than 600 broadcast and film media businesses operating in the region in 1998/99.
- In 1997 the industry employed 2,484 workers.

Resourcing Culture in the South West

This study, undertaken by Culture South West and Kingshurst Consulting Group (2004), sought to evaluate the extent of investment in the region's cultural sector by Central Government and the Lottery. The study covered the period 2001 to 2004 and so it only provides a snapshot of cultural investment expenditure not a description of the longer-term trends.

Analysis in the report consisted of an audit of the national sources that provide funding to cultural activities in the South West. The methodology employed was a process of information gathering about the one variable, investment, and is therefore too simplistic to aid the development of our proposed methodology. Although the study covered the broad cultural industry, it did have one finding specific to the screen industries. The study found that the film and moving image sector in the South West received £1.3m in funding over the period 2001-2004, and this was in line with the UK regional average. A

wider conclusion of the report was that the use of the Government's Index of Multiple Deprivation (IMD), which uses variables such as income and employment levels to measures the extent of deprivation in ward areas across the country, may be unfair in certain areas, including rural parts of the South West. As this index is used by some funding sources, the study proposed alternative measurements which it considered to be fairer.

Creative Industries Mapping and Economic Impact Study: Stage One Data & Technical Report

This study was carried out in 2004 by Burns Owens Partnership and the School of Performance and Cultural Industries, University of Leeds, for Culture South West and the South West Regional Development Agency. The study explored the impact of the broad creative industry (defined as Audio-visual, Books and Press, Performance, Visual Arts, Heritage, Sport and Tourism) in the South West by analysing labour market data and economic performance indicators from national data sources, such as the ABI. As well as examining the industry as a whole the study also looked at four more detailed sub-sectors in the region: Visual Arts; Design; Performing Arts and Music.

The study was guided by the Regional Cultural Data Framework (RCDF), developed by the Department of Culture, Media and Sport in partnership with the Regional Cultural Consortia and other regional cultural agencies. The definition of what is included in the creative industry was drawn from the RDCF, which also provides the relevant industry (SIC) and occupation (SOC) codes for the sub-sectors. The study uses the principle of production supply chains (as recommended by the RDCF) to capture the fullness of cultural activities; not just the end product but employment and value added generated at all stages, from concept, to production, to presentation, and finally consumption. Six separate linkages have been established to capture the typical activities undertaken within any given sub-sector. These six functions are Creation, Making, Dissemination, Exhibition/Reception, Archiving/Preserving and Education/Understanding. However, analysis of all six stages was restricted by the limitations of industry and occupation classifications in capturing all linkages robustly. Therefore only the first four linkages were evaluated by the study.

The study comments on the statistical weaknesses that should be remembered when interpreting data. The most important is that the more detailed the level of classification, either sectoral or geographical, the less reliable the data are, because the sample size used as the basis for estimation gets smaller. The study also points out that important parts of the creative industry fall beneath the financial and/or employment thresholds for inclusion within the samples used for national datasets, possibly resulting in under-estimation. First, the SME sector may be under represented in national datasets as it is represented by a comparatively small sample possibly not large enough to capture the breadth of SME-based creative activities. Second, self-employment data are based on a very small sample of households that may not be sufficient to capture the required activities at the necessary level of occupational and geographical definition.

The study uses national datasets, including the Annual Business Inquiry (ABI), the Labour Force Survey (LFS), and the New Earnings Survey (NES); but only to a limited extent, as data are not published at the four-digit level for industries and occupations and the sample size at the regional level is too small to be considered reliable. The final national data source is the VAT Registration and De-registration Data (VAT RD) which covers business start-ups and closure, though, like the NES, the VAT RD only publishes

data at the three-digit SIC level and the regional data are not available for specific industries. Using these sources the main findings of the study are:

- In 2002 , the creative industries provided direct employment for nearly 89,000 people representing 3.6% of the total South West workforce and 8.8% of the creative workforce in England.
- Of the 89,000 people employed in the creative industries, just under 30,000 were self-employed.
- Of the 89,000 working in the creative industries, 32% worked in the Audio-visual sector, 34% in Books and Press, 7% in Performance and 26% in the Visual Arts sector.
- Freelance work was most prevalent in the Visual Arts sector, with almost three-quarters of employees freelancers compared to 20% in Book and Press.
- The largest concentration of creative industry jobs in the South West is centred on the City of Bristol.
- In 2002, over a third (36%) of jobs undertaken in the creative industries were classed as associate professional and technical occupations, with managers and senior officials accounting for 16% and sales occupations accounting for 12%.
- In 2001, 55% of creative industries jobs in the South West were occupied by men. However, in the sub-sector of Performance 54% of jobs were held by women.
- In 2001, the total number of businesses with employees in creative industries was 9,355, of which 90% were micro-enterprises employing less than ten people.
- The South West creative industries generated revenues of £5.54bn and GVA of £1.63bn in 2001. This represented 4.3% and 3.6% of regional business revenues and GVA.
- The Audio-visual sector accounts for two-thirds of all business revenues and nearly a half of the GVA generated by the creative industries in the South West.
- Investment in capital equipment made by the creative industries sector in 2001 amounted to £173m (56% of this was in the Audio-visual sector), representing an average investment per business and per employee of nearly £19k and £2.7k respectively.

Exploratory Statistical Study of the Digital Media Sector in the South West

This Study, undertaken by Burns Owens Partnership, the School of Performance and Cultural Industries, and University of Leeds for South West Screen (2004), built on the methodology and findings of the Creative Industries Mapping and Economic Impact Study (see above). The aim of the study was to fully capture the scope of the Audio-visual sector in the South West.

There are difficulties in evaluating this sector as it is not clearly visible within SIC definitions. The method used by the study established an approximate identification of digital media activity within the SIC, by weighting results from the ABI with more detailed data from the Yell database. Yell contains 4.2m records on businesses, classified by 4-digit SIC codes and a more detailed classification below the 4-digit SIC level. This, importantly, allows for identification of digital media activities.

The study covered a two-year period, starting in 2001 for the GVA data and starting in 2002 for employment data. This short time period was due to two factors: the changing definitions in SIC of digital media, and the effects of the rapid growth in the digital media sector between 1995 and 1999 followed by the dotcom crash in 2000. Some of the report's key findings are:

- In 2002, there were an estimated 3,236 paid employees (excluding self-employment) working in digital media in the South West, across 1,825 business units, amounting to 6.7% of those employed in digital media in the UK.
- The number of employees in the South West's digital media sector fell by 5.4% between 2000 and 2002.
- Businesses within the digital media sector in the South West are very small, 93% employ between 1-4 people and 96% are micro businesses (1-10 employees).
- During 2001-02 full-time employment accounted for 80% of employees in the digital media sector.
- The digital media sector in the South West generated revenues of £283m and Gross Value Added (GVA) of £151m in 2001.
  - the region's digital media sector also invested £7.6m in capital equipment in the same year, representing an average level of net capital investment per business and per employee of £4.2K and £2.1K respectively.

West and East Midlands

The Socio-economic Impacts of Carlton in the English Midlands Region

This report, Aston Business School (2002), designed to assess the social and economic contributions made in the English midlands by Carlton Broadcasting (central region). The report does not include an account of the methodology undertaken, but some of its main findings are:

- Carlton Central employs 712 full-time-equivalent persons, and 91% of the workforce is resident in the local area.
- The company's total expenditure (2001/2002) was £273.2m, including about £64.3m paid to local suppliers.

The report calculated the indirect contributions of Carlton using multipliers. The estimation of the multipliers was complicated, especially as input-output tables were not available for the Midlands area. So, the report calculated multipliers by using existing sector-specific estimates for income and employment multipliers. The multiplier for income was applied to the total value of local payments made, while the employment multiplier was applied to total regional employment. Estimates were made with upper and lower levels for multipliers. For income the lower level was 1.55 and the upper was 2.42 and this yielded estimates for Carlton's direct and indirect contribution to GDP of between £106.7m and £166.6m. The lower level of the multiplier for employment was 2.49 and the upper was 3.00, which yielded contributions to regional employment of between 1,614 and 1,944.

- The East Midlands region has 42 film-related firms, employing 2,032 people. The region has twelve television and radio companies, collectively employing 544 people and 69 television broadcast-related firms.
- Birmingham is the centre of BBC East Midlands regional production and the city also has many independent producers.

The Creative Industries in the East Midlands

This recent, Comedia (2003), study for the East Midlands Development Agency assessed the value of creative industries at both the sub-regional and sub-sectoral level. The definition of creative industries was taken from the 2001 version of the DCMS's Creative Mapping Document. Though the study's segmentation of the Creative Industries does not correspond precisely to those in our study, it does include assessments of the industries that overlap those be covered in our study: Film, Video & Photography; Television & Radio; and Interactive leisure software.

Data for the analysis were gathered by a survey undertaken by the authors. The survey had 4,985 respondents. Though this methodology does not adopt the types of comprehensive methods that our study will use, it still provides commentary on some issues which need to be considered. The study used industry clusters to provide estimates of the value of the each industry. Clusters have become a widely-adopted concept to understand, manage and enhance the dynamics of business activity. The study highlights the debate over which types of cluster models are most suitable for the creative industries. The Porter model is based on the concepts of interaction of identifiable firms within a spatially defined area (which, according to Porter, can be of almost any size). However, the model of firms interacting within an area may be inappropriate for the creative industries as interactions of individuals are at least equally important, and these interactions may be short-lived and subject to reconfiguration in different combinations. Such a cluster of individual talent is termed a knowledge community. The use of firm-based cluster analysis is subject to the further criticism (made by Professor Ron Martin) that it is very difficult to identify which firms actually operate within a cluster. Firms of many different kinds and geographical locations could establish some horizontal or vertical links of use to an industry. Too loose an application of cluster terminology will only serve to devalue its meaning and usefulness. The study also notes the important distinction between a sector and a cluster. A cluster is defined by interaction, while a sector is defined by similarity. The rest of the methodology and commentary is not relevant to the present study.

- The survey of the Film, Video & Photography Industry was a comprehensive questionnaire covering 181 firms in the region.
- The Film, Video & Photography Industry is made up almost exclusively (95%) of small businesses, employing fewer than ten people; only 9% of the companies have turnover of more than £500,000.
- Most of the film production companies are concentrated around Nottingham.
- The Film, Video & Photography Industry has a distinctive trade pattern, with consumers based locally, but suppliers from outside the region.

- Intermedia, based in Nottingham, supports the Bang!, a short film festival, and the Vital film festival, which provides the opportunity for disabled workers in the screen industries.
- The Television & Radio Industry is concentrated mainly in Nottinghamshire.
- The Television & Radio Industry draws employment largely from outside the region due to the highly specialised nature of its activities.

Yorkshire & the Humber

The Regional Impact of Yorkshire Television

This report, University of Leeds (2002), was submitted to Yorkshire Television in 2002 by the University of Leeds. The report used in-house data submitted by YTV, secondary data from UK national data sets and primary data gathered from television interviews. It also used an econometric model developed by Yorkshire Forward (the Regional Development Agency) to evaluate the monetary value of YTV's economic contribution to the region.

- YTV directly contributes around £55m to the economy of Yorkshire & the Humber, and its total (direct and indirect) contributions is around £88m.
- YTV is one of only 100 companies in Yorkshire & the Humber employing more than 1,000 people (1,112 in 2001).
- Contracts from YTV (25% of non-news programming is contracted out) sustain many small and medium-sized production companies in the region.
- Some 85% of YTV's staff live within the region, the vast majority in and around Leeds.
- YTV is the hub of an expanding media cluster in and around Leeds.
- The popularity of some YTV series serves also to promote the attractions of Yorkshire & the Humber as a tourist destination.
- YTV provides an important design and production service to local companies wishing to advertise on the airwaves in the region (the value of regional TV advertising rose by 5½% in 2001 and of sub-regional TV advertising by 23%).

North West

Cheshire Creative Industries Mapping Study

Like other regional studies of the creative industries, the present study, Boon, P. and G. White (2000), uses the definitions in the DCMS Mapping Document (but the 1998 version, not the 2001 update). The study contains an analysis of previous studies and uses the results of a survey undertaken by its authors. Their survey received a total of 162 responses from businesses and 111 from individuals (sole traders). However, only 14 of these responses were from businesses and 30 from individuals operating in the Film, Digital and Broadcast Media Industries. It is interesting to note that there was a higher response from individuals, because freelancers are not included in the DCMS Mapping Document. In analysing the responses to the questionnaires the returns were

treated as a sample, and a multiplier used to round up the data for the whole county. The multiplier was based on the ratio of the number of questionnaires returned to the number circulated. Film, Digital and Broadcast Media represents a small proportion (between 10-15%) of creative businesses across all sub-regions of the county.

Because of the small number of responses related to screen industries, the results of this report are not very useful for our present study.

The Regional Impact of Granada Television

This report, Manchester Business School (2000), was submitted to Granada Television in 2000 by Manchester Business School. Given the short duration of the project (five weeks) the authors concentrated on certain features of the economic effects of Granada: employment and Granada's practices as an employer, the purchase of resources, the cluster of media companies in the region and Granada's role in attracting tourist visits to the North West.

In calculating the economic effects of Granada's spending (mainly on salaries and the purchase of supplies) the report used the regional multipliers for the South West calculated by the South West Economy Centre of the University of Plymouth in its 1999 report on the impact of broadcast and film media on the economy of the South West (University of Plymouth (1999)). The reason for doing this was that it would have been too time-consuming and costly to calculate regional multipliers for the North West. The justification was that conditions in the media industries of the two regions were similar enough. An assumption explicitly made was that it was valid to adopt as a multiplier for employees' expenditure a measure derived from data on suppliers' expenditure. The resultant multipliers were 2.42 for income and 3.59 for employment.

The report then became the template and model for the scope and coverage of other reports on the regional impact of local television companies (including Yorkshire Television and Anglia Television, both of which are owned by Granada Media).

- The activities of Granada (including the spending of visitors to Granada Studios) directly and indirectly add almost £188m to the income of the North West. Of this total some £93m is due to Granada's expenditure on salaries and £69m to expenditure on supplies (account being taken of the multipliers and of the proportion of Granada's employees [25%] living outside the region).
- Granada employs around 1,500 people.
- Granada accounts for about 13% of employment in motion picture, TV, radio and video industries in the North West; but its share is particularly high (33%) of actors, stage managers etc.
- Granada purchases in small quantities from a high number of small suppliers; consequently its contracts are not crucial to the survival of the majority of its suppliers.
- Granada is a principal cause of the growth of employment in the media cluster in the North West (a cluster ranked second in the UK, in terms of employment growth, by an earlier study).

The Cultural Production Sector in Manchester

This study, O'Connor (1999), used a production chain model to describe the process of developing creative products. It focuses on different stages, examining dynamics, interdependencies and linkages within and between sub-sectors. The limitation of the method is that it is essentially of a descriptive nature and it gives an impression of cultural production as a sequential process.

O'Connor undertook an audit of the sector, building a database from all sources of information available (mainly the Labour Force Survey, the Census of Employment and the Census of Population). At the end of the study this database held details on 3,734 enterprises working in the cultural industries in the Manchester area. This search was then supplemented by a series of postal contacts and telephone and face-to-face interviews. Where employment levels were not known, estimates were made by using weights, constructed by multiplying the database figures by the percentage differentials given in figures from the TEC. This procedure depends on the assumption that the ratio in the Census of Population between cultural industries employment and non-cultural industries-based cultural occupations is uniform across the UK. The employment estimates do not distinguish between part-time and full-time jobs, and this weakens the robustness of the estimates because employment status in the cultural industries is extremely mixed. The study does not disaggregate results into the different cultural industries, but it does provide some results that apply to the Screen Industries in our study.

- Liverpool is the centre of independent TV production in the North West.
- Manchester hosts several film festivals and events.
- Employment in TV & Radio in 1995 was 1,797 in Manchester and 2,416 for the whole of the North West.

North East

Culture Cluster Mapping And Analysis

This report, CURDS (2003), by the Centre for Urban and Regional Development Studies at Newcastle University consists of a description of the creative industries in the North East, with particular reference to the extent to which they have already grouped into clusters and the types of policy that would promote the growth of these clusters and the development of others. It divides the creative industries into eight segments, two of which are directly relevant to our study of the economic impact of screen industries: (1) Computer and Video Games, and (2) Film, Television and Video.

The core of the CURDS Report concentrates on the economic effects of that part of the value chain of the creative industries that is concerned with the origination of content (corresponding roughly to pre-production and production in the value chain used in our study). The report also focuses on three other important types of consequence of the presence of creative industries in the region: support to tourism; support to the infrastructure of skills and knowledge; raising the profile of a region.

The CURDS Report is based largely on structured interviews with individuals active in the creative industries in the North East and on two strategy workshops. It also embodies reviews of the application of the cluster concept to creative industries and a comparative review of development strategies for creative industries and clusters. The only statistical analysis focuses on the employment statistics for creative industries.

The CURDS Report sets out clearly the problems (mentioned also in other studies) about the difficulties of getting reliable data about creative industries. First, the SIC classification groups activities on the basis of similarity without reference to the sectors they might specifically serve. Second, there can often be hidden 'cultural' employment in non-cultural firms and cultural uses of non-cultural occupations (eg, solicitors providing services to script-writers). These problems bedevil attempts to gather employment statistics for clusters, where what matters is the complementarity between different firms and individuals in a cluster. The problems are particularly serious for studying clusters of creative industries, where the key element of a cluster can be the pool of knowledge and talent in a locality rather than the officially classified type of employment of the talented individuals or the official activity of the enterprise.

Subject to these caveats, the CURDS Report calculates that the share of creative industries (understood as pre-production and production) in total employment in the North East is around 0.75%. The DCMS Creative Industries Mapping Document, taking a wider range of activities throughout the value chain, had calculated a proportion of 3.25%.

Computer & Video Games is a substantial and growing market in the UK and the rest of Europe, and worldwide.

- The UK market for computer games in 2000 was worth more than the UK cinema box office (by £300m) and was almost double the value of home video rentals.
- In the North East computer & video games is composed mainly of development companies, with several leading studios.
- The publishing side of computer & video games is seriously under-represented in the North East.
- The higher-education sector in the North East (particularly Teesside University) is active in producing adequate numbers of programmers and graphic artists.

Film, Television and Video in the North East is a small industry, but of high critical acclaim (especially for its short films).

- There are two main employers in the North East: BBC, and Tyne Tees Television (and both of these have only a small presence in the region). There are also more than 50 independent production companies, most of them very small.
- Outside the BBC (around 170 employees in the North East) and Tyne Tees Television (around 250 employees), most employment in this sub-sector is free-lance or part-time, varying much in number according to production schedules.
- There are many linkages between the film cluster in the North East and other cultural activities, especially with writing, publishing, theatre, performance and music.
- The Northern Screen Commission has strong links with tourism and is active in promoting the region.
- Most production companies in the North East are very small and financially precarious.

- There are very few people with skills in new media in the region.

The Moving Image Sector in the North East of England

This report, Pembridge Partnership (2004) uses three main methods: mapping, benchmarking and economic-impact assessment. However, the report does not employ any complex statistical methods in its assessment, nor does it calculate any multiplier effects. It focuses on the direct effects of the industry.

Each stage of the study uses the results from a questionnaire survey conducted by the authors. This survey included more than fifty in-depth telephone interviews and thirty face-to-face interviews. As the report was focused on the Creative Success Policy (a development programme for the moving image sector in the North East) the survey excluded large organisations and cinema chains on the grounds that they are not eligible for Phases 2 and 3 of the development programme. The study notes that the selection of survey respondents was non-random and that as a result the conclusions may be biased.

Firms operating in the sector were classified into categories by their status, ie emerging, developing, experienced and established. A supply-chain consisting of TV, games and feature films, was also established. These classification methods allowed the report to assess the strengths of the different sectors of the industry within the region.

The first stage of the report, mapping, establishes the links between firms operating within the sector and those operating outside it. In the mapping process data collected through the survey were analysed using a spreadsheet program; and the result was a snapshot of the industry. The second stage, benchmarking, provided a baseline against which growth of the industry's value-added can be measured. Benchmarking also generated measures of performance, based on both financial and productivity benchmarks. The financial benchmarks were hard data, such as gross profits and profit growth. However, some financial benchmarks could not be calculated due to incomplete/inconsistent data. In the case of capital-intensive firms, for example, additional data recording the return on capital are needed to provide a full picture, but such data were not available. Productivity benchmarks included skills, investment, innovation, enterprise, and competition. This benchmarking methodology allows objective comparisons. A matrix was used to score responses between one and ten for each firm and sector. The questions asked about these productivity benchmarks normally required a 'yes/no' response; but this approach only allows the extreme values to be represented.

The third and final stage in the analysis was economic-impact assessment. In this stage data gathered from earlier stages were combined with data from other sources. The calculations took the mean figure for each sub-sector and multiplied it by the estimated number of business operating for that sub-sector in the region. This method does not provide accurate estimates of the sector's contribution to the region. The study states that this method aims to be repeatable for year-on-year analysis, rather than provide a comprehensive or exact evaluation. The study states that some figures calculated include some double counting and uncertainty is inherent in the figures estimated. However, its methodology contains no mechanism for dealing with these problems.

Wales

The Economic Impact of the Arts and Cultural Industries in Wales

This report, Welsh Economy Research Unit (1998), sets out the findings of a nine-month research project aimed at measuring and analysing the economic impact of the arts and cultural industries in Wales. The study was conducted by the Welsh Economy Research Unit and DCA (Cardiff), with the assistance of a number of other organisations. The report was commissioned jointly by the Arts Council of Wales, the Welsh Development Agency, the former Development Board for Rural Wales and S4C. The arts and cultural industries were conservatively defined as including the Performing Arts, Visual Arts, Crafts and Design, Media, Literature and Publishing, Libraries, Museums and Heritage, and General Cultural. The research was based on questionnaires and interviews with nearly 200 individuals and organisations in arts and cultural industries in Wales. These, combined with the use of the Input-Output Tables for Wales (developed for the South Wales Economic Research Forum), enabled new measures of impact to be produced. This report estimates the multiplier effects of changes in arts and cultural industry activity. Across the arts and cultural industries as a whole, an increase in output or turnover of £1m would typically result in a total increase in output in Wales of £1.68m. An extra 100 jobs in the industry would typically generate a total of 174 jobs throughout the Welsh economy once consequent indirect effects are taken into account. The overall conclusion of this report is that arts and cultural industries already have a significant impact on the economy of Wales. The enhancement of these impacts by judicious policy shifts could increase not only the prosperity of the sector, but also the contribution of arts and culture to economic development in Wales.

Scotland

Scottish Screen: A review by the Scottish Executive

This review of Scottish Screen (2002) took place between October 2001 and March 2002. The report looks at the framework within which Screen Scotland operates and evaluates the current state of the industries in Scotland. The evaluation was based on two specific studies; an update of the 1996 report 'Scotland on Screen', produced in partnership with Scottish Screen and PACT, and 'The Aims and Objectives of Scottish Screen and Impact in Achieving Them' April 2002, by Stewart Black and Kathleen Benham. Other information was gathered through 39 extensive interviews and discussions with relevant organisations and individuals working within the Industries.

The report noted that due to the diverse and small-scale nature of the activities many are difficult to evaluate robustly. Evaluation is also hampered by the lack of specific objectives or evaluation measures. The Scottish Enterprise strategy, under which the Creative Industries are evaluated in Scotland, uses the concept of clusters and is strongly focused on digital developments. The focus on digital development undervalues the quality of film production, as the normal linkage between production quality and commercial success does not in the same way in Screen Industries as in the business sector.

The conclusions drawn from this report, relevant to our current study, are below:

- Scotland is estimated to have 165 businesses operating in the film industry, of which businesses 96 operate in the independent production sector. Many of the businesses that operate in Scotland are small in terms of employment (typically one- or

two-person) and turnover (less than £100,000). The report concludes that this does not constitute an industry, but a film-making community.

- Businesses in the film industry directly employ 3,500 people in Scotland, of whom 500 are freelancers.
- Short film production in Scotland is strong, while feature film production has continued to rise over the last ten years. However, films, though attracting critical success, have not achieve mass box office success.
- In 2002 Scottish films represented 22% of all UK films. Location spending in Scotland in the same year was a record £20m.
- The Creative Industries as a whole in Scotland support over 70,000 highly-qualified, full-time jobs and contribute £5bn to GDP. The Screen Industries occupy the most important position within Scottish Creative Industries.
- The country's largest local film commission is located in Glasgow, reflecting the domination of that city in the industry. Glasgow accounts for 4% of the UK's regional television drama, documentary and comedy.
- Recent research placed the Edinburgh International Film Festival in the top ten of international film festivals.

The Audit of the Scottish Screen Industries

This report, undertaken in 2003 for Scottish Screen and the Scottish Enterprise, is one of the few that focus solely on the screen industries, rather than the broader definition of cultural activities: it covers television, film, radio, commercials production, video production and screen-related internet activities. The report overcame the difficulty of matching national data sources to the specific screen industry definitions by undertaking its own survey. This was used in combination with several case studies and other sources of data to provide a comprehensive audit of Scottish Screen Industries in 2001. The report calculated a value chain for each industry as well as key economic indicators, such as output and employment; some of those relevant to our study are highlighted below:

- In 2001 the total spent on television network programming in Scotland was £66m, with non-network spending a total of £75m and multi-channel a further £8m.
- Scotland contributed £523m to UK television revenue in 2001, of this only £200m went directly to Scottish companies:- this pattern was further highlighted by the fact that for £1m of Scottish GDP only £723 was spent on network programming, compared to £2,859 for the UK as a whole.
- There were 24 production companies in Scotland in 2001, with the two largest television employers in Scotland, BBC Scotland and SMG, employing an estimated 1,076 people.
- In 2001 video production in Scotland had a turnover of £17.6m, and employed 211 people working in 46 video production companies; which, unlike other screen industries in Scotland, were typically located outside the main urban areas.
- Its estimated that in 2001 local advertising in Scotland amounted to around £53m of revenue, however, even local advertising agencies commission most of their

production from outside Scotland as the country suffers from a lack of local facilities.

- Scotland participates at about 14% of total UK film production and 6% of the total UK budget, with the budgets for films produced by Scottish companies amounting to £4.4m in 2001.
- In 2001 there were 36 film production companies operating in Scotland, employing a total of 55 people on a full-time basis: an average of just 1.5 full-time employees per company demonstrating the tendency of the sector to employ freelance staff.
- In 2001 the Scottish animation industry had 13 companies which employed an estimated 104 full-time staff, and generated an estimated revenue of £3.4m: 87% of the companies were located in Glasgow reflecting the localised nature of the industry.
- In 2001 radio generated revenues of about £91m, with approximately half of this coming from licence fees and half from advertising on Scottish commercial services.

Northern Ireland

A Development Strategy for the Northern Ireland Film and Broadcast Sector

This study, Olsberg/SPI (2001), was commissioned by Northern Ireland's Local Enterprise Development Unit (LEDU) and Training and Employment Agency to review the Northern Ireland film and television sector and produce a business development strategy for the sector.

Some observations from the study include:

- Film and broadcast activity in Northern Ireland is under-developed.
- There is no indigenous feature film production; feature film production is irregular and depends on overseas producers.
- Television production is focused on the local market. There are two large broadcasters, BBC Northern Ireland and Ulster Television.

The study estimates that there are 70 companies working in television, film and video productions and around 120 new media companies. There are also about 210 freelancers. The majority of the workforce in the sector is employed by the broadcasters. Because of lack of activity there is an exit of talented individuals who seek better opportunities in Great Britain or elsewhere.

Overseas

The Economic Impact of Film Production in Ireland

This report, IBEC (2001), is based on statistics obtained from the Research and Information Services of the Irish Business and Employers Confederation. Most productions in Ireland are required to complete an Economic Database Input Form detailing funding, expenditure, and other economic data. These forms are then collected by the funding bodies involved with the financing of productions and forwarded on the basis of confidentiality to IBEC for analysis.

The report calculated tax, GNP, and employment multipliers for the industry, on the basis of work carried out by Professor Eamon Henry at ESRI, applying Input-Output analysis to a 41 NACE sector model of the Irish economy. These multipliers were then applied to the data held by IBEC. The multipliers relate specifically to the Other Market Services sector of the Irish economy in 1993. The multiplier effects are split into direct, indirect and induced effects. The report notes that expenditure, which is domestically financed, does not have an induced effect as the money has already been circulating within the economy. As a result the multiplier for foreign-funded expenditure in Ireland is greater than for domestically-funded expenditure. It is important to note that by applying the multiplier solely to expenditure on Irish goods, services and labour, the estimate of the activity generated by film production in Ireland is understated by the amount spent by overseas employees whilst in Ireland. Another source of understatement arises from the issue of the potential effect of government on the multiplier. The effect of government on the multiplier may be added if it is assumed that government responds fully to all income received, and that there is full interaction between current government outgoings and all economic activities. If this assumption is invalid and government decides its expenditure before its revenue is clearly known, the additional government effect on the multiplier becomes less certain. For this reason, the government effect on the multiplier was omitted and this may well have led to an understating of impact.

- Some 175 audiovisual productions were completed in Ireland in 2001.
- Net gains for the industry in 2001 was €22.5m.
- Benefits to the Exchequer from the industry are estimated at €46.7m in 2001.
- The number of employees working in the Film Industry in 2001 was 17,435 ; 98% of them were Irish.

Scoping the Lasting Effects of The Lord of the Rings

One question worth giving special attention to in the study of the impact of the screen industries is the extent to which blockbuster films have distinctive economic effects. Blockbuster films (in terms of box office receipts) are not always large films in terms of budget (conventionally large means $25m or more). However, the one study of the economic effects of a blockbuster film that we have seen is also of a large (indeed monster) budget film, The Lord of The Rings.

The study in question, NZIER (2002), was produced by the New Zealand Institute of Economic Research for the New Zealand Film Council. It evaluated the economic consequences of the production of the three films in the Lord of the Rings trilogy. At the time of the study The Fellowship of The Ring had been released and the other two films were in the post-production phase.

Before 1998, when production started, New Zealand had a small film industry, rather removed from the mainstream of the worldwide film industry and concerned almost exclusively with production. The Scoping Study was thus particularly concerned with the effects on the New Zealand film industry of such a large budget production. Although the context of the UK film industry is rather different from that of the New Zealand industry, there are still lessons to be learnt, particularly about the potential effects of large productions on UK regions where the screen industries are not very substantial and about the capacity of a major production to raise skills and promote

networks. The obvious comparisons would be with Brave Heart and Scotland and the effects of Harry Potter on reviving the Leavesden Studios and the contribution of film to the whole Harry Potter promotion industry.

- The effect of the injection of a massive amount of investment into the New Zealand film industry between 1998 and March 2002 ($352.7m [New Zealand dollars], or about 75% of the film's total production, post-production and labour costs) was to raise expenditure on film production in New Zealand by a factor of nearly 20 and to increase employment in the industry by 52% (full-time-equivalent).
- At peak periods, some 1,500 people per week were employed on the films (excluding day labour and extras).
- The production skill-base and capacity of the New Zealand film industry were substantially broadened and deepened.
- More generally, the managerial skills of the New Zealand film industry and the ability to handle complex problems have been enhanced.
- New networks have been established between skilled people in different aspects of film-making.
- The ambitions of local film-makers have been raised and widened in scope.
- New Zealand's profile has been raised for film-writing and all aspects of production.
- The New Zealand film industry now has increased confidence and ability to win and handle major film production contracts in the future.
- Films made in New Zealand in the future are likely to have a greater proportion of local skill and employment than they used to before 1999.
- An increase in tourist and other interest in the country can be expected.
- The films generated work and, more important, raised the skills levels of various small specialist companies, from digital imaging to stunt companies, merchandisers and producers of miniatures and film-related products (figures, toys, clothes etc).

The Migration of U.S. Film and Television Production

This report, Department of Commerce (2001), is concerned with the trend for the production of US-developed films to be carried out in other countries. Despite the limitation implied by its title the report provides one of the most comprehensive and detailed accounts of all the economic aspects of film production that we have come across in our literature survey. It is, of course, hardly surprising that the country with the longest-established and best developed film industry in the world should show the economic impacts of screen industries more clearly than any other.

The Department of Commerce undertook the study in response to a specific request from members of both Houses of Congress. The Directors Guild of America had been urging legislative action for some years to counteract what it describes as 'runaway production' and the effects of incentives given by foreign governments (mainly Canada, but also the UK, Australia and Ireland) to attract film production companies away from the US.

The report is concerned principally with the production of TV series, especially 'movies-of-the-week' and miniseries. An increasing number of these, although

developed (ie written, designed, planned etc) in the USA are now being produced in other countries The report explains that this is largely a matter of rising levels of expertise combined with lower costs, but is also a consequence of the technological revolution in film production. One consequence of digital technology and the internet is that many activities in the production chain no longer require proximity. Whereas the whole complex business of dealing with the film produced at each shot (cutting, splicing etc) used to require the physical presence of film editors and of the actors and directors so that the results could be approved or rejected at each stage, it is now normal for these activities to be carried out by digital means and for the results to be transmitted over the internet. Consequently the editors, continuity experts, directors and actors can now be anywhere in the world while the editing process is going on. Many parts of the editing process can be carried out wherever it is most convenient or most economical to do so.

This point has obvious implications for the regional impact of film production. We are not aware of coming across it in any other report we have reviewed.

On the other hand, many of the activities involved in film production have to be carried out locally. These are the 'below-the-line' activities from lighting and make-up to set construction, driving, cooking, cleaning and a myriad of others directly and indirectly related to the process of production. The direct impact of film production on the local economy is felt primarily through the vast range of jobs that production and the day-to-day running of a film studio require. Whereas actors (at any rate the leading actors), producers and directors can and do move anywhere in the world to work and many of those concerned with editing can be located anywhere in the world, the very large number of people employed below-the-line are employed locally and are in no position to move away.

Against the background summed up in the two preceding points (technological revolution and the range of local employment) the report makes the following claims of relevance to our present study.

- Although the US has had a far larger film industry for far longer than most other countries, the same problems of statistics (inadequacy of official classifications to capture the range of employment and activities involved in film production) arise there as in the UK.
- The film industry is directly responsible for at least $20bn of economic activity (and probably much more) in the US.
- The film industry accounts for at least $18bn in direct and indirect export revenues.
- More people are directly employed in film production in the US than in steel-making.
- While the economic benefits of film-making accrued almost entirely to California until the early 1970s (with New York also having an important presence in TV advertising), the film industry has spread to most other States over the last 30 years and is now of major economic importance in many States. The report quantifies the economic impact in six key States. [This has obvious implications for film-making in the UK regions.]

- Television films in particular (especially if they are long-running series) generate a considerable amount of tourism. Hundreds still visit Southfork (the setting of Dallas) for example, even though the series ended in 1991. There are many other US examples of this phenomenon, [which is replicated, on a smaller scale, by visits to the Granada Studios in Manchester.]

2.3 Evaluating the Economic Impact of Other Industries

Measuring the economic impact of sport

Studies at the national level

At the time of the original Sports Council study (Henley Centre, 1986), the study of the economic impact of sport was relatively new. There is now no shortage of studies, and the Henley study has become a standard reference in the literature. The methodological approach developed in this original study has served as the basis for a number of other studies undertaken by various researchers in the UK and Europe, such as CASSS (1995), Pieda (1991), Henley Centre (1989), (1990), (1992a), (1992b), and the Leisure Industries Research Centre model (see Leisure Industries Research Centre (2000a). All these studies have concentrated on estimating the economic impact of sport in terms of output, employment and income. The essential features of the Henley methodology, adopted in other studies, are:

- adoption of national economic accounting methods and conventions to ensure consistency of treatment and valid comparisons with other parts of the economy, and to avoid double-counting
- specification of a set of institutional sectors designed to cover the essential features of sport in the economy and its relationship with the rest of the economy
- the use of a multiplier to measure the additional impact on the economy over and above the expenditure on sports-related activity, as this spending generates income for others (either as wages, salaries or profits), some of which will be spent and in turn generate new income
- examination of investment flows over the previous four to five years, to overcome the problem of volatility in investment spending, which could be large enough to make any one year unrepresentative

The division of economic activity into institutional sectors is an important feature of the national accounts system, and the original Henley study identified seven sectors which were used in the analysis. These sectors were exhaustive (ie they covered the whole economy) and mutually exclusive (ie an economic unit could only be ascribed to one sector). The boundaries of each sector were drawn according to the types of income and expenditure flows and the nature of the issues to be examined. The sectors, and their main economic interaction with sport were:

- Consumer
  - sports-related expenditure flows from some households
  - households receive income (prize money, wages and salaries) from sport-related economic activity
- Commercial sport
  - private organisations that stage spectator events financed by admission charges (eg professional football clubs etc)
  - commercial sports clubs and centres (eg snooker clubs, private leisure centres etc)
  - sports departments of media companies (television, radio and newspapers)
  - sports goods manufacturers and retailers
- Commercial non-sport
  - all other private sector economic activity that supplies goods and services to the sport sector and provides households with goods and services that are used in connection with sports activity (eg transport, food and drink etc)
- Voluntary clubs and governing bodies
  - non-profit making organisations that are run by participants, typically on an amateur basis
- Central Government
  - spends money on sport mainly through grant aid to local authorities
  - receives income from the taxes generated by sport-related expenditure
- Local government
  - provides expenditure on sport in terms of provision of facilities
  - receives sport-related income in the form of user charges, as well as grant aid received from central government
- Overseas
  - inflows into the UK from sport-related tourism
  - outflows of expenditure include overseas sports holidays, notably skiing, and all the purchases of imported inputs
  - imports and exports of sport media coverage

In 1996 the Leisure Industries Research Centre (LIRC), a joint consultancy project between the University of Sheffield and Sheffield Hallam University, created a spreadsheet model of the UK sports sector. This has been used to reproduce the economic impact calculations undertaken by the Henley Centre (1986) and to update these to calculate the economic impact of sport in 1995 and 1998. The LIRC model has also been used to produce estimates of the economic importance of sport for England, Scotland, Wales and Northern Ireland. The model requires the input of published data for the required year, then performs all relevant calculations to derive firstly sport-related expenditure; secondly all the relevant sectoral accounts; and finally value added and employment. The LIRC model adopts the same analytical framework as that of the original Henley study, and many of the assumptions underpinning the LIRC model are taken from previous Henley studies.

A major change over the past 15 years has been the impact on sport of the development of information communication technology (ICT), particularly in TV broadcasting, and the resulting growth in spending on televised sports events and on sponsorship. Hence these aspects now require a more careful treatment than was the case in the original study. Prior to 1998, the assumption was made that household spending on subscriptions to cable and satellite sports channels, as a proportion of total spending on cable and satellite TV, was the same as the proportion of the TV licence fee spent on sport. A survey of BSkyB subscribers carried out in 1997 found that 52% said that the main reason for subscribing to BSkyB was for greater coverage of sport. Furthermore, sports accounted for 42% of BSkyB's total programming cost, and it is this figure that was used in the 1998 update.

Studies at the regional level

While there have been a number of studies looking at the economic impact of sport nationally, there have been relatively few studies looking at regional (or sub-regional) impacts. The need for such analysis has been highlighted by the shift in public policy towards a greater role for regional bodies, such as the RDAs and Regional Cultural Consortia, and Sport England's own move to develop a stronger regional structure.

The relative size of the sports-related economy is likely to vary. For example, if a region has several Premiership football teams there will be a substantial commercial sports sector. It was noted in the Henley Centre (1986) study that although national income accounting provided the framework for the analysis, the published national accounts were too general as sources of information. The data had to be sourced from elsewhere and the study essentially took the form of a detective exercise, in which a large number of potential sources of information were investigated in order to complete the framework developed on the basis of the national accounts methodology. The published information is even scarcer at the regional level. Because of the present study's focus on the English regions, the methodology adopted in studies undertaken for Scotland (1991), Wales (1995) and Northern Ireland (1992), which adopted the comprehensive framework used in the original Henley study, are of particular interest, although it should be noted that those studies had access to central government spending data for each country, routed via what was then for example the Scottish Office. In these studies, the 'overseas' sector included the rest of the UK, as well as overseas nations.

The Bracknell and Wirral study (Henley Centre, 1989), which also adopted the comprehensive framework used in the original Henley study, is a more useful reference for the kind of sources likely to be available for the English regions, as is one recent study of the East of England (Hogarth, 2001), which is less comprehensive in scope but more detailed in certain respects of data at the regional/local level (drawing for example on CIPFA Leisure and Recreation Statistics). Four types of data sources were used in the Wirral and Bracknell study:

- detailed postal questionnaire to targeted sources in areas of sport-related economic activity (including retailers, clubs and governing bodies and the commercial non-sport sector)
- interviews and correspondence with the appropriate individuals in the localities, in particular those with local government responsibilities in education and sport

- official statistics at the regional level (including the Family Expenditure Survey and National Travel Survey data)
- national level data, published in original reports, journals and official statistics

LIRC (2000) analysed the economic impact of six major sporting events (ie those that generate other economic activity in other industries such as transport, accommodation, entertainment and retailing) that were held in the UK in 1997. Two events (the Weetabix Women's British Open Golf Championship, Surrey, and the first Ashes Test match between England and Australia, Birmingham) are part of the annual cycle of sporting events in the UK. Three events were 'one-off' events that would not normally take place in the UK (the World Badminton Championships, Glasgow, the European Junior boxing Championships, Birmingham, and the European Junior Swimming Championships, Glasgow). The sixth event, the International Amateur Athletics Federation Grand Prix usually takes place in the UK, but not in Sheffield, the venue for the 1997 championship. The methodology adopted was a survey of the types of groups of people that have attended the event (ie spectators, media, etc). Because each event is different in nature, the survey questionnaire was not identical for all events. The figures were used to calculate the additional expenditure generated within a city which could directly be attributable to the event (ie spending by visitors). The figures can be used in local multiplier analysis to give estimates of local expenditure, income and employment generated by the event. However, it is not usually plausible to attribute a long-term increase in employment to the staging of a one-off event. Typically, a more reasonable conclusion to draw is that the additional spending within the local economy has helped support jobs in the hotels, catering, travel and retailing sectors of the economy. The study found that it was very difficult to accurately predict the economic impact of sporting events, given the difficulties in predicting the numbers of spectators, even at regularly occurring events.

Cambridge Econometrics (2003) provided an authoritative assessment of the economic impact sport has on the economies of the English regions. The study involved the application of a common framework to the nine English regions. The starting point for developing the framework was the existing national assessment previously carried out for Sport England by the LIRC. Evidence was also gathered from the sub-national studies that had been undertaken previously in the UK as well as overseas. The final framework estimated the economic impact of sport using the international conventions of economic accounting, so that the results were directly comparable in concept with existing regional economic data. It identified the economic impact on the region both with respect to the production of sports-related goods and services in the region and the level of sport-related spending.

Sport impact references from other countries

Some recent studies have been carried out in the US, Canada, Australia and Switzerland. Many of these studies are carried out with the aim of promoting or justifying the publicly funded support for sport in one form or another. Some are concerned with the benefit to the local economy of major sports events, such as the Olympics. Other studies, more relevant to the present study, seek to capture the contribution to the economy of all sport-related activity. Some such studies appear to be modest in scope (Department of Fish and Game, State Government of California (1996) and Phillip Gray & Associates

(2001)), while others are designed simply to establish a few statistics to provide politically-helpful headlines. Others, however, have a stronger objective basis (Sub-Committee on the Study of Sport in Canada (1998)). The countries listed all have a federal structure and so many of the studies are carried out at the state/provincial level at which funding for sport is typically provided, which is of some relevance to the present study. At the European level, Deutsche Sportochschule Koeln, Germany and Minho University, Portugal (2000), found that up until the mid-1990s there were differences in approach to measuring the economic impact of sport, but that these were determined by data availability, rather than a fundamental difference in methodology. An alternative approach to modelling the impact of sport was adopted by Meyer and Ahlert (University of Osnabrueck, 1999), who undertook a cost-benefit analysis of the potential impact of the 2006 World Cup in Germany. The authors did not have access to a model linking sport to the wider economy, but by attributing part of the value added of industries in the German input-output table, enabled the final results to be produced.

Impact studies of other cultural activities

National studies

Once again, there is no shortage of studies to examine. However, our assessment is that there is little to be gained from an extensive review of such studies since the methodology adopted does not appear to differ in any significant way from that adopted for the sports studies. As in the case of some of the recent sport impact assessments from other countries, many studies of cultural activities are carried out with the aim of promoting or justifying public subsidies.

The most recent study by the Policy Studies Institute (PSI) The UK Cultural Sector: Profile and Policy Issues (Policy Studies Institute (2001)) assessed the value of government support for the built heritage, film, libraries, literature, museums, galleries, performing arts, public broadcasting and visual arts. The report was the largest survey of the subsidised cultural sector organisations ever undertaken in the UK, and provided the first comprehensive analysis of the financial workings of the sector. The study also included a review of past studies, and the PSI concluded that these studies had failed to establish dependable data on the cultural sector, and as a result much of the information currently available is inconsistent and unreliable. The PSI found that no single agency is responsible for gathering data on the cultural sector in the UK. There are, for example, no single sources of information about local authority funding, European funding, or even Lottery funding. Official data tends to be broad brush, and is of little use in building up a picture of specific areas of cultural activity. Data held by national and regional agencies are almost always incompatible, and much of the data commissioned by publicly funded bodies are unavailable for use by outside agencies. Little information is available about how many organisations receive subsidies, how many people attend subsidised events and activities, how many people work in the subsidised cultural sector, or the level and kind of economic impact cultural subsidies are actually having. Many of these findings are relevant to the present study, as an indication of the scale of the task involved in assembling consistent data. However, with regard to methodology, the study simply tried to calculate employment, expenditure and turnover in the cultural sector,

rather than adopting the comprehensive framework used in the Henley (1986) sport study.

The economic impact of tourism; methodological issues

There have been many studies about the impact of tourism both in the UK and abroad. Theoretical literature has shown that there are two principal methods for estimating recreation and tourism-related spending and its economic impacts: satellite accounts and visitor surveys/input-output models.

Satellite accounts and visitor surveys: two different purposes

Satellite accounts are primarily used to give an overall aggregate estimate of the contribution of tourism activity to state and national economies. They extract tourism-related activity from a system of national accounts (see University of Nottingham (2001)). When spending and impact assessments are required for particular market segments or for local regions, survey approaches are generally used. Spending data are gathered from visitor surveys and applied to estimates of the volume of tourist activity in an area. Spending totals are then applied in regional economic models to estimate economic impacts on the local area. These models usually apply specific multipliers.

A satellite account re-organizes the national system of accounts to identify the contribution of tourism to a state or national economy. The advantage of the satellite accounting approach is that it uses existing economic data and embeds tourism in an accepted system of accounts. The drawback is that the information necessary to extract tourism activity from national economic accounts is often not complete or consistently gathered. Furthermore, satellite methods are much more difficult to apply below the national level or for subcategories of tourism activity. National accounts are organized around a set of industries or commodities, whereas tourism is more a type of customer than either an industry or a type of commodity. For example, restaurants serve both tourists and local residents and the system of accounts has no easy way to distinguish one from the other. The basic procedure in satellite accounting is to allocate a proportion of sales of each commodity or industry to tourism. These shares, however, can vary widely for different regions. Information to estimate them generally comes from various sources including surveys of households or tourists. Many of these surveys are not carried out on a consistent basis and are subject to a variety of sampling and measurement errors. Tourist shares also depend considerably on how tourism is defined (usually all trips of 100 miles or more or overnight).

Initial satellite efforts have focused on visitor trip spending. Some have added capital expenditures (eg hotel development) and selected durable goods purchases (RVs, boats, etc.) to the tourism account. There remain questions of how far the accounts should be extended, for example into imputed rents for seasonal homes, construction of seasonal homes, and even the manufacturing of passenger aircraft and automobiles. Satellite accounts generally are restricted to the direct effects of tourist spending, not the indirect or induced economic activity.

Visitor Surveys/Input-output models

A more common approach than satellite accounting is to directly survey tourists to estimate their spending, for example, Heart of England Tourist Board (2001), East Hertfordshire District Council (2002), IPPR (2003), Scottish Executive (2003).

Estimates of spending can be translated into the resulting jobs and income in a given area using appropriate economic ratios and multipliers. The direct survey method is more applicable to estimating impacts of particular actions on a local economy, such as the impact of a new 100 site campground or a museum that will attract 50,000 visitors to the area. These more focused impact studies frequently also include multiplier effects of tourist spending on a region, as they focus more directly on impacts using a with vs without framework to evaluate impacts of a particular action. In contrast, satellite accounts only cover direct effects and tend to demonstrate the overall 'importance' or 'significance' of tourism industries to a region rather than 'impacts'.

The economic impact may be estimated in terms of spending, sales, income, value-added, tax revenues and employment. Estimating the number of visitors requires a clear definition of what a visitor (tourist) is and what units tourism activity is measured in (eg person trips, person nights, party nights, party trips). Tourists are generally visitors from outside the region of interest. Reliable estimates of tourism activity and spending frequently require that tourists be divided into distinct segments with different spending patterns. Visitation estimates can be made from a variety of sources including surveys and various visitor counting methods. Average spending of tourists on trips can be measured in visitor spending studies, either by sampling trips at destination areas or asking about recent trips in a household survey. Multipliers (and economic ratios) can be used to convert spending to income and jobs as well as to capture secondary impacts of tourist spending. When available, visitor spending may be applied to a complete input-output model of the region's economy to estimate economic impacts on the region. There are, therefore, three key inputs to an economic impact estimate for tourism: number and types of visitors; average spending per visitor (within visitor types or segments); and multipliers for the region of interest.

The most commonly used impact measures are income or value-added. The income to the region is reflected in the wages, salaries, rents and profits generated by tourist spending. Tourist spending can yield a distorted picture of tourism's impacts, particularly when tourists are buying goods that are not made in the local area. In these cases only the retail margins on these goods show up as direct sales in the local area and contribute to regional income. The 'capture rate' estimates the portion of tourism spending that shows up as direct sales in a region's economy. Although there is great interest in tourism's employment effects, job estimates can be misleading given the large number of part time and seasonal jobs associated with tourism in many areas. This makes aggregate estimates or comparisons across regions and industries problematic.

The economic impact of higher education institutions

Since the 1980s there has been a growing interest in modelling the effects of Higher Education institutions on local economies to determine the extent of their economic contributions. There are strong grounds to believe that a university has a greater impact on the local and regional economy than other types of economic activity. Universities have a major economic impact in three main ways; through staff, students and University purchasing. The economic impacts will, however, vary according to the geographical scale of analysis used.

Paul Chatterton (University of Bristol, 1997) adapted two alternative models used in previous studies to measure the economic impact of the University of Bristol on the local and regional economy. Both models were based on forms of multiplier analysis. The

economic impact of the University is therefore considered through three categories; direct (the effect of the direct employment of staff at the University); indirect (non-salaried expenditure by the University); and induced (expenditure on goods and services in the geographical areas by recipients of both direct and indirect income). The induced effect is calculated by applying a multiplier to the initial income injection. The multiplier is calculated on the base of percentage of University purchases made within each defined area.

Chatterton used two models in his calculations of the economic impact of Bristol University. The South Bank (University) model calculates the total income impact on local business as a result of expenditure by the University, its staff and students. The Robson (Manchester University) model uses gross local output as a measure of the income impact. In both models, the initial income injection from the University is calculated by combining the direct impact and indirect impact. The induced impact represents the ripple effect of the direct and indirect expenditure until the initial income injection to be re-spent in the region becomes negligible.

The direct employment impact is simply the number of staff at the University measured in FTEs (Full-Time Equivalents). The indirect and induced employment impacts are the jobs created within the region as a result of spending by the University, its staff and students. These are calculated by profiling each round of this spending by Standard Industrial Classification (SIC) category and then dividing this total spending by average output per employee in that industrial sector. Average output is estimated using domestic price input-output tables and Census of Employment data and then updated using producer price indices from Economic Trends. The employment multiplier is, therefore, calculated through the same methodology as the income impact multipliers.

Chatterton found that the economic impact multiplier for the regional economy was slightly higher under the Robson model (1.30) than the South Bank Model (1.24). That the two models present different conclusions is not surprising as both models have different assumptions and premises. First, the South Bank Model relies heavily upon accurate data gathered from the University. In contrast to the Robson Model, however, one weakness of the South Bank model is its failure to incorporate in the calculations differences in staff salaries between residential areas and between occupational bandings. The model also excludes the impact made by part-time students and 'outsiders' in the form of visitors and conference delegates. The full impact of the university will, therefore, be under-estimated. Finally, there are estimations in the model on the number of other students whose expenditure makes a difference; and of student expenditure and propensities to consume. All these estimations should be seen as potential weaknesses in the model.

In contrast, the Robson model may over-emphasise the effects of university salaried expenditure, as the model relies more on published data and regional statistics, and assumes that regional spending by the University on salaries in a particular industrial sector reflects the region's share of overall employment in that sector. The Robson model also ignores the potential level of 'leakage' from the regional economy arising from university non-salaried expenditure; although post-code analysis of Bristol University's purchase ledger showed that 48% of spending was within the South-West, one must be aware that much of this could simply be to distributors in the region and that the money will quickly 'leak' elsewhere, even overseas. Furthermore, the discrimination

within Robson between types of students and staff is not fine enough to prevent over-generalisation about spending patterns.

2.4 Implications of the Literature Review for the Current Study

This review has demonstrated that there is a large and extensive range of previous work in the area of economic impact analysis of sectors with similar characteristics to the screen industries or requiring a similar form of analysis. These studies differ in methodology, the type of data used and in the definition of the form in which multiplier impact is measured. They also range through many different types of sectors and have different regional foci. Generally, previous studies have used calibration methods rather than survey approaches to underpin impact analysis, and where survey data is used this is often constrained to just one spatial area, and not used to articulate inter-regional feedback effects or assure consistency at national level. However, the underlying content of these studies can be used to justify the current approach that lays strong emphasis on distinguishing detailed activities, and that therefore seeks to specify a full accounting flow analysis. This will allow for the exploration of the interdependencies between consumption and production, while better dealing with overall consistency problems. All studies can therefore be marshalled to support the detailed inter-industry methodology that is used in the present study, however, there are no exact and corresponding studies that can be readily used to directly compare with those obtained in the current study.

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3 THE SURVEY RESULTS FOR FILM, TV, CORPORATE VIDEO AND COMMERCIALS

3.1 Introduction and Data Collection

This chapter provides a commentary on the final data set for the four main screen industries - film, television, corporate video and commercials (advertisements). We adopted a different methodology for our analysis of the interactive media industry, and so the findings for this industry are reported separately in Chapter 5.

In the analysis in this chapter we refer to film, TV, corporate video and commercials (advertising) as screen industries and pre-production, production, post-production and distribution/exhibition as sectors. All the data in this chapter refer to 2002.

We have used three main data sources to compile the dataset for the screen industries on which the multiplier analysis is based; the figures and tables presented in this chapter are based on estimates taken from this dataset.

The three data sources used to compile the dataset were:

Annual Business Inquiry (ABI)

The ABI is conducted by the Office for National Statistics and provides very detailed data on economic activity and employment based on survey returns which are presented by region and by industry using standard industrial classification (SIC) codes. The data used in our estimates are ABI regional data which we have disaggregated to the 4 or 5 digit level using the corresponding national proportions - for example, the ratio of SIC 92.20/2 to 92.20 at national level has been used to disaggregate 'Television' (92.20/2) from 'Television and Radio' (92.20) activities at regional level. We have also reconciled the data to make the regional ABI figures sum to the national aggregates.

Optima population database

The database contains over 9,000 firms in the screen industries and was complied by Optima using data purchased from Experian, information and lists supplied by regional screen agencies, and data from other miscellaneous sources. We obtained basic turnover and employment information for a significant proportion of the firms in the population database which enabled us to locate almost 70% of these firms by industry and sector. The population database was then used to provide estimates of the discrete population proportions which were needed to further disaggregate the regional ABI data into the 16 different industry-sector combinations required by the multiplier model data template. As over half of the firms were active in more than one Industry-Sector combination, Optima developed a disaggregation algorithm to estimate the discrete industry sector population proportions required for the multiplier model data template. The database also provided the basis for drawing optimal stratified samples for the screen industry survey as described in Appendix B.

Optima survey data

Data was obtained from a screen industry survey conducted using an optimally stratified sample, which was drawn from the Optima population database. In the course of the study we conducted three rounds of surveying, distributed about 2,500 questionnaires

and received back about 400 completed questionnaires (a 16.5 per cent response rate). The survey process is described in Appendix C. The questionnaires provided information about the location of customers and suppliers, and enabled us to estimate patterns of inter-regional trade which are necessary for the multiplier analysis.

In this chapter we present an analysis of sales by the screen industries. Sales are calculated as the sum of all transactions along the value chain. There is, therefore, double-counting where a company sells pre-production services to a production company which produces a film that is distributed by a specialised distribution company. This methodology inevitably produces a larger figure than that given by the final output of a value chain ("Gross Value Added", or GVA). For example, total sales by the UK screen industries were £19.7bn in 2002, while the ABI estimate of GVA from these transactions was only £8.1bn.

Our methodology generates data that are consistent with ABI estimates at all levels at which ABI data are available. This is an important factor for the degree of accuracy of the data because the ABI survey has a higher response rate and therefore generates more robust data

In order to disaggregate ABI estimates to the more detailed statistics required by the multiplier analysis we used information from sample surveys. However, surveys can produce unreliable results, particularly where the market is a small one, where there is a high degree of variance between firms in that market, or where there is a low response rate to the survey.

In the rest of the chapter, we have indicated where estimates are based on a low response rate and should therefore be treated with some caution. In general, estimates by industry and sector at national level (e.g. the UK film production sector) are robust; as are regional estimates by industry or by sector (e.g. the film industry in the South East or the production sector in the South West). Estimates for London are also robust for a sector in a given industry e.g. film production in London. Results become more tentative for smaller regions especially when we divide screen activities by industry and then by sector (for example, the pre-production sector in the TV industry in the North East). Estimates of inter-regional trade are also somewhat tentative. These qualifications also apply when interpreting the multiplier analysis, which is based on these data.

The rest of the chapter concentrates on findings which we regard as robust. However, given the complexity of the factors that have influenced any result at regional level, we would strongly suggest that findings of interest or concern should be explored further using additional local surveys. Results for regions with low concentrations of screen activity should also be treated with caution.

The remainder of this chapter contains four sections:

3.2 Sales by the screen industries

3.3 Employment

3.4 Expenditure and Profitability

3.5 Location Shoots

3.2 Sales by the Screen Industries

Total sales

The combined sales, as defined above, of the four industries covered by the survey was £19.7bn in 2002. This is consistent with the following ABI four digit codes:

92.11 Motion picture and video production

92.12 Motion picture and video distribution

92.13 Motion picture projection

92.20/2 Television activities

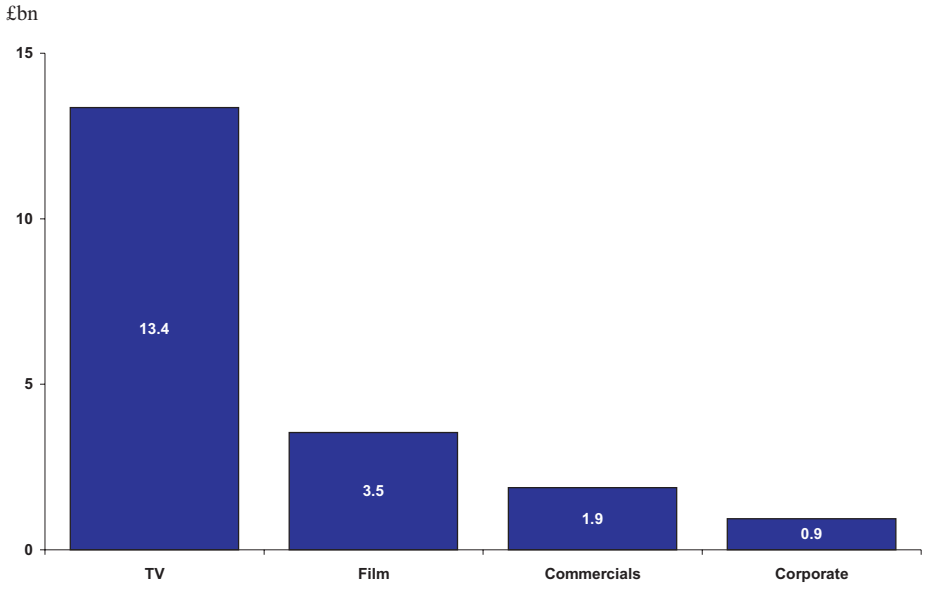
Of the £19.7bn, £13.4bn (68 per cent) was from TV related activities, £3.5bn (18 per cent) in film, and the rest (£2.8bn, 15 per cent) in commercials and corporate video (Figure 3.1).

Over half (53 per cent) of the sales of the screen industries was in the production sector, with total transactions of £10.5bn in 2002. Distribution and cinema exhibition was the next biggest-sector with sales of £5.4bn. The pre- and post-production sectors are worth £1.7bn and £2.1bn respectively (Figure 3.2).

The £5.4bn of sales from distribution and exhibition includes revenue from the distribution and exhibition of feature films in cinemas, revenue from the sale of feature films to UK broadcasters, and the wholesale value of DVD and VHS sales. The total excludes the retail margin on video sales and rental (the rationale for excluding the retail margin on DVD and VHS sales and rental is that the margin belongs to the retail value chain and not the screen industries value chain).

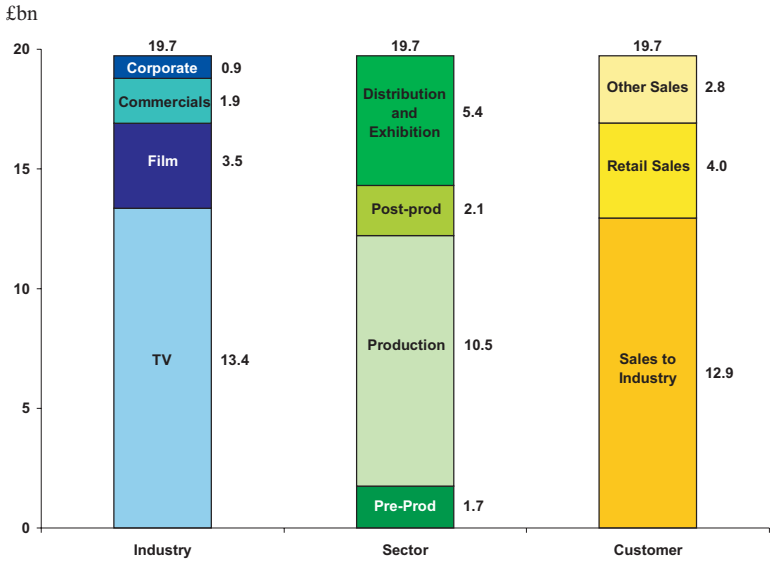
A substantial proportion of turnover from distribution and exhibition is earned by US feature films. That proportion of turnover that is remitted to the United States is included

FIGURE 3.1: TOTAL SALES BY SCREEN INDUSTRIES



Note(s) : The chart shows total turnover generated from sales by the UK screen industries.
Source(s) : ABI and Optima population database.

FIGURE 3.2: BREAKDOWN OF SALES BY SCREEN INDUSTRY, SECTOR AND CUSTOMER



Source(s) : ABI and Optima population database.

in total turnover and also appears as an expenditure on goods and services purchased abroad (i.e. as an import).

Table 3.1 provides total sales by industry and sector for each Government Office region, Wales, Scotland and Northern Ireland.

Sales to industry

Two-thirds of turnover (£12.9bn in 2002) was earned from sales to industry. This includes sales to firms within the screen industries (hence there is some double counting) and sales to other firms, in the UK and abroad. A substantial part of the turnover from sales to industries was attributed to sales within the screen industries.

Retail sales by screen industries (for example, box office receipts, payment of TV subscriptions) totalled £4.0bn, about 20 per cent of total sales in 2002. From the rest of the sales, which totalled £2.8bn in 2002, the most significant component was sales to central and local government.

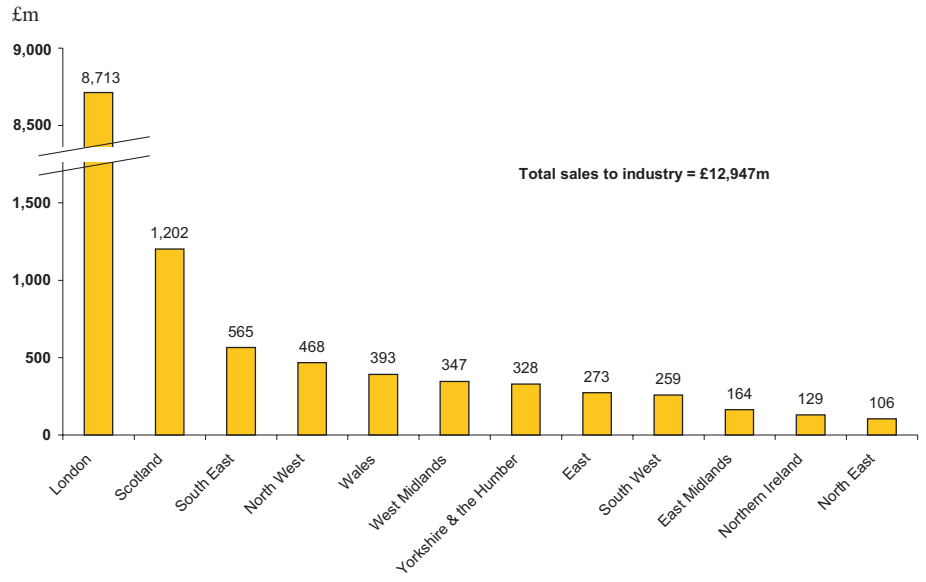
Figure 3.3 provides a breakdown of sales to industry by region. It demonstrates the dominance of the London screen industries, which accounted for two-thirds of the total sales by UK screen industries to firms in 2002. This does not just reflect London's larger economy but also the greater than average specialisation of London firms in activities (attributed to screen industries) which serve business in the region or elsewhere in the UK and abroad; the £8.7bn of sales by London screen industries is equivalent to almost £2,000 per person employed in the Capital, and it is an indication that London screen industries serve a wider market than the London market. The other two regions with relatively high concentration of screen activities serving business are Scotland and Wales, while at the other end of the scale are screen industries in the East Midlands and the North East (see Table 3.2).

TABLE 3.1: SCREEN INDUSTRY SALES BY REGION

	London	South East	East of England	South West	West Midlands	East Midlands	Yorkshire & the Humber	North West	North East	Wales	Scotland	Northern Ireland	UK
	(						£'000						)
Film - Pre-Prod.	90,168	15,024	6,129	2,581	2,529	2,033	956	9,385	2,868	1,622	4,562	2,039	139,895
Film - Prod.	622,979	85,522	17,321	21,220	21,915	11,418	14,146	47,549	7,169	7,401	24,331	8,921	889,891
Film - Post-Prod.	106,562	15,024	3,198	4,875	3,652	2,190	4,015	5,631	2,998	1,115	1,521	1,784	152,564
Film - Dist.	1,637,927	230,930	53,247	57,298	56,141	31,254	38,199	125,015	26,045	20,257	60,771	25,466	2,362,550
TV - Pre-Prod.	713,529	27,903	47,000	17,696	29,465	11,731	22,213	46,868	20,878	52,732	117,459	16,986	1,124,460
TV - Prod.	5,083,892	235,182	168,649	182,018	224,673	105,581	236,934	281,208	42,749	345,153	1,013,088	81,010	8,000,136
TV - Post-Prod.	1,248,675	35,875	24,883	32,864	51,564	23,462	55,531	34,086	25,848	57,526	88,095	20,906	1,699,316
TV - Dist.	1,873,013	99,654	35,942	20,224	62,614	26,814	55,531	63,911	9,942	23,969	249,601	11,760	2,532,974
Corporate - Pre-Prod.	17,186	907	2,318	1,176	700	431	1,145	862	926	864	2,645	1,265	30,425
Corporate - Prod.	465,955	27,357	12,560	11,178	20,553	8,955	19,489	26,768	3,903	25,058	81,140	5,590	708,505
Corporate - Post-Prod.	68,745	1,512	1,977	3,163	1,632	1,195	1,832	612	1,728	2,310	2,645	1,273	88,622
Corporate - Dist.	80,713	8,890	2,917	3,130	2,480	1,337	1,828	5,060	1,008	1,303	3,943	1,236	113,846
Commercials - Pre-Prod.	302,715	9,210	13,583	6,988	14,156	2,174	6,067	14,018	3,735	19,064	47,855	3,389	442,954
Commercials - Prod.	592,044	40,272	17,149	19,375	22,584	11,966	21,429	33,283	5,735	25,987	86,894	10,704	887,422
Commercials - Post-Prod.	93,588	6,790	3,954	4,670	4,697	5,444	6,983	4,673	2,941	5,207	3,562	1,702	144,211
Commercials - Dist.	276,849	21,062	4,859	6,261	9,294	4,251	14,110	14,631	2,718	8,809	42,434	2,933	408,212
Total	13,274,538	861,115	415,685	394,717	528,649	250,237	500,409	713,557	161,189	598,375	1,830,545	196,966	19,725,983

Source(s) : ABI and Optima population database.

FIGURE 3.3: SALES BY SCREEN INDUSTRIES TO FIRMS



Note(s) : Sales by screen industries located in a region to firms in the UK and abroad.
Source(s) : ABI and Optima survey data.

Sales by London screen industries to business

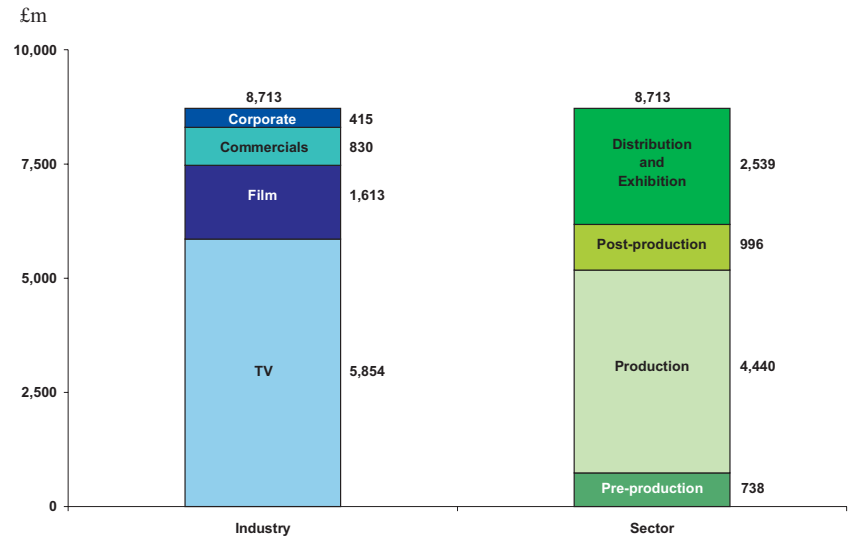
Two-thirds of sales by screen industries to firms is accounted for by sales of screen industries located in London. Figure 3.4 shows sales by London screen industries to business, broken down by screen industry and by sector. It shows the dominance of TV activities but also activities attributed to the production sector. Of the £8.7bn of sales by the London screen industries in 2002, £5.9bn was in TV related activities and £1.6bn in

TABLE 3.2: SALES TO FIRMS RELATIVE TO THE SIZE OF THE REGION'S ECONOMY

Region	Turnover ratio (£)
London	1,949
Scotland	478
UK	436
Wales	313
Northern Ireland	170
North West	143
Yorkshire & the Humber	140
West Midlands	135
South East	132
East of England	103
South West	102
North East	99
East Midlands	82

Note(s) : Turnover from screen industry sales to firms divided by total employment in the region.
Source(s) : ABI and Optima survey data.

FIGURE 3.4: SALES BY LONDON SCREEN INDUSTRIES TO FIRMS



Note(s) : Total sales to firms broken down by screen industry and sector.
Source(s) : ABI and Optima population database and survey data.

film. This is equivalent to 67 per cent of all UK TV sales to business and 69 per cent of UK film sales to business. The turnover from sales to business by the London production sector was £4.4bn and distribution and exhibition accounted for £2.5bn of sales (Figure 3.4). This concentration is unsurprising given that the headquarters of the UK's main broadcasters (the BBC, ITV, Channel Four and Five) are all located in London, as are many of the major film and TV production companies, and film distributors and exhibitors.

We note that, if anything, the concentration of activity in London presented above is lower than estimates from other studies. The fact that London's share of production – 64.5 per cent – is also lower may suggest that policies by the BBC and Channel Four to disperse production to the regions are having an effect (Table 3.3). However, it should be recalled that this figure relates to the sales of companies based in London – rather than the physical location of the actual activity of production.

Sales by screen industries located outside London to business

Of the other nations and regions, only Scotland has a turnover from sales to industry greater than £1bn in 2002. Using ABI data, sales by Scottish industries are estimated to be £1.2bn, of which £960m are TV related (Figure 3.5). Sales by the South East and the North West are about £½bn while, at the bottom of the scale, sales by Northern Ireland and the North East are about £100m.

Scotland, outside London, is also the region with the highest turnover from production activities when aggregated across the screen industries. About 11.5% of sales by the UK production sector is generated by the Scottish screen industries (see Table 3.3). From Table 3.3, we also see that screen industries in Northern Ireland and the North West contribute together only about 1½ per cent of total sales by the UK production sector.

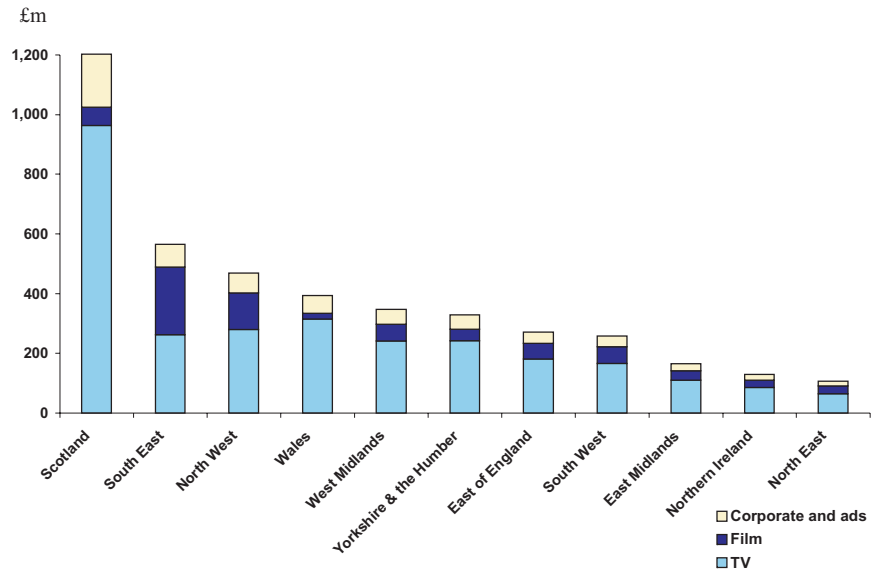
TABLE 3.3: SALES BY THE PRODUCTION SECTOR TO FIRMS

	(£000s)	(%)
London	4,440	64.5%
Scotland	791	11.5%
Wales	265	3.9%
South East	255	3.7%
North West	255	3.7%
Yorkshire & the Humber	192	2.8%
West Midlands	190	2.8%
South West	153	2.2%
East of England	142	2.1%
East Midlands	91	1.3%
Northern Ireland	70	1.0%
North East	39	0.6%
UK (Total)	6,883	100%

Note(s) : The table shows sales to business by the production sector across film, TV, corporate video and commercials.
Sourc(s) : ABI and Optima population database and survey data.

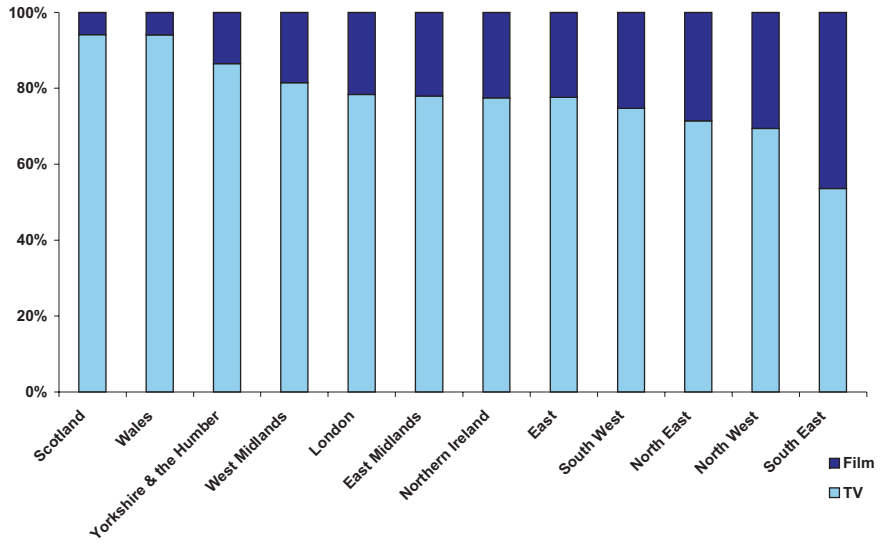
If we just look at turnover generated by film and TV-related activities (Figure 3.6), the South East has the highest proportion of film in the mix (46 per cent) – reflecting the location of Pinewood Shepperton Studios. Scotland has the lowest proportion of film in the mix (six per cent).

FIGURE 3.5: TURNOVER FROM SALES TO FIRMS, BY REGION



Note(s) : The chart excludes sales by the London screen industries.
Source(s) : ABI and Optima population database and survey data.

FIGURE 3.6: FILM AND TV RELATED ACTIVITY BY REGION

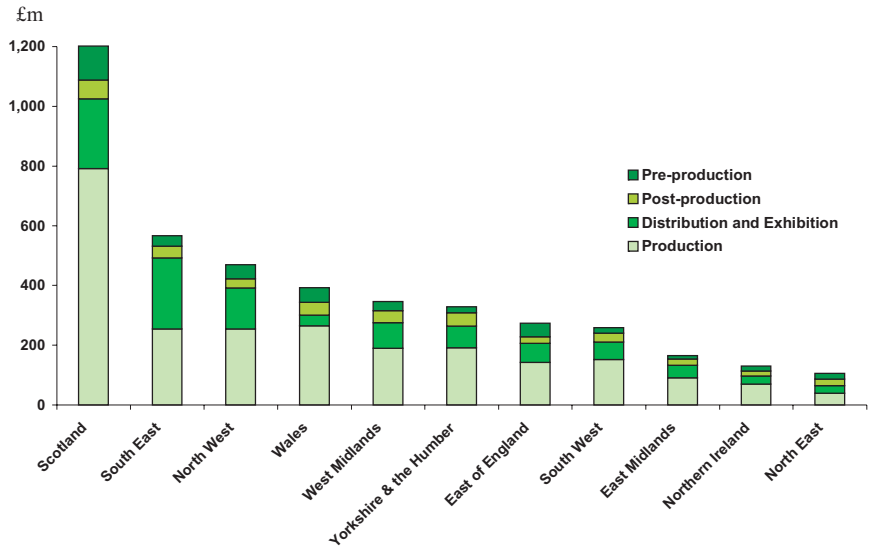


Source(s) : ABI and Optima population database and survey data.

Presenting the same turnover from sales to industry but this time divided by sector (Figure 3.7), we find that production is the largest sector of the screen industries in every region, although in the South East distribution and exhibition is almost as large (£237m, as against £255m for production).

The production figures for the South East (£255m) and the East of England (£142m) seem somewhat small given the location of studios in these regions (Pinewood and

FIGURE 3.7: SALES BY SCREEN INDUSTRIES TO FIRMS



Note(s) : For each region, the chart highlights the contribution of each sector (pre-production, production etc) to turnover from sales to firms. Data for London are not included.
Source(s) : ABI and Optima population database and survey data.

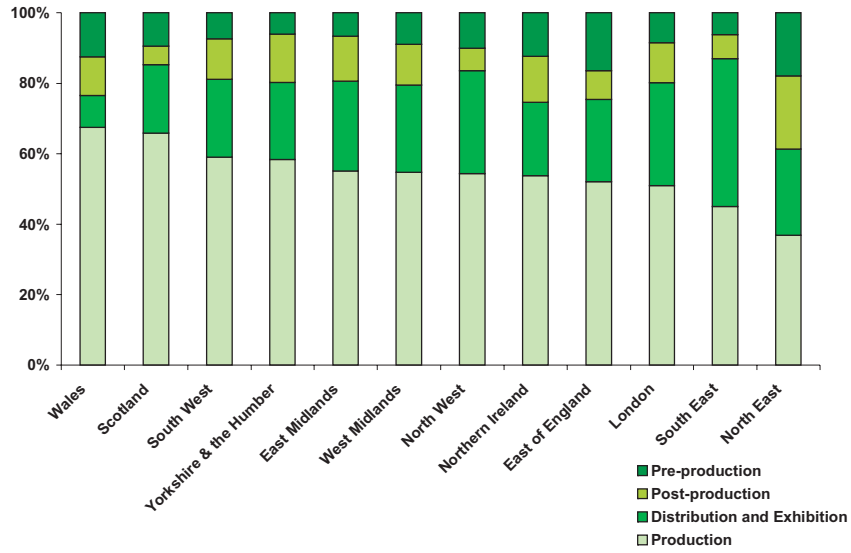
Shepperton in the South East and Leavesden and Elstree in the East of England) but our analysis confirms that these estimates are robust. It is worth pointing out that the pure production activity figures do not capture all of a studio's activities, which may incorporate an element of pre- and post production as well. We estimate that if these activities were included it would add at least another £75 million to the sales by companies in the South East and £65m in the East of England.

Figure 3.8 shows the share of sales to business by screen sector in each region. Wales relies most heavily on production and has very little distribution and exhibition activity. By contrast the North East derives income in similar proportions from across all sectors of the screen industries.

In London post-production activity accounts for 11% of total sales by screen industries to firms. However, examining the post-production activity across the regions, it is seen that London has a very high share of all post-production activity – 73 per cent of all UK post-production activity. This reflects the high reliance on London companies for computer generated images, final edits, dubbing and sound effects. Scotland and the North West appear to have small post-production sectors relative to the size of their screen industries.

In the previous analysis the figures have shown that the data for Scotland are quite striking – particularly the high total sales to industry and the substantial role played by the TV industry. We suggest this may be explained by Scotland's indigenous TV activities, by the volume of location production in Scotland, and by the presence of call centres of the major TV platforms in Scottish towns. We have also observed a rapid increase in programme production in Scotland immediately after devolution, driven particularly by the BBC.

FIGURE 3.8: SALES BY SCREEN INDUSTRIES TO FIRMS



Note(s) : For each region, the chart highlights the share of sectors (pre-production, production etc) to total sales to firms.
Source(s) : ABI and Optima population database and survey data.

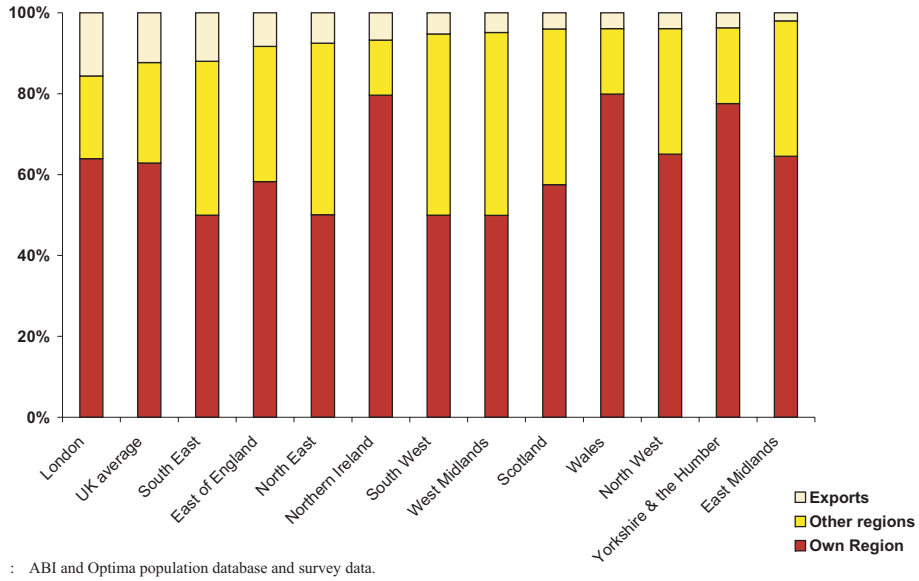
Sales to UK regions and abroad

London exports the highest share of its sales to industry (16 per cent in 2002) and the East Midlands the least (two per cent, see Figure 3.9). The impact of major studios in the South East (Pinewood Shepperton) and the East of England (Elstree) can be seen in the high proportion of exports from these regions (£67m and £22m, or 12 per cent and 8 per cent of sales in each region, respectively).

Our data on inter-regional trade is tentative and should be treated with caution, being based on survey data and therefore less robust. Bearing in mind this caveat, we have estimated that companies located in Northern Ireland, Wales and Yorkshire & the Humber do the smallest proportion of business outside their own region – only 20 per cent in each case. We find this somewhat surprising, given Yorkshire's reputation for the production of popular TV (for example, Emmerdale). The South West, the West Midlands and the North East do the highest proportion of their business with other UK nations and regions – between 40 and 45 per cent in each case (Figure 3.9). The reasons for this are likely to be complex. It may reflect nationally sought-after skills (in the South West, for example, there is a high concentration of animation and wildlife programming expertise in Bristol). It may, on the other hand, reflect a lack of substantial local demand in a given region from end users such as broadcasters and distributors; or an immature industry with small firms concentrated mainly in the pre-production phase, who contract with larger firms outside the region.

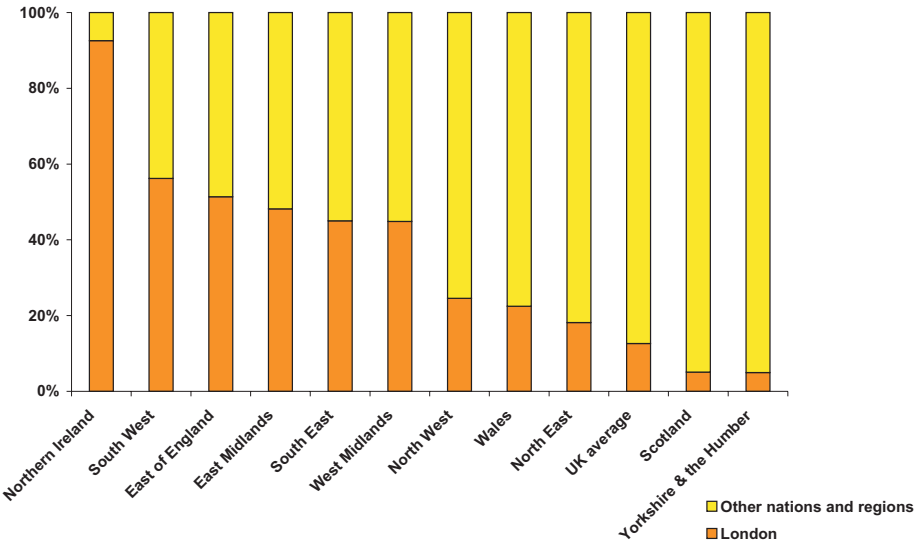
Looking just at turnover from sales to firms located in other regions of the UK, we find that London firms are an important client for the screen industries in many regions. Thirteen per cent of all the screen industries' UK sales that are outside their own region are in London. The reliance on London as a source of sales varies greatly by region – in Northern Ireland 93 per cent of UK sales outside of the Province are to London; in Yorkshire & the Humber and in Scotland the picture is reversed, with only 5 per cent of UK sales outside of the region or nation being made to firms in London (Figure 3.10).

FIGURE 3.9: SALES BY SCREEN INDUSTRIES TO FIRMS IN THE UK REGIONS AND ABROAD



Source(s) : ABI and Optima population database and survey data.

FIGURE 3.10: SALES BY SCREEN INDUSTRIES TO FIRMS OUTSIDE THEIR OWN REGION



Note(s) : For each region the figure shows the share of sales to firms in London and to firms in the rest of the UK.
Source(s) : ABI and Optima population database and survey data.

It is possible, however, that in sampling BBC regions we have under-estimated regional production activity by the BBC that is funded from central programme budgets.

Public subsidy

We estimate that the UK screen industries benefited from public subsidies of £548m in 2002. This includes direct subsidies, employment subsidies and tax breaks for production (film tax breaks were worth approximately £300m in 2002).

3.3 Employment

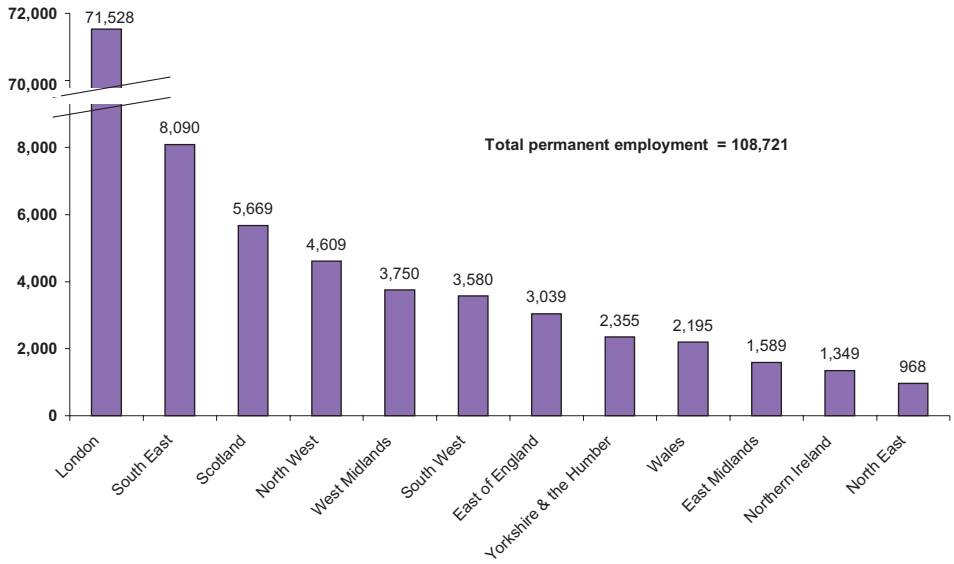
Permanent employment

Data from ABI show that there were 108,000 people in permanent employment in the screen industries in 2002, of which almost 85,000 (78 per cent) were in full-time employment and the rest were part-time employees. Almost two-thirds of all permanent jobs (71,500 employees) are in London. The next-largest regions in terms of permanent jobs are the South East with 8,100 employees and Scotland with 5,700 employees (Figure 3.11).

Figure 3.12 provides a breakdown of employment by industry and by sector. Over half of all jobs are in the TV industry (54,000) and almost 41,000 are employed in the film industry. Production is the largest sector, with about 53,700 permanent employees in 2002. There are also significant numbers of employees (over 35,000) in the distribution and exhibition sector, although 43 per cent of these jobs are part-time, compared with only 12 per cent for production.

Figure 3.13 provides estimates of the average cost per permanent employee (that is, wages, employers' national insurance costs, pension costs, and redundancy and severance payments to employees). The average cost per employee was just over

FIGURE 3.11: PERMANENT EMPLOYMENT IN THE UK SCREEN INDUSTRIES

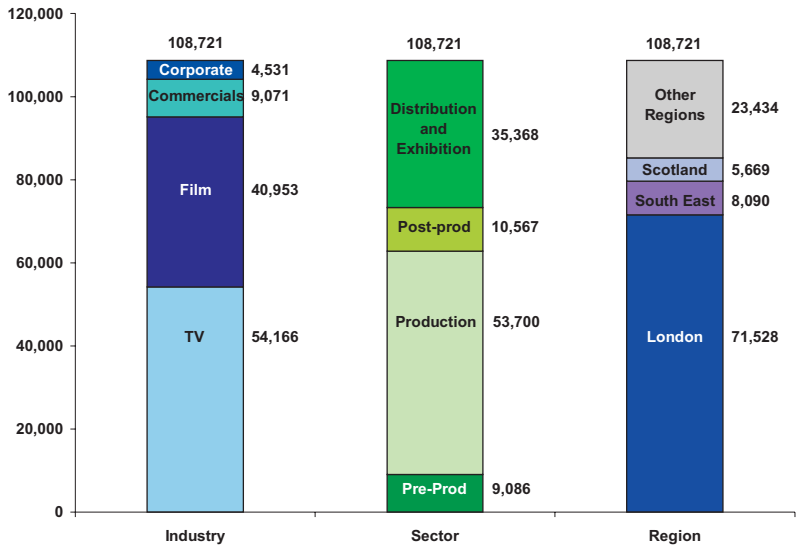


Source(s) : ABI.

£28,600 in 2002. Costs were highest in the TV industry (averaging £37,655 per employee) and in the post-production sector (£33,463).

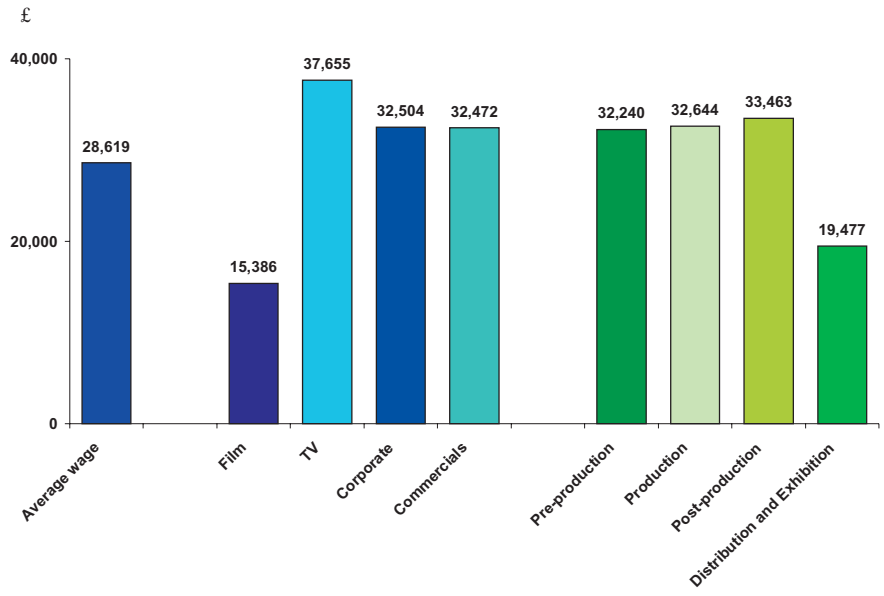
The low average cost per permanent employee in the film industry (£15,386) and in the distribution and exhibition sector (£19,477) needs explanation. What we have found is that there is a high reliance on part-time and low-paid workers in the film exhibition sector (mainly young and female employees working in the cinema box office and

FIGURE 3.12: PERMANENT EMPLOYMENT IN SCREEN INDUSTRIES



Source(s) : ABI and Optima population database.

FIGURE 3.13: AVERAGE COST PER PERMANENT EMPLOYEE



Source(s) : Optima.

selling sweets and drinks) which brings down average employee costs for the film industry. Of the 41,000 employees in the film industry, 23,000 (56 per cent) work in film distribution and exhibition, where the average cost per employee is about £11,350.

Employment costs per employee are highest in Wales (£32,381) and lowest in the South East (£23,763). This is shown in Table 3.4.

The total employment costs of all permanent employees in 2002 was £3.1bn.

Freelance employment

The screen industries rely heavily on a freelance workforce for services. We estimate that approximately 3.8m days of freelance services were purchased by the screen industries in 2002, of which 2.1m were in TV, 1.2m in the film industry, and 0.5m in the production of commercials and corporate video. A substantial majority (84 per cent) of freelances work in the production sector. The average daily rate was £260 in 2002. The spend on freelances in each region varies between £7.5m in the North East and £629.2m in London (Table 3.5).

Reconciling our data with Skillset census

The annual Skillset census measures employment in the Broadcast, Film, Video and Interactive Media industries. Skillset estimated that there were 150,000 people working in these industries in June 2002, around a quarter of whom were freelance. Our data (based on ABI and our own estimates of the freelance workforce) show that there were approximately 109,000 people in permanent employment in the screen industries in 2002. Translating the 3.8m days of freelance services that we estimated that were purchased in 2002 to 10,000 full-time and 10,000 part-time permanent jobs, our estimate of the total number of people employed in the screen industries reaches 129,000 in 2002. It should be recalled that Skillset include radio (around 21,000 people). If this is taken into account, our estimate of employment in the screen industries is similar to the Skillset estimate.

TABLE 3.4: AVERAGE COST PER PERMANENT EMPLOYEE BY REGION

Nation or Region	Average cost per employee (£)	Percentage higher or lower than the UK average
Wales	32,381	13%
Scotland	31,496	10%
Northern Ireland	31,126	9%
West Midlands	30,277	6%
Yorkshire & the Humber	29,564	3%
London	28,941	1%
UK Average	**28,619**	**0%**
East Midlands	28,482	0%
North East	28,450	-1%
North West	27,221	-5%
South West	27,057	-5%
East of England	26,106	-9%
South East	23,763	-17%

Source(s) : ABI.

TABLE 3.5: TOTAL PAYMENTS FOR FREELANCE SERVICES

Nation or Region	Freelance Days	Payments for freelance services (£m)
London	2,433,801	629.2
South East	278,254	71.9
Scotland	209,978	54.3
North West	164,818	42.6
South West	133,214	34.4
West Midlands	131,669	34.0
East of England	100,345	25.9
Yorkshire & the Humber	84,680	21.9
Wales	84,668	21.9
East Midlands	57,412	14.8
Northern Ireland	48,275	12.5
North East	28,862	7.5
UK	3,755,976	971.0

Source(s) : ABI and Optima survey data.

TABLE 3.6: SOURCES OF SCREEN INDUSTRY PURCHASES

Where purchases are made	£m	Percentage of total purchases
London	6,494	57%
Other regions	4,115	36%
Imports	725	6%
Total	11,334	100%

Note(s) : The table shows purchases by the screen industries from firms in London, UK regions outside London and abroad.
Source(s) : ABI and Optima survey data.

3.4 Expenditure and Profitability

Expenditure

The screen industries purchased goods and services (additional to the employment costs and payments to freelances considered above) worth £11.3bn in 2002. Most purchases are made from companies in the region where the screen industries are located – £8.7bn or 77 per cent of all purchases. Of purchases outside the region, £6.5bn (57 per cent) were made from firms in London and six per cent were imports (Table 3.6).

Profitability

Combining the income and expenditure information we find that profit, measured by EBITDA (earnings before interest payments, tax, depreciation and amortisation), was £4.7bn in 2002, giving an EBITDA margin of 23.2 per cent (Table 3.7). Table 3.8 gives

TABLE 3.7: PROFITABILITY OF THE UK SCREEN INDUSTRIES

Item	Income	Expenditure	£m Total
Total Turnover from Sales	19,726		
Public Subsidies	548		
Total income			20,274
Wages		3,112	
Payments for freelance services		971	
Purchases of goods and services		11,334	
Other Expenditure		159	
Total Expenditure			15,575
EBITDA			4,699
EBITDA Margin			23.2%

Source(s) : ABI and Optima population database and survey data.

TABLE 3.8: PROFITABILITY OF THE UK SCREEN INDUSTRIES

Screen industry	Total income	Total expenditure	EBITDA	EBITDA Margin
	£m	£m	£m	
Film	3,644	2,885	759	20.8%
TV	13,728	10,457	3,271	23.8%
Commercials and Corporate Video	2,902	2,233	669	23.1%
UK (Total)	20,274	15,575	4,699	23.2%

Source(s) : ABI and Optima population database and survey data.

a summary for each of the screen industries and shows that TV has a higher EBITDA margin than either film or commercials and corporate video.

Capital investment

We estimate that the UK screen industries made total investments in capital goods of £650m in 2002, or 3.2 per cent of total turnover. Capital investment expressed as a percentage of turnover was highest in the West Midlands and the Yorkshire & the Humber (Table 3.9). Of this investment, £436m was in TV and £129m in the film industry.

TABLE 3.9: CAPITAL EXPENDITURE BY THE UK SCREEN INDUSTRIES

Nation or Region	Capital Expenditure (£m)	Percentage of Turnover
West Midlands	47	8.6%
Yorkshire & the Humber	44	8.5%
Northern Ireland	11	5.4%
South West	21	5.2%
East of England	19	4.4%
East Midlands	11	4.4%
North West	32	4.3%
South East	36	4.1%
North East	5	3.2%
Scotland	59	3.1%
London	352	2.6%
Wales	13	2.2%
UK (Total)	650	3.2%

Source(s) : ABI.

3.5 Location Shoots

We estimate that UK resident companies carried out location shoots worth £832m in the UK in 2002, of which £511m was for TV and £260m for films. Of the total £832m spent on UK location shoots, the breakdown of spending by activity is shown in Table 3.10. Although the survey did not provide sufficient detail to show patterns of spending by each region, we can make some inferences from key findings in the UK estimates.

A region will benefit from a high proportion of spending on local goods & services

The region in which the location shoot is being made will benefit most from spending on local goods and services, such as hotels & catering, which accounted for 11% of spending, hire of premises and location fees (6½%), and perhaps a proportion of spending on set construction, props, etc (7%) and transport & parking (11%).

The activities on which most was spent were crew & other technical staff (42%), and cast & extras (14%). Not all regions are able to provide these specialised screen industry activities and so they would have to be imported into the region from elsewhere (other UK regions, or overseas). For example, a location shoot in the East Midlands is likely to hire technical crew from London. Therefore, regions which do not have an established representation of these specialised screen industry activities will not benefit from location shoot spending on them.

The proportion of location shoot spending on local goods & services is relatively low

The survey showed that of total spending on goods and services purchased by the film, TV, corporate video and commercials screen industries, on average around three quarters was on purchases of good and services from within the region. This proportion was highest in London, and lowest in the regions neighbouring London. From the pattern of spending shown in Table 3.10 and the discussion above, we can estimate that for location shoot spending in regions without an established representation of specialised screen industry activities, the proportion of spending on local goods and services is likely to be lower than for the screen industries as a whole. Therefore, in such regions, the regional

TABLE 3.10: LOCATION SHOOTS - SHARE OF COSTS

Item	Percentage of total location costs
Crew and other technical staff	42.1%
Cast and extras	13.6%
Transport and parking	10.8%
Hotels and catering	10.7%
Other	8.7%
Set construction, props, etc	7.2%
Hire of premises and location fees	6.5%
Security	0.4%
Total	100%

Source(s) : Optima survey data.

multipliers for location shoot spending are likely to be smaller than those estimated for total screen industry activity (see Chapter 4 Findings of the Multiplier Analysis).

The interactive economic impact model provided as part of this study delivers the capacity to run in-house multiplier analysis of incremental changes. The model incorporates the framework to analyse the impact of a change in demand for location shoot activity and for this purpose the model uses results for the production sector (activities of all production for all of film, TV, corporate video and commercials). Note that, because the regional multipliers for location shoot activity are likely to be lower than the average for the production sector, the results for *production* in the interactive economic impact model will be at the upper bound of the likely impact of location shoot spending.

4 FINDINGS OF THE MULTIPLIER ANALYSIS

4.1 Introduction

In this chapter, we summarise the findings of the multiplier analysis that was undertaken to address the key study questions. The analysis examines the economic impact of the screen industries in the UK, disaggregated by nation and region, and focusses on the economic multipliers of the various screen industries. Section 4.2 provides an introduction to multiplier analysis and our research methods. Section 4.3 summarises the findings of the multiplier analysis and Section 4.4 compares the screen industries multipliers with the multipliers for other UK industries.

4.2 Multiplier Analysis to Assess Economic Impact

Measuring the economic impact of an industry

The economic impact of an industry in a region can be assessed by measuring that industry's level of activity, for example the output and employment, generated by the direct activities of the industry. However, the extent of the industry's impact goes beyond its direct activity through the linkages to the rest of the region's economy and elsewhere. For example, an increase in expenditure on cars will not only provide a direct boost to car production; it will cause an indirect impact by raising the demand for the inputs to car production, such as steel, glass, rubber and financial services. There will also be an induced impact as the incomes of those employed by the car industry, and its suppliers, will increase and so household spending on consumer goods and services will in turn be boosted. The eventual increase in income will be a multiple of the initial boost to expenditure, and this is what multiplier analysis is designed to measure. The size of the multiplier will depend upon the extent of linkages and leakages. The regional multiplier will be larger the greater the linkages, for example the industry's dependence upon suppliers from within its own region. The multiplier will be lower the greater the leakages from the region, for example, to imports from elsewhere, to savings or tax.

The UK screen industries sell their products and services to firms and households located across the regions of the UK and in the rest of the world. At the same time they employ staff and purchase materials and services from other industries in order to produce their products and services and to build capacity for future production. Many of the sales are *intermediate* purchases by other firms in the screen industries or by non-screen industry firms which purchase screen industry goods and services as inputs to their own production. Other sales are to satisfy *final* demand by consumers of screen industry outputs in households and government, or for building capacity for future production, and for exports to organisations outside the UK. For example, a US film producer purchasing post-production film services from a firm in Hertfordshire would represent an export sale by this sector of the film industry. While this separation of *intermediate* and *final* demand may have little significance for the firm, it is important for economic accounting to avoid double-counting of impacts and to draw the correct implications for statistical concepts such as GDP.

In order to produce their outputs the screen industries purchase inputs. These may come from other firms in the screen industries or from firms in the rest of the economy and these firms may be located in the same region or elsewhere in the world. The indirect effects of these intermediate purchases are to generate demand elsewhere in the economy through these supply-side linkages. A screen industry firm also employs and pays for direct labour, generating household income and thus general consumption by the employees of the firm. The firm also uses capital, either borrowed or retained, pays taxes to government and receives subsidies, and trains its staff. The firm makes profits or losses on its activities and these are retained or distributed to shareholders.

The pattern of supply will determine the nature of indirect effects. The post-production firm in Hertfordshire, in the example above, might for example buy materials and services from other firms in the East of England region, or from outside the region. These purchases could include energy, raw materials, technical equipment, transport, financial and business services. Purchases by the firm in the region would generate further indirect effects on other firms in the East of England as supplier firms in turn purchase materials from other firms in the region and as consumption by those directly and indirectly employed boosts household consumption. The economic activity of the firm has quite different indirect (and hence total) economic effects on the economy depending on the pattern of its spending and the location of its suppliers.

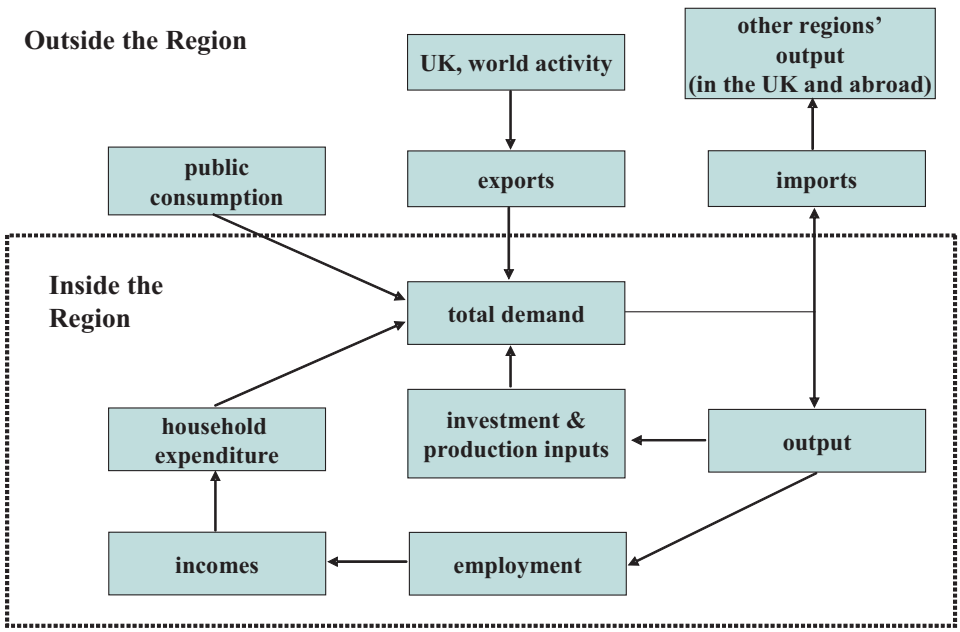
Cambridge Econometrics' research methods

The multiplier analysis was undertaken using Cambridge Econometrics' Multisectoral Dynamic Model (MDM). This was extended to represent the screen industries explicitly so as to provide a common analytical framework to examine the screen industries across region and nation, and in the context of the economy as a whole. MDM, a regionalised input-output model of the UK economy, provides a fully integrated dynamic model of the UK economy and the Government Office Regions, Wales, Scotland and Northern Ireland. This approach contrasts with modelling approaches that work by disaggregating given national totals and which require successive solutions of a suite of models. A detailed description of MDM is provided in Appendix A: Multiplier Analysis Methodology.

MDM represents explicitly the linkages within the screen industries and between the screen industries and other industries, within the region and across other UK regions and nations, and outside of the UK. Such linkages allow survey information on sales and purchases to be incorporated into a full economic multiplier analysis.

Chart 4.1, Modelling Economic Impact, illustrates the key linkages described above. For each region, MDM has a complete accounting framework linking household expenditure to incomes, incomes to employment, employment to output, and output to the various sources of intermediate and final demand. The *output-investment* loop embodies the linkages between the production of an industry and the inputs required for that production. The output-investment loop includes intermediate demand for goods and services and runs from total demand to output and then to investment and back to total demand. Total demand for the output of goods and services is formed from intermediate demand for production inputs, and the components of final demand, namely, household expenditure, government demand, investment and exports to other UK regions or nations, or outside of the UK. Total demand is then satisfied either by output from within the region or by imports of other regions' output in the UK or abroad. In the

CHART 4.1: MODELLING ECONOMIC IMPACT



output-income loop, output generates employment and incomes, which lead to household expenditure, thereby adding to total demand, and so on. Instead of estimating a single multiplier to calculate indirect and induced effects, we represent in the model the backward linkages, income generation and household spending effects explicitly. The model results then provide the information required to calculate the multipliers.

4.3 Findings of the Multiplier Analysis

What is the dynamic economic impact of the screen industries?

This section summarises the findings of the multiplier analysis. Its focus is to address the study question: what is the dynamic economic impact of the screen industries, including their national, regional and UK multipliers?

The results show the outcomes for a series of scenarios, one for each screen industry in each region, in which a 'shock' was applied to one of the screen industries in a single region. The shock was in the form of an exogenous boost to export demand in the region for a chosen screen industry. It was assumed that the extra exports went overseas rather than to another UK region. In the results shown, the scale of the shock was set at +5% of the value of exports in 2003, but sensitivity analysis showed that the magnitude of the boost to exports did not have a major impact on the value of the multiplier.

We have assumed that the boost to exports is external (ie demand from overseas) and so it is additional. The model incorporates substitution and displacement effects as the boost to export demand for each screen industry is satisfied not solely by production within the region where the boost occurred, but also by imports from other regions. The extent of this displacement depends upon the concentration of screen and supporting industry activities within the region boosted, and upon the linkages and leakages to other

industries and regions. A more detailed description of the implementation of the scenarios is provided in Appendix A: Multiplier Analysis Methodology.

The regional multipliers in Table 4.1 show the dynamic impact on value added output in the region in which the boost to demand was made; the UK multipliers in Table 4.2 show the dynamic impact on value added output in the whole of the UK of the boost to demand in one region. The results are reported for the four screen industries: film, TV, corporate video and advertising.

The regional multipliers are highest in those regions with a strong representation of supporting services

A regional multiplier of greater than one indicates that a £1 increase in final demand in the specified screen industry in that particular region boosts value added in the overall economy of that region by more than £1. The impact on the region's economy tends to be larger, ie the regional multipliers tend to be higher, when:

- the region is relatively large
  - larger regional economies are likely to be more *self-sufficient* than smaller regional economies. Larger regional economies benefit from the presence of a greater variety of economic activities. In smaller regional economies, it is likely that some goods and services required within the region, and in particular very specialised goods and services, will not be produced there; and so they must be imported from elsewhere.
- there is a strong representation of screen-industry activities within the region
  - if a region has a strong representation of screen-industry activities it is more likely to be able to satisfy the demand for screen-industry activities from within its own region. For example, if the value chain for TV industry activities is well-represented within a region, the demand for other screen-industry inputs to TV production, eg TV pre-production, are likely to be met from within the region rather than from elsewhere.
- there is a strong representation of supporting industries within the region, ie those industries that provide inputs to screen industry activities
  - if a region has a strong representation of other industry activities that support screen industry activity, it is more likely to be able to satisfy the demand for these supporting goods and services from within its own region. In addition to other screen-industry activities, the most important supporting industries include financial & business services, communications, publishing, food, construction and distribution, hotels & catering.

In London the regional multipliers for each of the four screen industries are greater than one (see Table 4.1). As would be expected, London's regional multipliers are large because the region ranks highly for each of the characteristics which underpin large regional multipliers; it is the largest regional economy in the UK; the location quotients for all of the screen industries show that the representation of screen industry activity is three to four times the national average; and there is a strong representation of the important supporting services within the region. So much screen industry activity is concentrated in London that it far outstrips the UK average; in all other regions the representation of screen industry activity is below the UK average.

TABLE 4.1: REGIONAL DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	LO	SE	EE	SW	WM	EM	YH	NW	NE	WA	SC	NI
	(£ increase in value added output per £1 increase in export sales)											
Film	1.1	1.0	0.9	0.9	0.8	0.8	0.8	0.9	0.8	0.8	0.9	0.8
TV	1.1	1.1	1.1	0.9	0.9	0.9	0.9	1.0	0.9	0.8	0.9	0.8
Corporate video	1.2	1.1	1.0	0.9	0.8	0.8	0.9	1.0	0.9	0.8	0.9	0.8
Advertising	1.2	1.2	1.0	0.9	0.8	0.9	0.9	1.0	0.9	0.8	0.9	0.8

Note(s) : Multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

A high proportion of the boost to final demand for each screen industry is satisfied by production within London rather than by imports from other regions; this is because of the high concentration of screen industry activities within the region. Of the four screen industries, the boost to final demand for TV causes the least impact on the output of the other screen industries within the region, indicating that the TV industry relies less on inputs from other screen industries than do film, corporate video and advertising. The magnitude of the impacts on film and TV output are similar for the corporate video and advertising scenarios, indicating that corporate video and advertising both require similar proportions of inputs from film and TV. The impact on the rest of the economy is relatively large in London because supporting services such as financial & business services are well-represented within the region, as are consumer goods and services which will benefit from the boost to incomes.

In the South East the regional multipliers for each of the four screen industries are also greater than one. In the South East, the representation of the film industry is relatively high; it ranks second to London and is above the other regions by a high margin. The representation of corporate video and advertising is also relatively high in the South East. However, there is a relatively low concentration of TV activities. The regional multipliers are high because the South East is a large region, has relatively high concentrations of most screen industries and also has a high representation of supporting industries, especially financial & business services.

The only other cases in which the regional multipliers are greater than one are for both TV and advertising in the East of England and for TV in the North West (figures in the table are rounded to one decimal place). Despite having relatively low concentrations of TV and advertising activities, the economic impact on the East of England is boosted because it is a relatively large region and has a high representation of supporting services such as financial & business services and communications. In the North West, the representation of TV activities is relatively low (despite the presence of Granada). However, the North West is the third-largest regional economy, and its representation of some supporting services, such as distribution, matches the national average.

The regions with the smallest regional multipliers are Wales, Northern Ireland and the West Midlands. In Wales, there is a relatively high representation of TV activity, and also corporate video and advertising. In Northern Ireland TV activity is relatively well-represented. In the West Midlands, the concentration of screen industry activities is

relatively low. However, in all three regions the dominant impact is that inputs for supporting goods and services are imported from other regions, especially London and the other regions in the south of England. In the case of Wales and Northern Ireland, this is because the regions are small and there is a particularly low representation of supporting services such as financial & business services and communications. The West Midlands is an average-sized economy (in terms of output), but it has a lower than average representation of supporting goods and services such as financial & business services, communications and publishing.

The UK multipliers are smallest when the leakages from the UK economy are larger

In all cases the UK multipliers are higher than the regional multipliers as they capture the UK-wide effects of the increase in screen industry expenditure. Most of the UK multipliers lie in the range 1.4-2.5 (see Table 4.2) and so indicate that a £1 increase in final demand in the specified screen industry in that particular region boosts value added in the whole UK economy by £1.40-£2.50. The impact on the UK economy tends to be smaller the larger the leakages from the UK economy; ie the UK multipliers tend to be lower when:

- there is a greater proportion of inputs to the increased activity imported from outside of the UK
  - the discussion of the regional multipliers highlighted that the regional multipliers would be smaller the greater the proportion of goods and services imported from outside of the region. The equivalent is true for the UK multipliers; if the higher demand for goods and services cannot be satisfied by UK production, then the goods and services must be imported from elsewhere. The greater the proportion of inputs imported from outside of the UK, the lower will be the boost to the UK economy.
- the marginal propensity to spend is lower
  - as discussed in Section 4.2, through the *output-income* loop, output generates employment and incomes, which lead to household expenditure, thereby adding to total demand, and so on. The extent of this impact will depend upon how households respond to higher incomes; how much of it do they save and how much do they spend? The lower the proportion of the increased income that is spent (ie the lower the propensity to spend at the margin), the smaller will be the boost to the economy. The marginal propensity for the UK as a whole will vary

TABLE 4.2: UK DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	LO	SE	EE	SW	WM	EM	YH	NW	NE	WA	SC	NI
	(£ increase in value added output per £1 increase in export sales)											
Film	1.8	2.0	2.1	2.4	1.8	1.8	2.0	1.9	2.1	2.4	2.5	1.6
TV	1.9	2.0	2.3	2.2	2.0	2.1	2.4	2.0	1.8	1.8	2.1	2.2
Corporate video	2.1	2.0	2.1	2.0	1.6	1.4	1.6	1.6	2.1	2.2	1.7	1.9
Advertising	2.1	2.5	2.3	2.2	1.5	1.4	1.7	1.8	1.9	2.1	2.2	2.0

Note(s) : Multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

depending upon the extent of the impact on incomes across the different regions. If incomes are boosted mostly in one region then the marginal propensity to spend of households in that region will have the greatest effect.

In the case of the film scenarios, the largest UK multipliers are for the South West, Wales and Scotland. In all these regions the proportion of the increased demand satisfied by imports from outside of the UK is relatively low. In addition, a relatively large proportion of the increase in incomes is spent, perhaps because average earnings in these regions are relatively low. Therefore, because the leakages from the UK are relatively low for the South West, Wales and Scotland the boost to the UK economy is relatively high.

The lowest UK multipliers for the film scenarios are for Northern Ireland, London, the East and West Midlands. In Northern Ireland and London the largest proportion of increased inputs is imported from outside of the UK. In the case of Northern Ireland the proportion of imports from outside of the UK is relatively high because Northern Ireland is a small economy and its location makes it more dependent upon non-UK producers for imported inputs. The survey results showed that 6% of inputs to the screen industries were imported from overseas. In the case of London this proportion was higher. This indicates a greater international dependence of the screen industries (which is also evident for other supporting industries) and, in consequence, larger leakages, as inputs are imported from outside of the UK. Of the increase in incomes for the regions with low UK multipliers, a relatively small proportion was spent in the Northern Ireland, and the East and West Midlands scenarios.

In the case of the TV scenarios, the largest UK multipliers are for the East of England, the South West and Yorkshire & the Humber, due to a relatively high marginal propensity to spend; the lowest multipliers are for the North East and Wales, due to a relatively low marginal propensity to spend.

The impact on employment is weaker for the scenarios for regions with relatively low labour intensity

The regional multipliers in Table 4.3 show the dynamic impact on employment in the region in which the boost to demand was made; the UK multipliers in Table 4.4 show the dynamic impact on employment in the whole of the UK of the boost to demand in one region. The results are reported for the four screen industries: film, TV, corporate video and advertising.

Employment is increased in order to generate the higher output required to satisfy the increased demand. As would be expected, in general, the scenarios in which the largest increase in value added output occurred also saw the largest increase in employment. Following this argument the regional multipliers in the North East and Northern Ireland are among the lowest. The employment increase was below the average in the scenarios for which demand was boosted in London. In London, productivity (value added output per worker) is relatively high, indicating the higher-skill, higher value-added and less labour-intensive nature of activity in the region. Therefore, because productivity is relatively high, when output in the London screen industries was increased, relatively few new jobs were created. For each of the screen industry scenarios for London, around 15 jobs per £1m increase in demand were created within the region, eg a £200m increase in US film production would generate around 3,000 jobs in London. Around one-third to one-half of these jobs were in the London screen industries, with the rest of the

TABLE 4.3: REGIONAL DYNAMIC MULTIPLIERS FOR EMPLOYMENT

	LO	SE	EE	SW	WM	EM	YH	NW	NE	WA	SC	NI
	(increase in employment per £1m increase in export sales)											
Film	14	25	24	29	16	29	15	16	13	16	23	15
TV	15	27	28	30	18	34	17	19	14	16	23	14
Corporate video	15	26	26	30	17	31	16	17	14	16	21	14
Advertising	15	28	27	30	17	31	17	17	14	16	23	14

Note(s) : Multiplier = increase in the region's total employment over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

London economy benefitting from the remaining increase in jobs as activity in other industries was boosted. The boost to employment spread across the other UK regions was similar in scale to that in London so that, for each of the screen industry scenarios for London, around 30-40 jobs per £1m increase in demand were created in the UK as a whole (this includes the impact in London).

The East Midlands is the region in which employment is most responsive to the boost to demand because productivity (value added output per worker) is relatively low. For each of the screen industry scenarios for the East Midlands, around 30 jobs per £1m increase in demand were created within the region, and 50-70 jobs in the UK as a whole (including the impact in East Midlands). It is worth noting the relatively high response of employment in the South East. In the case of the film industry, this may be due in part to the South East's strong representation of film distribution and exhibition which is relatively labour-intensive and relies greatly on part-time employment.

On average, tax revenues are boosted by 20p for every £1 increase in final demand for screen industries output

Table 4.5 shows the dynamic impact on the total UK tax revenues of the boost to demand in one region. The revenues analysed include those from income taxes and from National Insurance contributions. The results reported are for the average of all the screen industries.

Employment and profits increase in response to the higher output required to satisfy the increased demand, and, as a result, there is an increase in tax revenues. As would be

TABLE 4.4: UK DYNAMIC MULTIPLIERS FOR EMPLOYMENT

	LO	SE	EE	SW	WM	EM	YH	NW	NE	WA	SC	NI
	(increase in employment per £1m increase in export sales)											
Film	32	50	56	67	41	58	49	40	48	55	66	34
TV	36	50	61	63	47	70	51	42	38	40	58	48
Corporate video	40	48	54	58	35	48	46	31	46	51	47	41
Advertising	40	63	61	62	33	50	51	36	42	49	59	45

Note(s) : Multiplier = increase in the UK's total employment over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

TABLE 4.5: UK DYNAMIC MULTIPLIERS FOR TAX REVENUES

	LO	SE	EE	SW	WM	EM	YH	NW	NE	WA	SC	NI
	(£ increase in tax revenues per £1 increase in export sales)											
Screen industry average	0.13	0.26	0.37	0.25	0.22	0.21	0.18	0.26	0.21	0.14	0.26	0.21

Note(s) : Multiplier = increase in the UK's income tax revenue over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

expected, in general, the scenarios in which the largest increase in employment occurred also saw the largest increase in tax revenues. On average, a £1 increase in final demand for the screen industries output boosted tax revenues by 20p. Of all of the regional scenarios, those for London and Wales yielded the smallest impact on tax revenues. In regions with relatively high average earnings, such as London, a larger proportion of the increase in income from employment would be taken as tax. However, in the London scenarios this effect was not sufficient to offset the relatively low impact on output and employment overall. The largest impact on tax revenues was for the East of England scenarios in which revenues were boosted by the relatively strong employment impact along with high average earnings in the region.

Note that these tax multiplier estimates are the outcome of a simple analysis; they measure only the boost to income taxes generated by the higher activity and employment from the scenarios described above. These estimates do not capture the wider impact of public spending on the screen industries and the effects on public finances, such as: the potential reductions in government transfers such as social security payments (because of lower unemployment); the potential 'crowding out' effect of public expenditure on private sector spending; the displacement effect as public expenditure is redirected away from other activities to the screen industries; and the effects of firms substituting one activity for a similar one to take advantage of public sector assistance.

4.4 Comparison With Other Industries and Studies

Comparison of the screen industries' multipliers with those for other UK industries

CE's MDM model provides a common analytical framework for comparing the screen industries with other UK industries. MDM was used to estimate multipliers for a selection of other UK industries by simulating a boost to exports of each industry in 2003 and calculating the total impact on value added output during the following four years.

The multipliers estimated for the screen industries (film, TV, corporate video and advertising) averaged around 2.0, ie for the screen industries a £1 increase in export demand boosted value added in the whole UK economy by £2. This average multiplier lies in the range of the multipliers estimated for other industries (see Table 4.6). The multipliers for technology-related services, communications and computing services, are around 2, close to the average multiplier for the screen industries; the multipliers for tourism-related services, hotels & catering and retailing, are a little higher at 2½.

The screen industries form part of the larger MDM industry miscellaneous services; the screen industries accounted for 20% of miscellaneous services in 2003. At 1.6 the multiplier estimated for the whole of the miscellaneous services industry was lower than for the screen industries component. Other activities within the miscellaneous services industry include other arts, media and sporting activities, and personal services such as hairdressing.

Comparison of the estimated multipliers with those from other studies

The literature review presented in Chapter 2 found that there is a large and extensive range of previous work in the area of economic impact analysis of sectors with similar characteristics to the screen industries or requiring a similar form of analysis. However, because these studies differ in methodology, in the type of data used and in the definition of the form in which multiplier impact is measured, there are no exact and corresponding studies that can be readily used to directly compare with those obtained in the current study.

Official sources provide guidance on multiplier analysis. Both H M Treasury's 'Green Book' (2003) and ODPM's 'The 3Rs guidance' (2004) provide valuable guidelines on multiplier analysis, and on the interpretation and application of multipliers. However, neither publication prescribes what would be an acceptable range of values for multiplier estimates.

In the 'Additionality Guide' (2004) English Partnerships draws on DETR guidance to provide 'ready reckoner' values for multipliers. These 'ready reckoner' values are recommended for analysis where empirical measures are absent; it is proposed that multiplier effects within a labour market at a sub-regional level could be supported by previous empirical work as ranging from 1.05 to 1.15 with 1.10 as a suggested value for usual case applications (see Table 4.7). These are though local multipliers and are therefore smaller than regional figures. The medium case guidance for regions suggested by English Partnerships is a composite multiplier of 1.50. In the analysis presented in this report, our results are empirically based and expressed at regional and national

TABLE 4.6: UK DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

Industry	SIC03 definition	UK multiplier
Miscellaneous services	91-99	1.6
Hotels & catering	55	2.4
Retailing	52	2.6
Distribution	50, 51	1.3
Communications	64	1.9
Computing services	72	2.2
Screen industries	92.11, 92.12, 92.13, 92.20/2	2.0

Note(s) : Multiplier = increase in the UK's entire value added over four years per unit increase in UK export sales by firms in the specified industry.

Source(s) : Cambridge Econometrics.

TABLE 4.7: MULTIPLIER EFFECTS FROM THE ENGLISH PARTNERSHIPS ADDITIONALITY GUIDE

Level	Description	Composite multiplier (neighbourhood level)	Composite multiplier (regional level)
Low	Limited local supply linkages and induced or income effects	1.05	1.30
Medium	Average linkages. The majority of projects will be in this category.	1.10	1.50
High	Strong local supply linkages and income or induced effects.	1.15	1.70

Source(s) : 'Additionality Guide', English Partnerships.

levels. At regional level, our estimates range through 0.8 to 1.2, ie on the low side of the regional range recommended by English Partnerships.

4.5 References

English Partnerships (2004) *Additionality Guide: A Standard Approach to Assessing the Additional Impact of Projects*, English Partnerships.

H M Treasury (2003) *The Green Book: Appraisal and Evaluation in Central Government*, The Stationery Office.

Interdepartmental Group on the EGRUP Review (2004) *Assessing the impacts of spatial interventions: regeneration, renewal and regional development - 'The 3Rs guidance',* Office of the Deputy Prime Minister.

5 INTERACTIVE MEDIA INDUSTRY

The interactive media industry is a rapidly developing set of activities, the boundaries of which are not yet clearly defined; this means that we cannot use the same methodologies to quantify economic activity as we applied to the other screen industries in this study. The industry can not be easily defined within the existing SIC. The lack of a clear definition means that we do not know the full population of firms in the industry and so we cannot conduct a fully stratified sample survey.

This chapter presents the findings of a scoping study which attempts to provide a broad estimate of the size of the industry and to quantify the contribution it makes toáthe production of audiovisual content. We also conduct a comparison of the interactive media industry with the computer services industry to identify whether they display similar multiplier effects. We hope this research and analysis will contribute to the development of more detailed methodologies for defining and quantifying this industry.

5.1 Literature Review

Department for Culture, Media and Sport Evidence Toolkit (DET)

Formerly known as the Regional Cultural Data Framework, the Evidence Toolkit (DET) developed by the Department for Culture, Media and Sport (DCMS) is "an online interactive web based toolkit for accessing and using information about the Cultural Sector" (http://www.culture.gov.uk/global/research/det/default.htm). Its relevance in the context of this study is that it provides a standard conceptual and technical definition of activities in the cultural sector.

For each cultural "domain" (of which seven are identified – Audiovisual, Books and Press, Heritage, Performance, Sport, Tourism, and the Visual Arts) the DET identifies a "cultural cycle" (analogous to a value chain) of six processes: creation, making, dissemination, exhibition/reception, archiving/preservation and education/ understanding.

The audiovisual domain encompasses interactive media, which covers leisure software, digital art and new media activities. According to DET, this classification is consistent with Skillset's approach.

The DET identifies the intersection of each cultural domain by means of the Standard Industrial Classification (SIC). Interactive media is contained within the following SIC codes as indicated in Table 5.1.

The new SIC 2003 four digit codes 72.21 and 72.22 cover the creation and dissemination of software. We assume that interactive media is a subset of these activities (except for interactive TV applications which are captured in 92.20/2). 72.21 and 72.22 also cover other, substantial activities unrelated to the cultural domain (business processes software publishing and supply, for example, which is a much larger activity). The DET acknowledges that further work is needed to capture effectively those companies in the interactive media sector. The separate coding of the functions identified as needing

TABLE 5.1: INTERACTIVE MEDIA INDUSTRY STANDARD INDUSTRIAL CODES

SIC Code	Definition	Cultural Cycle
72.21	Software publishing	Dissemination
72.22	Other software consultancy and supply	Creation
92.20/2	Television activities	Creation
NFW	Leisure software design/development	Creation
NFW	Production of new or multi-media	Making
NFW	Publishing of leisure software	Dissemination

Note(s) : NFW = "Needs further work".
Source(s) : Department for Culture, Media and Sport.

further work (NFW) would be a significant step towards a common definition of the interactive media sector.

Hence the DET locates interactive media as a subset of 72.2, except for interactive TV, which is a subset of 92.20/2.

The Sector Skills Agreement for Interactive Media (Interim draft) January 2005

The Skillset agreement for interactive media has been published in draft form. It provides a definition of the interactive media industry and an estimate of the number of people employed in it, together with a breakdown of employment by region. This part of the report is highly relevant to the current study and has been used as the basis for a valuation of the sector.

The report then assesses the skills required by practitioners in the interactive media workforce and identifies skills gaps (where individuals in the existing workforce have lower skill levels than are necessary to meet business or industry objectives) and skills shortages (a lack of adequately skilled individuals in key roles in the labour market). The report discusses future trends in the industry and their implications for skills demand. It concludes by setting a strategy for meeting the skills needs of the interactive industry and describing the actions required to achieve the strategy, and it gives a timetable for implementation. Once finalised, the Sector Skills Agreement for Interactive Media will be agreed with the Department for Culture, Media and Sport.

Regional reports

The report for One NorthEast by the Centre for Urban and Regional Development Studies (CURDS) at the University of Newcastle Upon Tyne *Culture Cluster Mapping and Analysis* (2001) examines the computer and video games development cluster in the North East. According to the report, the leading games developers in the sector are: Acclaim Studios on Teesside (with 70+ employees, part of the US-based Acclaim group), Atomic Planet (formed by a break-away team from Acclaim in July 2000), Reflections (owned by French publisher, Infogrammes), Eutechnyx (based in Gateshead, over 40 employees), and Pitbull Syndicate (based in County Durham with over 30 employees).

The cluster is thought to reflect the capacity of the higher education sector to produce adequate numbers of programmers and graphic artists for the industry. Teesside University, in particular has been active in this respect, although relevant courses are also run at Sunderland.

Identified weaknesses in the NE computer and video games cluster include the absence of commercial linkages between companies in the cluster, with relationships mainly oriented outside the region to (mainly global) publishers. The cluster also appears to have limited linkages with other creative industries in the region.

The report (also for One NorthEast) *Digital Technologies and Digital Media Cluster Mapping & Analysis*, prepared by GHK in association with SQW and Paul Owens, sets out to quantify the digital media cluster in the North East, to assess its strengths and weaknesses, and provide the basis for interventions to develop the cluster.

The report notes that many firms in the digital cluster are 'invisible' because they are too small to be VAT registered; it also rehearses the difficulties of using the SIC codes as a basis for estimating activity in the interactive media industry. The report notes that there are approximately 500 entries in the Digital Media Network (now renamed Codeworks) database of companies engaged in the provision of digital media and ICT (information and communications technology) products and services. Over half of these firms are characterised as small (less than five employees). Only six have more than 100 employees – the two largest being Sage (1,400 employees) and QSP (200 employees).

The report by Pembridge Partnership for Northern Film and Media (2004) *The Moving Image Sector in the North East of England: Mapping, Benchmarking and Economic Impact Report* estimates that there are eight games companies in the region, all of which are games developers, with average turnover of £1.06m and gross profit of £0.70m (30 per cent). The industry in the North East has revenues of £8.48m per annum, or approximately 0.4 per cent of UK games industry revenues, and employs 119 people (less than the estimates from the CURDS report above). The report notes that relatively long project cycles and the importance of know-how in the games development sector mean that the workforce is largely permanent (only eight of the 119 employees are freelancers).

SEEDA commissioned a report *Getting a measure of the games development business: strategies to meet global challenges* (2003) to identify the strengths and weaknesses of the electronic games development sector in the South East and identify gaps where support could be provided. Possible sources of support include SEEDA, other local and national government agencies, businesses and networking organisations such as Wired Sussex. The report states that there are 15 electronic games developers in the South East region in three clusters – Oxford (five companies), Brighton (four) and Guildford (six).

The report did not seek detailed financial data; the total value of sales of the 15 businesses is put at less than £30m – something less than 15% – of the UK's total electronic games development sector. Employment grew from 423 in 1993 to 3,017 in 2003. As the report notes, however, failed businesses were not interviewed so this positive growth cannot be extrapolated to the industry as a whole. Labour costs accounted for between 60 and 80 percent of the total costs of the 15 companies surveyed, with median salaries of between £25K and £30K.

The report by Pembridge Partners for Business Link for London *Mapping the Games sector in London Report on Exercise 1 – Mapping the Industry* (2003) estimates that the games industry in London comprises 50-70 companies, the majority of which are independent small or medium-size enterprises. Around 80% of firms are games developers, while an estimated 4% are publishers and an estimated 5% provide facilities services to the sector such as music, art and software tools. The rest are distributors, retailers and suppliers of peripherals. The study suggests a low reliance on freelance staff, with 92 per cent of the workforce being permanent employees.

The report by Burns Owens Partnership for South West Screen (2004) *Exploratory Statistical Study of the Digital Media Sector in the South West* uses the Yell online directory to identify the population of digital media companies in the South West region. This approach enables companies offering internet web design, multimedia services and mobile phone texts and ringtones to be identified. The report is based on a survey of companies in these sub-sectors (ie it excludes the electronic games sector).

The report estimates that there were 3,236 paid employees in digital media in the South West accounting for 6.7 per cent of the UK's digital media sector (this is substantially higher than estimates from the Skillset survey above). In 2002, 73 per cent of employment was in small companies with less than five employees.

The turnover of the digital media sector in the South West is estimated at £289m in 2001, with gross value added of £151m and capital investment of £8m (2.6 per cent of turnover).

Games industry

A report on the games industry by Spectrum Strategy for the Department of Trade and Industry (2002) estimates that the UK games industry employed more than 20,000 people in 2001, of which 6,000 were in the games development sector and 1,500 in publishing (the remainder were in the retail sector and in functions such as manufacturing). The report quotes figures from Screen Digest that the UK had a positive balance of trade of £186m in leisure software in 2000.

The report identifies over 270 studios in the development sector employing on average about 22 employees. The eleven largest developers (companies like Infogrammes and Electronic Arts) employed over 100 people each. The report estimates that the UK development sector had revenues of £456m in 2001. The UK games publishing sector is concentrated in eight companies with combined earnings estimated at £254m in 2001.

5.2 Estimation of the Size of Interactive Media Industry

The Skillset agreement for interactive media has been published in draft form. The number of people employed (43,570 in June 2004) is quoted from the Skillset annual employment census. This figure is broken down by region and into three interactive media sectors - web-based activities (broadly speaking, web sites, intranets and extranets), electronic games, and offline media (multimedia CD-ROMs, DVDs, etc) as shown in Tables 5.2 and 5.3.

As Table 5.2 shows, the Skillset estimate of people employed in the industry in June 2004 (43,570) is greater than the 40,953 people employed in the TV industry (our 2002

TABLE 5.2: PERMANENT EMPLOYMENT IN THE INTERACTIVE MEDIA INDUSTRY, 2004

	Interactive Media Sector			Total permanent employment
	Web	Electronic games	Offline media	
Employees	27,020	8,360	8,190	43,570

Source(s) : Skillset.

estimate from the sample data). The Skillset census may somewhat under-estimate employment in the interactive media industry given that it does not gather information from companies whose primary activity is not media-related.

Interactive TV is also excluded (activities such as interactive elements to accompany linear television programmes which would normally be considered part of the interactive media industry). However, we surveyed enterprises in the interactive TV 'space' as part of our survey of the TV industry and so the turnover generated by these activities is captured in that part of our work.

Table 5.3 shows Skillset's breakdown of the regional spread of employment in the industry. Combining Tables 5.2 and 5.3 gives a regional breakdown of permanent

TABLE 5.3: REGIONAL BREAKDOWN OF EMPLOYMENT IN THE INTERACTIVE MEDIA INDUSTRY, 2004

	Interactive Media Sector		
	Web	Electronic games	Offline media
London	60.0%	16.0%	25.0%
South East	19.0%	38.0%	33.0%
East of England	0.0%	2.0%	5.0%
South West	2.0%	3.0%	4.0%
West Midlands	1.0%	12.0%	2.0%
East Midlands	7.0%	0.5%	4.0%
Yorkshire & the Humber	1.0%	10.0%	2.0%
North West	1.0%	11.0%	2.0%
North East	3.0%	5.0%	6.0%
Wales	3.0%	1.0%	13.0%
Scotland	2.0%	1.0%	3.0%
Northern Ireland	1.0%	0.5%	1.0%
Total UK	100.0%	100.0%	100.0%

Source(s) : Skillset.

employment (Table 5.4). It shows that, between them, London and the South East account for 70 per cent of employment in the industry. Wales and the North East have employment shares proportionate to their share of the UK population; all other regions have a smaller share of employment than their populations would suggest. The East, in particular, is highly under-represented, with nine per cent of the UK's population but only one per cent of interactive industry jobs.

To create estimates of the interactive industry we have used ratios (average turnover per employee, for example) calculated from the data assembled for the other screen industries. The post-production sector was used on the basis that it is closest to the interactive industry in terms of functions and structure. This methodology leads to an estimated turnover of £8.6bn in 2004, which is 2.5 times larger than the film industry (estimated at £3.5bn in 2002). Table 5.5 gives these estimates.

5.3 Reconciliation of Data for the North East and the South East with Findings from the Literature Review

The Skillset estimates of employment in Table 5.4 are consistent with the estimate of the size of the games industry cluster in the North East by CURDS (2001) but seem to underestimate total employment in offline media – where, according to the report by GHK for One NorthEast (2001), there were 1,600 employees in the North East-based software companies, Sage and QSP. We assume these companies are excluded from the Skillset survey because they are not primarily engaged in media-related activities.

TABLE 5.4: REGIONAL EMPLOYMENT IN THE INTERACTIVE MEDIA INDUSTRY, 2004

	Interactive Media Sector			Total
	Web	Electronic games	Offline media	
London	16,212	1,338	2,048	19,597
South East	5,134	3,177	2,703	11,013
East of England	0	167	410	577
South West	540	251	328	1,119
West Midlands	270	1,003	164	1,437
East Midlands	1,891	42	328	2,261
Yorkshire & the Humber	270	836	164	1,270
North West	270	920	164	1,354
North East	811	418	491	1,720
Wales	811	84	1,065	1,959
Scotland	540	84	246	870
Northern Ireland	270	42	82	394
Total UK	27,020	8,360	8,190	43,570

Source(s) : Skillset, ABI and Optima population database and survey data.

TABLE 5.5: ESTIMATE OF KEY DIMENSIONS OF THE INTERACTIVE MEDIA INDUSTRY BY REGION

Total	Number of enterprises	Total turnover excluding VAT (£'000)	Approximate gross value added (£'000)	Total purchases of goods and services (£'000)	Total net capital expenditure (£'000)	Total employment costs (£'000)
London	2,157	3,866,218	1,545,045	2,284,606	125,781	654,823
South East	1,212	2,172,761	868,294	1,283,917	70,687	368,002
East of England	63	113,774	45,467	67,231	3,701	19,270
South West	123	220,723	88,207	130,428	7,181	37,384
West Midlands	158	283,538	113,310	167,547	9,224	48,023
East Midlands	249	446,022	178,243	263,561	14,511	75,543
Yorkshire & the Humber	140	250,552	100,127	148,055	8,151	42,436
North West	149	267,045	106,718	157,801	8,688	45,230
North East	189	339,331	135,606	200,515	11,040	57,473
Wales	216	386,462	154,441	228,366	12,573	65,455
Scotland	96	171,579	68,568	101,389	5,582	29,060
Northern Ireland	43	77,711	31,055	45,920	2,528	13,162
Total UK	4,795	8,595,717	3,435,080	5,079,337	279,647	1,455,861

Source(s) : Skillset, ABI and Optima population database and survey data.

The employment in the games industry in the South East is consistent with SEEDA's estimate of 3,017 employees in 2003, implying an increase of about 160 employees (5.3 per cent) to 2004.

5.4 Audiovisual Content Production

The Skillset estimate employs a very wide definition of the interactive media industry which covers technology, design, content creation and maintenance. In order to refine this estimate to capture just that part of the interactive media industry that is audiovisual content creation, we asked a question in our survey of interactive media companies about the proportion of turnover from sales that was earned from the production of audiovisual content (which we defined as moving pictures - either real, animated or computer generated - with accompanying soundtrack. So, for example, we include electronic games as audiovisual content but not static web pages). From this question we found that 20.2 per cent of the turnover of companies in the interactive media industry is derived from audiovisual content. This equates to £1.74bn of the total turnover of £8.6bn in the interactive media industry. This finding suggests that audiovisual content production in the interactive media industry is almost as large as the creative spend on the production of commercials (£1.9bn) and is almost exactly half the turnover of the film industry (£3.5bn).

5.5 Reconciliation with ABI Data

From the Department for Culture, Media and Sport Evidence Toolkit (DET) (see Section 5.1) it is apparent that the interactive media industry is a subset of SIC code 72.2 (software consultancy and supply). The exception is Interactive TV, which is a subset of 92.20/2 (television activities).

In keeping with the DET and Skillset methodologies, this study treats interactive TV as part of the television industry and not as part of the interactive media industry.

Hence, for the purpose of reconciling our estimates for the interactive media industry with the ABI data, we assume that the £8.6bn industry turnover is a subset of SIC 72.2, a sector consisting of 62,210 enterprises with turnover of £28.1bn in 2002. Therefore, according to our estimates, the interactive media industry contains eight per cent of the enterprises and 31 per cent of the turnover of the broader SIC 72.2 category.

A refinement to the standard industrial classifications introduced in 2003 separates SIC 72.2 into two categories – 72.21 (Software publishing) and 72.22 (Other software consultancy and supply). In 2003 the turnover in these sectors was £1.2bn and £32.6bn, respectively. The DET identifies 72.21 as dissemination and 72.22 as creation (this is somewhat confusing, given that creation comes before dissemination in the industry value chain).

We have insufficient information on which to split further our estimation of 72.2 into the two categories of content creation and dissemination. However, we can state with some confidence that the 20.2 per cent of the interactive media industry that is "audiovisual content production" belongs in 72.22 - ie the £1.74bn identified above.

5.6 Interactive Media Industry Survey

Overview

The objective of the survey of the interactive media industry was to collect data sufficient to permit a comparison of the interactive media industry with the broader computer related activities division (Standard Industrial Classification code 72) of which it is a part. If, using a ratio analysis, we find that the profile of the interactive media industry is similar to that of the broader SIC 72 division, we can assume that they will exhibit similar multiplier effects.

Data were collected from a sample of interactive media companies drawn from two regions – the North East and the South East – using a simple questionnaire. This section describes the sample methodology and the outputs from the survey, on which the ratio analysis is based.

TABLE 5.6: ESTIMATE OF KEY DIMENSIONS OF THE INTERACTIVE MEDIA INDUSTRY BY SECTOR

Total	Number of enterprises	Total turnover excluding VAT (£'000)	Approximate gross value added (£'000)	Total purchases of goods and services (£'000)	Total net capital expenditure (£'000)	Total employment costs (£'000)
Web and Internet	2,974	5,330,647	2,130,270	3,149,959	173,423	902,855
Electronic Games	920	1,649,305	659,106	974,599	53,657	279,344
Offline Multimedia	901	1,615,766	645,704	954,780	52,566	273,663
Total UK	4,795	8,595,717	3,435,080	5,079,337	279,647	1,455,861

Source(s) : Skillset, ABI and Optima population database and survey data.

Sample selection

It is not easy to define the interactive media industry in terms of the Standard Industrial Classification codes and, although the revisions introduced under SIC2003 are an improvement, comprehensive changes will be necessary to properly disaggregate this rapidly expanding sector in the future[1]. As commercially available databases (like Experian) rely heavily on the SIC system, there are currently no data sources available that allow us to isolate the relevant population of companies in the interactive media industry for comprehensive sampling at regional level.

Instead, to obtain a representative sample of the interactive media industry we used internet directories associated with new media clusters in each region: the membership directory maintained by Wired Sussex for the South East, and the Codeworks Connect membership directory maintained by Codeworks for the North East.

Wired Sussex is the business development and networking agency for companies operating in the digital media and technology sectors in Sussex, with more than 1,000 registered members. Launched in 1997, it is a subsidiary of Sussex Enterprise.

Codeworks Connect is the trade organisation for digital businesses in the North East; its membership base covers the spectrum of digital media and technology industries in the region including software, web design and games development.

Because the directories produced by these agencies are the product of a natural self-selection process whereby companies identify themselves with a given market activity, we believe they represent the best way of identifying the firms associated with a new and rapidly evolving economic activity. We hope that by capturing the activities of companies in these clusters we have built up a good picture of the new media industry in these regions.

We approached a sample of 300 firms – 200 from the South East and 100 from the North East to reflect the population size of their respective new media industries. We used a systematic sampling methodology to select sample firms from the relevant directories to

1 It should be noted that the regional ABI data for 2003 using the new SIC2003 classifications will not be available until September 2005.

TABLE 5.7: POINT ESTIMATES CALCULATED FROM QUESTIONNAIRE RETURNS

Turnover from sales

- Sales to industry
- Retail sales
- Other sales
- Total turnover from sales
- Proportion of turnover from sales that was earned from the production of audiovisual content

Proportion of turnover from sales to:

- Own region
- Other UK regions
- Overseas

Employment and wages

- Number of full-time employees
- Number of part-time employees
- Total number of employees
- Wage bill

Expenditure

- Purchases of goods, materials and services
- Capital expenditure
- Interest charges and loan repayments
- Other
- Total expenditure

Proportion of purchases of goods, materials and services from:

- Own regions
- Other UK regions
- Overseas

reach the required number of sample draws. This generally produces the same precision as a simple random sample and is well suited to the data at hand.[2]

Using this method we obtained 70 filled questionnaires - giving a response rate of 21 per cent in the North East (21 questionnaires returned) and 24.5 per cent in the South East; (49 questionnaires returned). Using the information from the completed questionnaires we have calculated a point estimate for each question in the questionnaire (see Table 5.7). Using these statistics Cambridge Econometrics have compared the interactive media industry with the other screen industries and the computing services industry, SIC code 72.

2 Systemic sampling is suspect when the data being sampled may have systemic fluctuations, as would be the case if we tried to establish average traffic density on the M25 by counting the numbers of cars on a given stretch at 5.00 pm every Friday for a year.

5.7 Assessment of Multipliers

In this section, key statistics calculated from the survey of the interactive media industry are compared with those for the other screen industries and for the computing services industry (Standard Industrial Classification 2003 Division 72). The statistics for the other screen industries have been calculated using the results of the survey of the film, TV, corporate video and advertising industries; the statistics for the computing services industry have been calculated using data drawn from Cambridge Econometrics MDM model.

The comparison of key statistics draws out similarities and differences in order to assess how the multipliers for the interactive media industry might compare to those for the other industries.

Multipliers for computing services and the screen industries are around 2.0 - 2.2

The MDM model was used to estimate a multiplier for the computing services industry by simulating a boost to exports of computing services in 2003 and calculating the total impact on value added output during the following four years. The estimated multiplier (see Table 5.8) showed that a £1 increase in export demand boosted value added output in the whole UK economy by £2.20. The multipliers estimated for the screen industries (film, TV, corporate video and advertising) averaged around 2.0 (see Chapter 4 Findings of the Multiplier Analysis), ie for the screen industries a £1 increase in export demand boosted value added in the whole UK economy by £2.00.

The discussion of the multipliers presented in Chapter 4 highlighted the key factors that determine the scale of the estimated multipliers. One factor is the proportion of inputs that are imported from outside of the UK; the greater the proportion of inputs imported from outside of the UK, the lower will be the boost to the UK economy.

TABLE 5.8: ASSESSMENT OF MULTIPLIERS

	Average wage (£)	Export share (%)[1]	Import share (%)[2]	UK value added output multiplier[3]
Computer services	46,400	7.4	4.6	2.2
Interactive media	24,700	8.1	0.6	N/A
Film	15,400	8.5	3.8	2.0
TV	37,700	8.0	3.9	2.0
Corporate video	32,500	8.1	3.9	2.0
Advertising	32,500	8.1	3.9	2.0

Note(s) : 1 Export share of total sales.
2 Import share of UK demand.
3 £ increase in UK value added output (over four years) per £1 increase in export sales.

Source(s) : Cambridge Econometrics and Optima.

The import ratio for the interactive media industry is relatively low

Table 5.8 shows the import ratios (the import share of UK demand) for the different industries. Of the industries compared, computing services has the highest import ratio of 4½%. This ratio is low compared to manufacturing industries, in which it is not uncommon for more than half of demand to be satisfied by imports, but compared to less tradeable services, such as retailing, it is relatively high. The import ratios of the screen industries average 4% but the estimated import ratio for the interactive media industry is relatively low at less than 1%. This would indicate that, all other things being equal, the interactive media industry would have a larger UK multiplier than the other screen industries and the average for computing services.

The export shares (of total sales) for all of the industries shown in Table 5.8 are around 7½-8½% indicating that all the industries depend upon demand from outside of the UK to a similar extent.

The average wage for the interactive media industry is relatively low

Higher output generates higher employment and incomes, which boost household expenditure, thereby adding to total demand, and so on. The extent of this impact will depend upon the scale of the boost to household incomes and how households respond to higher incomes. Table 5.8 shows that at around £24,700 the average wage in the interactive media industry is lower than that in TV, corporate video and advertising, and stands at just over one-half of the average wage in computing services. Only the film industry has a lower average wage, partly because of its dependence upon part-time employment in distribution and exhibition.

The relatively low average wage in the interactive media industry indicates that if higher demand were to increase employment rather than productivity, then the boost to income (per worker) would be relatively low suggesting that the multiplier might be smaller than for the other industries. The average wage indicates the marginal cost of employing an additional worker and may also give an indication of the relative productivity of the industry. Hence, because the marginal cost of employing an additional worker in the interactive media industry is relatively low (perhaps because productivity is also relatively low) then when output is increased, relatively more jobs would be created than in the case of the other industries, which might offset the dampening effect of the low income per worker.

The findings above draw out the similarities and differences between the interactive media industry, the other screen industries and the computing services industry. The lower import share of the interactive media industry points to a higher multiplier than for the computing services industry, but the low average wage could offset this upward effect.

However, an estimate of the multiplier for the UK interactive media industry based upon these results would not be robust. The analysis has been based on results of a survey of interactive media activity in only two regions. Had the survey included other regions, such as London where activity of the industry is concentrated, then the findings of this analysis might have differed greatly.

5.8 References

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6: CONCLUSIONS

This study has involved the estimation of a hybrid screen industry economic impact model, to reflect existing information about the UK economy and the information drawn from an extensive regional survey of the UK screen industries. This survey has been used to explore the size and inter-region dynamics of changes in the demand for screen industry products, ie economic multipliers.

The report reviews a large and extensive literature dealing with economic impact analysis of sectors with similar characteristics to the set of screen industries studied in this report. However, these studies differ in methodology, in the type of data used, and they range through different sectors and regions. All previous economic multiplier studies have been more limited in scope than the current study, often using full calibration methods rather than mixed survey approaches, and/or constraining themselves to just one spatial area of interest. However, the studies are broadly supportive of an approach that distinguishes full-accounting flow analysis as being the route to understanding interdependencies between consumption and production flows, and the studies express the benefits of articulating a detailed value-added chain. There are, however, no corresponding studies that can be readily used to directly compare results with those obtained in the current study. The report provides estimates of the size of all screen industry sectors but concentrates on impact analysis of the film, TV, corporate video and commercials value-added chain.

The survey work undertaken between May and November 2004, allowed the team to estimate a number of characteristics relating to the size and character of the four main screen industries value-added chain:

- Turnover accounts for close to £20bn in 2002, of which over two-thirds (£13.4bn) is TV-related, £3.5bn is film, and the rest (£2.8bn) is in commercials and corporate video.
- Over half of turnover (£10.5bn) is concentrated in production, about a quarter (£5.4bn) in distribution and exhibition, with the remaining approximately evenly distributed between post-production(£2.1bn) and pre-production (£1.7bn).
- two-thirds of sales to firms is accounted by London screen industries (£8.7bn) reinforcing the view of the dominant and specialised role of London, and reflecting the concentration of the headquarters of the UK's main broadcasters and of many of the major film and TV production companies and film distributors and exhibitors.
- By far the largest regional turnover outside of London is located in Scotland (£1.2bn). This reflects the strength of Scotland's indigenous TV activities, the volume of location production in Scotland, the expansion in BBC activities following Scottish devolution, and the presence of call centres of major TV platforms in Scottish towns.
- Across the range of regional specialisations is the notable specialisation of film in the South East, and TV-related activity in Scotland and Wales.

- Multi-sectoral working is wide-spread with close to 50% of firms operating in more than one sector, ranging from 35% of firms in the South East to 67% in Northern Ireland.
- 108,000 people are in permanent employment, of which almost 85,000 (78 per cent) were in full-time employment and the rest part-time. Over half of jobs are in the TV industry. Almost two-thirds of all permanent jobs are in London (71,500) with the South East (8,100) and Scotland (5,700) the next largest regional employment bases.
- Freelances are a substantial source of supply, with some 3.8m days of freelance services purchased by the screen industries in 2002.
- The industries purchased about £11bn of goods and services in addition to employment costs and freelance services.
- Gross corporate receipts were £4.7bn in 2002 and capital investment of close to £650m (3.3% of turnover) was made.

UK companies carried out location shoots worth £832m in 2002, of which £511m was for TV and £260m for films.

These results are in line with those obtained from other sources using the DCMS mapping.

The interactive media industry is a rapidly developing set of activities, the boundaries of which are not yet clearly defined. Skillset estimates employment of some 44,000 in the industry in 2004, 72% of which is located in the wider South East and which is estimated to be associated with £8.6bn of turnover.

An analysis of regional economic multipliers shows the effects of a one-off boost to final demand, in the form of an export boost, over four years in one region for each of the four screen industries of film, TV, corporate video and advertising.

The following results were obtained:

- The regional multipliers are highest in those regions with a strong representation of supporting services.
- The regional multipliers tend to be higher, when the region is relatively large, and there is a strong representation of screen-industry activities within the region, as notably for London
- Larger multipliers are associated with a strong representation of supporting industries within the region, both those industries that provide direct inputs to screen industry activities, and financial & business services, communications, publishing, food, construction and distribution, hotels & catering.
- London ranks highly for each of the characteristics which underpin large regional multipliers. There is so much screen industry activity concentrated in London that it far outstrips the UK average while in all other regions screen industry activity is below the UK average.
- A high proportion of the boost to final demand for each screen industry is satisfied by production within London rather than by imports from other regions

- In the South East the regional multipliers for each of the four screen industries are also greater than one. In the South East, the representation of the film industry is relatively high; it ranks second to London and is above the other regions by a high margin. The representation of corporate video and advertising is also relatively high in the South East. However, there is a relatively low concentration of TV activities. The regional multipliers are high because the South East is a large region, has relatively high concentrations of most screen industries and also has a high representation of supporting industries, especially financial & business services.
- The only other cases in which the regional multipliers are greater than one are for both TV and advertising in the East of England and for TV in the North West. Despite having relatively low concentrations of TV and advertising activities, the economic impact on the East of England is boosted because it is a relatively large region and has a high representation of supporting services such as financial & business services and communications.
- In the North West, the representation of TV activities is relatively low (despite the presence of Granada). However, the North West is the third-largest regional economy, and its representation of some supporting services, such as distribution, matches the national average.
- The regions with the smallest regional multipliers are Wales, Northern Ireland and the West Midlands. In Wales, there is a relatively high representation of TV activity, and also corporate video and advertising. In Northern Ireland TV activity is relatively well-represented. In the West Midlands, the concentration of screen industry activities is relatively low. However, in all three regions the dominant impact is that inputs for supporting goods and services are imported from other regions, especially London and the other regions in the south of England.
- The UK multipliers are smallest when the leakages from the UK economy are larger. In all cases the UK multipliers are higher than the regional multipliers as they capture the UK-wide effects of the increase in screen industry expenditure. The UK multipliers lie in the range 1.4-2.5 and so indicate that a £1 increase in final demand in the specified screen industry in that particular region boosts value added in the whole UK economy by £1.40-£2.50.
- The impact on the UK economy tends to be smaller the larger the leakages from the UK economy as the UK multipliers tend to be lower when there is a greater proportion of inputs to the increased activity imported from outside of the UK and the proportion of the increased income that is spent is lower.
- For film, the largest UK multipliers are for the South West, Wales and Scotland. In all these regions the proportion of the increased demand satisfied by imports from outside of the UK is relatively low. In addition, a relatively large proportion of the increase in incomes is spent reflecting low average earnings in these regions. Because the leakages from the UK are relatively low for the South West, Wales and Scotland the boost to the UK economy is relatively high.
- The lowest UK multipliers for the film scenarios are for Northern Ireland, London, the East and West Midlands. In Northern Ireland and London the largest proportion of increased inputs is imported from outside of the UK. In the case of Northern

Ireland the proportion of imports from outside of the UK is relatively high because Northern Ireland is a small economy and its location makes it more dependent upon non-UK producers for imported inputs.

- In the case of the TV scenarios, the largest UK multipliers are for the East of England, the South West and Yorkshire & the Humber, due to a relatively high propensity to spend from increases in incomes. The lowest multipliers are for the North East and Wales with lower propensities to spend.
- There was a mixed impact on employment in the regions following a boost to demand. In general, the scenarios in which the largest increase in value added output occurred also saw the largest increase in employment. The employment increase was below the average in the scenarios for which demand was boosted in London. In London, productivity (value added output per worker) is relatively high, indicating the higher-skill, higher value-added and less labour-intensive nature of activity in the region. Therefore, because productivity is relatively high, when output in the London screen industries was increased, relatively few new jobs were created.
- For each of the screen industry scenarios for London, around 15 jobs per £1m increase in demand were created within the region, thus a £200m increase in US film production would generate around 3,000 jobs in London. Around one-third to one-half of these jobs were in the London screen industries, with the rest of the London economy benefitting from the remaining increase in jobs as activity in other industries was boosted. The boost to employment spread across the other UK regions was similar in scale to that in London so that, for each of the screen industry scenarios for London, around 30-40 jobs per £1m increase in demand were created in the UK as a whole (this includes the impact in London).
- The East Midlands is most responsive in employment to the boost to demand because productivity (value added output per worker) is relatively low. Around 30 jobs per £1m increase in demand were created within the region, and 50-70 jobs in the UK as a whole (including the impact in East Midlands). There was a relatively high response of employment in the South East that may in part be due to a strong representation of film distribution and exhibition which is relatively labour-intensive and relies greatly on part-time employment.
- On average, tax revenues are boosted by 20p for every £1 increase in final demand. Of all of the regional scenarios, those for London and Wales yielded the smallest impact on tax revenues. In regions with relatively high average earnings, such as London, a larger proportion of the increase in income from employment would be taken as tax. However, in the London scenarios this effect was not sufficient to offset the relatively low impact on output and employment overall. The largest impact on tax revenues was for the East of England scenarios in which revenues were boosted by the relatively strong employment impact along with high average earnings in the region.

It is of interest to consider whether there are policy implications coming out of this study. The multipliers analysis provides the first empirically based account of the full range of effects associated with changes in external demand for each of the component sectors of

the UK screen industries. In particular it articulates the full economic effects within and between regions. It therefore provides a tool for informing policy discussions about how these industry links might better work in the future, and how regional boosts coming from the levers used by government to promote UK-based screen industry activity might generate better regional and national gains for the economy as a whole.

The policy implications need to be well thought through. For example if the objective is to get more output for the national economy, then that might suggest a policy of simply directing spending more to those sectors in those parts of the UK, such as in TV in Yorkshire and the Humber or advertising in the South East, where the national output multipliers are largest. But this would be potentially not the most advantageous use of the findings.

The regional multipliers show how the supply chains operate through all regions to transfer a demand shock in a progressive wave, with every region operating as an open economy. There is evidently a particular structural importance to the south of England. The largest impact of a simulation involving uniform boosts of final demand across all regions is that demand is disseminated through the value-added chain strongly back to the wider South East (WSE) economy. This is mainly focussed in London, and the immediately proximate parts of the South East and East of England. This suggests that for the WSE regions long-term policies designed to encourage investment in a 'deepening' of the screen industry linkages and thereby to boost the size of the national multipliers, may be better directed to enhancing the existing clusters of activities that strongly characterise the London and WSE. This would see less leakage of economic benefits outside the UK. These are strongly associated with specialisation in the WSE and enhanced links to finance and distribution.

For regions outside the WSE, the regional multipliers for the screen industries are generally small and rather below the average for other sectors in the rest of the UK economy. This suggests there is potential for indigenous development of screen industries capacity in these regional economies. The WSE economy and its specialist niches have perhaps the strongest case for supplying enhanced financial and distribution links, given the global character of screen industries competition in these areas. But there are important potential advantages from more joined up activities in the regions outside the WSE, mediated by improved links to the financial and distribution services offered by the WSE. There would be multiplier benefits if niche developments in the regions outside the WSE were broadened so as to increase the regional, and thereby, the national multipliers. Clustering of activities is likely to be a sensible way to achieve this in these regions. Clustering in turn will make a better use of the entrepreneurial, workforce, property and natural resource endowments of those regions. The point is that the multipliers revealed in this study may well reflect an existing supply chain structure that is still suboptimal and under-developed for effective global competition, even though specialist niches of the industry are successful in the global market.

Indeed the strongest case for intervention by government in the screen industries is provided by the presence of market failures keeping the UK industry too small and inhibiting stronger vertical links. There is also the concern about equity, in particular in terms of the government's overall objective to see competitive growth but balanced regional development.

There is a strong argument that the UK film industry produces benefits (cultural benefits, externalities, additionality) that, without aid, are likely to be under-provided by the current UK market. While this study has no direct evidence to offer on these aspects of suboptimality, it does provide some support for a concern about the relative lack of value-added 'capture' by the UK screen industries. If the observed spending flows from final demand for screen industries output in 2002 are symptomatic, then this suggests a departure point for a fuller enquiry at least into supply chains. There are relatively high economic leakages from the London economy to abroad, and this it seems is likely to be associated with the global competition faced by the UK screen industries. In this sense the suggestions that there is a lack of commercial structures for dealing with the exceptional risks of film production, imperfect information, barriers to entry into international distribution, and market domination are all in accordance with the evidence on scale and rather poor linkages coming out of this study. The relatively 'low' regional multipliers, certainly for those regions peripheral to the major centres in and around London, suggest that the scale of development needs increasing and more substantial vertical supply chains are required - to link production up the value chain to creative conception and financing, and to link down the value chain to distribution. This would be a sensible objective for a policy designed to both increase the level of activity, and to get better returns on that final demand that is attracted by government-backed initiatives.

The particular value of the current study is that it provides a clear picture of how any regionally directed spending or support arrangement would currently flow in its economic effects across the regions, but the study also facilitates an understanding of how changes in supply chains could change the economic benefits and contributions of the component screen industries to the national outcome. This is its particular value for policy.

APPENDIX A: MULTIPLIER ANALYSIS METHODOLOGY

A1 Introduction

This chapter describes the methodology used for the multiplier analysis undertaken for this project. The basis for the analysis was Cambridge Econometrics' Multisectoral Dynamic Model (MDM), a regionalised input-output model of the UK economy. The screen industry information gathered by the survey was used to construct the data required to disaggregate MDM further in order to incorporate in a consistent manner the screen industry sectors and their corresponding supply chain relationships. A series of scenarios were then designed and implemented to examine the regional multipliers for the screen industries. A free-standing software product was developed that delivers consistent multiplier analysis matching the outcome of MDM and that has the capacity to run in-house multiplier analysis of incremental changes.

A2 The Structure of MDM

MDM is a regionalised input-output model

MDM provides a fully integrated dynamic model of the UK economy and the Government Office Regions, Wales, Scotland and Northern Ireland, as distinct from modelling approaches that work by disaggregating given national totals and which require successive solution of a suite of models. MDM explains a region's output by identifying, for each industry, the sources of 'domestic' and external demand for its output, and the extent to which this demand is satisfied by 'imports'. It therefore distinguishes separately the impacts of all of the components of final demand (ie household spending, investment, government consumption, changes in inventories and exports) at the regional level. MDM operates at a 49-industry level of disaggregation, allowing detailed differences in regional industrial structure to inform projections.

The model has been developed further to distinguish the screen industries

For this project MDM has been disaggregated further to provide the equivalent analysis for the 16 screen industries. The requirements of MDM drove the design of the questionnaire for the screen industries survey. This survey was used to gather additional data, required both to separate the screen industries from the other industries currently modelled in MDM, and to populate the sector accounts for these industries. It is the MDM accounts and modelling framework that allow information on sales and purchases coming from the screen industries survey to be incorporated into a full economic multiplier analysis. This framework allows one to place these industries into context with other industries' intermediate and final demands for goods and services. Chart A.1: The Core Input-Output Structure shows the formal flows accounting framework that establishes input-output accounts and that allows for a symmetric and integrated treatment of the economic activities undertaken by all sectors of the UK economy. Intermediate demand is identified in the input-output table in which the number of rows and the number of columns both correspond to the number of existing MDM sectors plus

the screen industries. Each of the components of final demand is distinguished for all of these sectors, as are imports and value added.

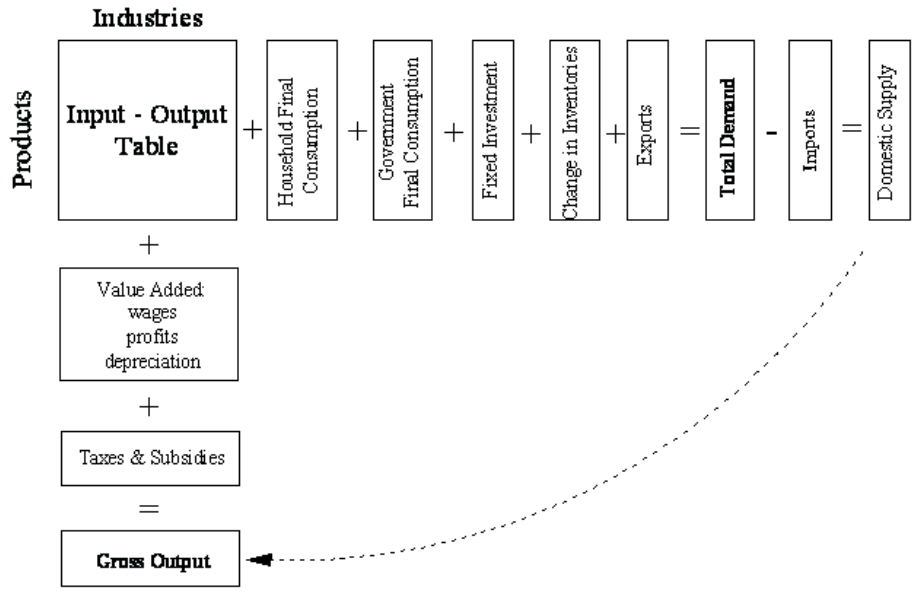
The advantages of our approach to modelling

The consistent treatment of all economic activities across the regions of the UK is an important element in MDM and in the full impact analysis of the screen industries. The approach used in MDM presents a distinct advantage over methods where multipliers have been established based on partial information, or extrapolation from the results of studies in other areas. Since the underlying model is a dynamic one it deals with the criticisms directed against other multiplier studies in that it handles both adjustments and interdependencies, for example those between household income and consumption. It achieves some of this by using higher-level data analysis and then calibration. For example, underlying the analysis of regional input-output relationships is the assumption that each region of the UK has similar technology for each sector, so that it is regional sector specialisation rather than regional technology differences that drives trade flows.

The advantages of our approach to modelling are:

- improved economic explanation
  - Regional output responds to changes in regional final demand. Thus, for example, the link between a slump in consumer spending in the South East and output in the same region, or other regions, is explicitly identified.
- Regional Accounts
  - The treatment allows the calculation of full regional accounting balances for commodity supply and demand, exactly corresponding to the balances for the whole UK. These balances cover inter-regional trade and an allocation of the UK commodity imbalances across the regions. They are in constant and in current prices, under the assumption that annual changes in prices for each

CHART A1: THE CORE INPUT-OUTPUT STRUCTURE



commodity are the same for all the regions. These commodity balances provide an important consistency check on any forecasts of regional output and the components of regional final demand.

- modelling regional markets
  - The approach allows full feedback from the regional economies to the UK economy. This facility is especially important in modelling those areas of economic life where markets are restricted by costs of travel or other costs associated with distance. For example, it is clear from the data that there are distinct regional differences in patterns of saving and consumption; the approach allows total consumption by region to be estimated and solved and UK consumers' expenditure to be formed as the sum of the regional expenditures. Another example is in the operations of the labour market which tend to be restricted to travel-to-work areas; here it has been possible to estimate regional employment and wage-rate equations to reflect different conditions in each of the regional labour markets. UK employment and the UK rate of wage inflation can then be found from the regional rates.

- distance and location effects
  - In the regionalised MDM, distance and location have three main influences.

1 Economic distance determines the regional export activity indices, such that the closer one region is to another in economic distance, the more its domestic demand affects the other region's exports.

2 For certain location-based activities, such as transport and distribution, the location of the infrastructure in the form of transport links and warehousing determines the regional supply.

3 The location of large new investment projects, eg tidal barrages, is introduced directly into the regional investment projections.

- use of regional information
  - It is much easier to incorporate partial and incomplete information into a fully specified economic model than into a reduced-form model. For example, estimates are available for costs and impacts of infrastructure projects such as the Channel Tunnel rail link or the Second Severn Crossing. These will have strong regional effects. If investment is fully specified in the model, such exogenous increases can be introduced explicitly into the forecast. Similarly, estimates of the local multiplier effects of the Toyota car plant in Derbyshire can be directly implemented in the model.

- inter-industry links
  - One of the great strengths of input-output models is their simulation of inter-industry links, allowing the calculation of industrial multiplier effects. These multipliers show the effects on the industrial structure of changes in exogenous variables, or in behaviour, for example an increase in the propensity to save in one particular region. They show, under simplifying assumptions, how extra demand is transmitted from one industry to another - for example the large increases in output of cars from the Nissan plant in Sunderland will have effects on suppliers of parts, and in turn effects on steel and glass production and imports.

Calibrating intermediate demands

To establish inter-industry flows in the model, the UK fully balanced input-output tables for 1975, 1979, 1985, 1990 and 1995 are interpolated and used for all the regions. The coefficients are calculated as inputs of commodities from whatever source (including imports) per unit of gross industrial output; they are therefore applicable to the regional economies on the assumption that the regional technology and mix are the same as those for the UK for each industry.

Calibrating final demands

The demand for a region's exports of a commodity is related to domestic demand for the commodity in all the UK regions, weighted by their economic distance from the region in question, and to activity in UK export markets as measured by UK exports, again weighted by economic distance, this time by the distance of the region from the main UK export markets for the commodity. The economic distance variable is normalised with a weight of 1 being given to activity in the home region; the weights for the other regions are inversely proportional to the economic distances of the other regions from the exporting region.

Total household spending by region is derived from consumption functions estimated from time-series data. These equations relate consumption to regional household disposable income, wealth and demographic characteristics. The regional totals are disaggregated into the 51 spending categories adopted nationally in MDM and the UK National Accounts. In dividing the total spending, the approach makes the most of the disaggregated data on household expenditure available by region from the Family Expenditure Survey. A set of cointegrating equations, viz a long-term equation and a dynamic error-correction equation, are estimated for each of 51 categories for each region. Explanatory variables in both the dynamic and long-term regional cointegrating equations include total regional spending, the implicit (UK) price deflator of the spending category relative to the overall (UK) price deflator for household expenditure, and some demographic characteristics of the region. In the long run a positive relationship is imposed between spending by disaggregated category and total spending. Restrictions are also imposed such that movements in relative prices result in an increase in spending on the relatively cheaper categories of expenditure. However, the data are allowed to determine the size of the relative elasticities in each region. Demographic characteristics are modelled by the inclusion of the proportions of pensioners and of children in the total population of a region.

Government Expenditure is treated as exogenous, being calculated by applying regional shares to UK totals by the five functional categories shown in the ONS's National Accounts. Regional investment by investing industry is determined in the model by regional industrial output, and UK investment in total by the industry. This treatment follows the equations in MDM for national investment. In order to find the demands on the industries supplying the investment goods, these investments have to be converted using UK converters and assuming that each region's asset structures for each industry correspond to those of the UK. Inventory levels are assumed to be allocated across the regions in the same proportions as output, and the change in inventories is calculated from these levels.

Employment is treated as a demand for labour derived from the regional demand for goods and services. Regional employment equations are estimated relating industrial employment in each industry to its output in the region, to wage rates in the region

relative to output prices and to national variables such as average hours worked. Long-run cointegrating relationships are identified and estimated and dynamic error-correction equations estimated to allow for short-run effects. In general the equations are well-determined and the parameters are of the expected sign and magnitude.

Data sources

A 49-industry classification has been adopted for the commodity and industry variables in the regionalised MDM (including gross output, GVA, employment, regional exports and imports). Most of the regional data are provided by the UK Office for National Statistics (ONS). The ONS publishes annually a series of Regional Accounts consistent with the UK National Accounts. These include data on nominal GVA, household spending, personal incomes and gross fixed capital formation for the nine Government Office regions, Wales, Scotland and Northern Ireland. Most of the data are available since 1971 but some disaggregated series are available only since 1978. Some data at disaggregated level exist for 1971-78 but these are on the 1968 SIC and much other data is on the 1980 SIC; in the process of creating long-term series these were all translated to 2003 SIC categories. Total consumers' expenditure is disaggregated into 51 categories, using information from the Regional Accounts and making the most of the disaggregated data on expenditure available by region from the Family Expenditure Survey. The source for employment and unemployment data is also the ONS. Employment is defined as the total of employees in employment, self-employment and HM Forces and is the June count seasonally unadjusted. Unemployment is defined by the annual average, seasonally adjusted, of benefit claimants aged 18 and over. Other data such as regional population, working-age population and migration are obtained from the ONS and the Registrars General for Scotland and Northern Ireland.

MDM95R8 was used for the analysis

The analysis was performed using version 95 release 8 of Cambridge Multisectoral Dynamic Model (MDM95R8) which is based on the 2003 Standard Industrial Classification (SIC03), with base year 1995 and with consistent 1995 input-output table and classification converters. The model incorporates the 2003 National Accounts and consistent Regional Accounts data.

A3 Processing the Survey Data for the Multiplier Model

Definition of the screen industries

In this study one of the MDM industries, industry 49 Miscellaneous Services, has been disaggregated further to distinguish 16 screen industries and sectors. The definition of the screen industries and sectors is based upon the UK Standard Industrial Classification 2003 (SIC 2003). Table A.1 shows which components of the SIC 2003 have been included in the screen industries (and the rest of MDM industry 49 Miscellaneous Services). The components of SIC 2003 included in the screen industries are:

- 92.11: Motion picture and video production
- 92.12: Motion picture and video distribution
- 92.13: Motion picture projection
- 92.20/2: Television activities

TABLE A1: DEFINITION OF THE SCREEN INDUSTRIES

Screen Industries	Screen Sectors	SIC 2003
Film	Pre-Production	92.11
	Production	92.11
	Post-Production	92.11
	Distribution/Exhibition	92.12 & 92.13
TV	Pre-Production	92.20/2
	Production	92.20/2
	Post-Production	92.20/2
	Distribution	92.20/2
Corporate video	Pre-Production	92.11 & 92.20/2
	Production	92.11 & 92.20/2
	Post-Production	92.11 & 92.20/2
	Distribution	92.12 & 92.20/2
Advertising	Pre-Production	92.11 & 92.20/2
	Production	92.11 & 92.20/2
	Post-Production	92.11 & 92.20/2
	Distribution	92.12 & 92.20/2
(Rest of MDM industry 49 Miscellaneous Services)		(91, rest of 92, 93)

It is noted that this definition excludes some activities which could be regarded as part of a broader definition of the screen industries, for example, retail sales and rental of videos and DVDs. The advantages of using these definitions (which are based upon the SIC 2003) are consistent analysis within the framework of the economic model, along with comparisons with and incorporation of other published sources of information. The linkages to activities within a broader definition of the screen industries will be captured in the multiplier analysis through the estimates obtained from the screen industries survey about purchases from and sales to other industries.

The screen industry information gathered by the survey was used to construct the data required to disaggregate MDM further so as to incorporate in a consistent manner the screen industry sectors and their corresponding supply-chain relationships. While the survey data provided the basis for the MDM inputs, it was also necessary to ensure consistency in the identity relationships (for example output being the sum of its component parts), consistency with data from the 2003 Annual Business Inquiry (ABI) and consistency with data for MDM industry 49 (Miscellaneous Services).

Gross output by region, and by product and industry

Regional gross output was estimated from the survey results for turnover (part of question 1) scaled to the available ABI data for turnover. No distinction is made between gross output by industry and gross output by product for the 16 screen industries, and the 17th 'Unallocated' sector acts as a residual to ensure consistency with MDM product and industry for Miscellaneous Services. A converter matrix between product and industry was calculated. Growth rates for the MDM Miscellaneous Services sector were applied to create a time series for each region, allowing an annual solution of the model based solely on historical data up to 2002.

Creating the regional input-output tables

This was the most complicated part of the data processing as it was necessary to ensure consistency amongst industry sales and purchases, but is also the most crucial part of the data processing, as it provides the linkages between the screen industries and the wider economy. The survey results of intra-regional sales and purchases (parts of questions 2 and 6) provided the basis for the input-output data. An additional problem was that the survey results did not constrain sales and purchases to be the inverse of each other; so the average was taken, before the values were scaled to the row totals for sales (which provided consistency with the ABI data).

The next step was to make the estimates fully consistent within the structure of MDM and the available ABI data for each region. This effectively meant imposing five restrictions and scaling. The restrictions imposed were:

- meeting ABI results for total industry purchases
- meeting ABI results for total industry sales
- consistency with MDM data for purchases by Miscellaneous Services
- consistency with MDM data for sales from Miscellaneous Services
- consistency with MDM data for sales of Miscellaneous Services within the industry

Numerical methods were used to construct a consistent set of data. Due to the complexities involved in meeting these criteria and the importance of these data, an additional automated check was included at this stage. Finally, input-output coefficients were calculated by dividing sales and purchases by gross output for each industry in the usual manner.

The input-output tables were estimated from the 2002 based data, and were assumed to be constant over time (a fairly standard assumption for short-term modelling).

Gross value added

Gross Value Added was calculated using the results for gross output and intermediate demand (taken from the input-output tables). The product tax rate for Miscellaneous Services in MDM (9.5%) was adjusted with the public sector subsidies data from the survey results. Then, applying the identity:

GVA = Gross Output - Intermediate demand - Product taxes

gave us an initial estimate. This was then scaled to match the ABI shares for screen and non-screen industries, and a time series estimated using the growth rates of the MDM Miscellaneous Services sector.

Employment

Estimates of full-time and part-time employment were obtained using a simple procedure scaling the survey results to ABI data. Self-employment was estimated as days of freelance purchased (from the survey results) converted into an annual full-time equivalent basis (ie divided by number of working days in a year). It should be noted, however, that freelance services were allocated to the purchasing industry (eg Film distribution purchasing freelance services increased self-employment in Film distribution). Time series were estimated using the growth rates for the MDM Miscellaneous Services sector, allowing an annual solution of the model. The different

types of employment (part-time, full-time and self-employed) are not distinguished within the sub-industry analysis itself.

Regional trade

The survey results for industry purchases and sales between regions provided the basis for estimating trade between regions in the screen industries. As with the intra-regional demand, purchases were scaled to meet the same totals as the sales data. However, this only includes purchases from and sales to by industries but not, for example, consumer goods purchased in another region. Therefore it was necessary to allocate part of the household consumption and other sales (survey question 1) to trade. In the absence of more accurate figures this was done by using population shares for consumers, and government spending shares for other sales (a combination of government purchases and investment goods). To compensate, the totals for regional consumption, government spending and investment were adjusted for the calculations below. Regional imports were later adjusted further to compensate for the inaccuracies relating to calculating regional consumption (see below). Time series were estimated for regional imports and exports using growth rates from the MDM Miscellaneous Services sector.

Regional household consumption

In MDM, consumer expenditure is grouped into the 51 categories used in the National Accounts. These are then allocated to the MDM industries using a constant matrix. A similar procedure was implemented to create a converter matrix between the 51 consumption categories and the 16 screen industries. Following the current MDM treatment, this matrix was calculated at national level and applied to each of the regions. However, this caused problems in the regions where the screen industries hold a disproportionately large share of Miscellaneous Services, in particular in London. There was some mis-allocation between the sectors. Moreover, the fact that consumption accounted for such a large share of output from the screen industries caused particular problems in several of the screen industries. To compensate for these imbalances, regional imports were adjusted accordingly in the affected regions and sectors (a process similar to the treatment in the MDM regional accounts).

Government spending and investment

The processing of government spending and investment was virtually identical to household consumption with the Other Sales part of survey question 1 combined with the five MDM government sectors and the 38 MDM investment sectors to create national converters. Similarly, regional imports were adjusted to compensate for any regional imbalances resulting from this process, but the levels involved were small compared to other factors.

A4 Implementing the Scenarios in the Multiplier Model

A series of scenarios were then designed and implemented to examine the regional multipliers for the screen industries

The sectoral (16 screen industries) and regional (12 UK Government Office regions) disaggregation of the current version of MDM made it necessary to run 192 (16x12) basic scenarios to gain a full understanding of each of the regional screen sectors. In addition, scenarios were run for each of the four broad industry groups (film, television, corporate and advertising) to provide the results to populate the Excel Front End software product, and scenarios were run covering the entire screen industry in each region and the rest of MDM sector 49 (Miscellaneous Services) in each region for the purpose of comparison and checking of results. This meant that 264 scenarios were run in total, covering the forecast period 2003-2006.

In the basic scenarios, a shock was applied to one of the screen industries in a single region. The shock was in the form of an exogenous boost to exports from the region from the chosen sector. In addition, it was assumed that the additional exports were external to the UK (ie exports abroad rather than to another UK region) so that results could be assumed to be the positive effects of additional exports, rather than the (possibly negative) effects of substitution of production between regions. The scale of the shock was set at +5% of current estimated exports in 2003, but sensitivity analysis showed that the magnitude of the boost to exports did not have a major impact on the values of the multiplier calculated. The only constraint was that the initial shock must be a minimum of £5 million (in 1995 prices), to prevent any rounding errors having an adverse effect on results from the smaller sectors.

The aggregated scenarios were designed specifically to produce output for the Front End software product. The methodology was identical to the basic scenarios, except that all of the sectors for a given group (eg Film pre-production, Film production, Film post-production and Film distribution make up the film group) were shocked at once. In practice, this proved to be a simplistic non-controversial step, with results that roughly matched a weighted average of the component sectors. Again this demonstrates the linear properties of the model results, and justifies the approach used in the calculations in the Front End (see Section A5).

The additional highly aggregated scenarios were run for the purpose of checking properties of the model and to ensure that sectoral results across the screen industry were consistent with results for the rest of the economy.

The large number of scenarios required to produce a full set of results for analysis and the Front End meant that several innovative new methods had to be developed during the course of the project. Each of the scenarios required a full independent model run, and this was handled automatically by linking the Ox software package to the current version of MDM (Fortran-based software) and its databanks. This allowed a full set of scenarios to be run without any additional user input. However, even when the forecast horizon was limited to 2006, this process took up to three hours to complete. The Front End, which was used for analysis of results and is also part of the final deliverables, was also built automatically from the model results. This was achieved by linking the Ox software package with a series of Microsoft Excel Visual Basic routines. Further programs were developed using Ox and Visual Basic to give quick summaries of results and to produce line charts, thereby aiding further analysis.

A5 Excel Model

Design and properties of the Excel Front End

A free-standing software product (the Front End) was developed to deliver consistent multiplier analysis that matches the outcome of MDM and has the capacity to run in-house multiplier analysis of incremental changes. The Front End is specifically designed to be a flexible yet user-friendly tool for modelling the effects of a shock to output in any of the defined screen industries across each of the UK regions. As well as getting regional and national multipliers, the user will be able to see increases in gross value added (GVA) in each of the four broad screen industries (film, television, corporate and advertising) and the other sectors of the economy. Results for employment are also available, and all the results are disaggregated by Government Office region.

The near-linear properties of the scenario results provide the basis for the Front End's capabilities. Testing showed that the ratio of additional output to the initial shock (and therefore the regional and national multipliers) was largely independent of the size of the initial shock. This meant that it was adequate to use a simple spreadsheet design in creating the Front End, and output could be calculated using standard spreadsheet formulae, rather than involving Visual Basic programming, for example. Further testing showed that the additivity property extended across regions and sectors (as shown below) and this feature was also incorporated into the spreadsheet design.

Scenario A Film production in the North East boosted £1m

Scenario B Television production in London East boosted £1m

Scenario C Film production in the North East boosted £1m and television production in London East boosted £1m

GVA (Scenario C) = GVA (Scenario A) + GVA (Scenario B)

Building the Front End from the raw MDM results

The scenario results are transferred from MDM to the Front End by means of text files and an interaction of Ox and Microsoft Excel Visual Basic software. The results are standardised as a ratio of output to the value of the initial shock and stored (hidden) in Excel worksheets. There is one worksheet for each of the four broad screen industries. These ratios can then be used to estimate GVA increases for a shock in any single region/sector or a combination of regions and sectors.

The versatility and simplicity of the Front End made it an important tool for analysing and checking model results from an early stage in the project, and in the design and implementation of the scenarios.

APPENDIX B: THE SAMPLING METHODOLOGY

B1 The Sampling Methodology

Using the relevant SIC classifications as a starting point, we used in-house as well as external datasets (notably Experian), to build up a comprehensive database of the population of firms to be sampled. A similar data gathering exercise was undertaken for the freelance workforce, using information provided by Skillset, and other relevant agencies, to build up a comprehensive picture of the population to be sampled. Since the SIC codes do not adequately subdivide the data for the purpose of this survey, we coded the collected population data down to the relevant screen industry and sector.

It was imperative to have this a priori population information to achieve representative sample draws through stratified sampling. We sampled four screen industry value chains (Film, Television, Corporate Video, Advertising/Commercials) and divided each industry into four sectors (Pre-Production, Production, Post-Production and Distribution) across the twelve UK nations and regions. Given the level of detail and complexity of information involved, simple random sampling would not have provided reliable estimates without the use of prohibitively large sample sizes.

The most commonly used form of stratification in sampling is proportional stratification, where the sample size for a given stratum is proportional to the ratio of the stratum's population to the population as a whole[1]. The accuracy of a sample-based point estimate, however, is dependent on both the sample size and the variability of the population being sampled, where the standard error (SE) of an estimate is given by the formula:

$$SE = \frac{\sigma}{\sqrt[2]{n}}$$

n being the sample size and σ the standard deviation of the population being sampled. The size of the standard error is therefore proportional to the standard deviation and inversely proportional to the sample size, and to achieve a given level of accuracy (ie standard error), the larger the standard deviation (ie variability) of the population being

INDUSTRIES
Film
Television
Corporate Video
Advertising/Commercials

SECTORS/LINKS
Pre-production
Production
Post-Production
Distribution/Exhibition

1 These population proportions for each stratum are then used as weights when deriving total population estimates from the individual estimates for the strata into which the population has been divided.

sampled, the larger the required sample size. To achieve a more uniform level of accuracy across the strata being sampled, the size, as well as the variability, of the population in each stratum must be taken into account. This type of stratification is known as optimal stratification, and it formed the basis of our sampling methodology.

As our population database contained information on both the number of firms and their number of employees in each region, for both the value chain and value chain link, we used the number of firms and the standard deviation of the number of employees as the basis for optimal stratification[2].

The optimal sample size for a given stratum was determined by the formula:

$$S_i = \tfrac{1}{2}\left[\frac{P_i}{\sum_{i=1}^{i=n} P_i} + \frac{\sigma_i}{\sum_{i=1}^{i=n} \sigma_i}\right] K$$

where:

S_i = Optimal sample size for stratum i

P_i = Population of stratum i (ie number of firms in stratum i)

σ_i = Standard deviation of stratum i (ie standard deviation of number of employees)

K = Aggregate sample size [3]

n = Number of strata under consideration

We used a two-stage approach, whereby the sample size for a given industry and region was determined first, and then formed the basis for a second-stage sector optimal stratification. We developed a sample size calculation algorithm, based on the formula above, which directly interfaced with our population database[4].

Once the sample sizes for a given region and value chain had been established, they formed the basis of a second-stage sector stratification to determine the optimal sample size for each link in the industry and region.

The final stage of our sampling methodology involved dividing each sector stratum into percentiles, based on employee size, with the number of percentiles being dependent on the optimal sample size arrived at in stage two of our calculation algorithm. We used these percentiles as the basis for ensuring a representative sample spread across each stratum, logging every sampled firm's size and position in a given stratum, and thus

2 It should be noted that, as we have no information on population variances for freelancers, as we do for firms through the standard deviation of the number of employees, we adopted a proportional stratification approach for sampling freelancers.

3 It should be noted that: $\sum_{i=1}^{i=n} S_i = K$

4 It should be noted that we excluded extreme statistical outliers (such as a large broadcaster's headquarters in a region with predominantly small firms) from our sample size calculations as they can lead to significant sampling bias. These outliers were not, however, excluded from the final sample draw and did, in most cases, form part of the final sample. Furthermore, as we were always aware of a sampled firm's size and position in a given stratum, we could always apply the appropriate population weights to generate accurate population estimates.

ensured the use of the appropriate weighting when deriving aggregated population estimates from individual sample points.

Our sampling methodology therefore ensured that we used all the available information at each stage of the sampling process to provide the most representative and statistically robust sample possible.

B2 Technical Issues in Sample Selection

The only significant technical problem we encountered when selecting the sample was the large number of firms with activities in more than one industry and/or sector. Table B1 below shows the relevant population percentages by number of firm; almost half (49.5%) of all firms are active in more than one industry or sector.

While overlapping activities did not prove to be a problem for the application of our optimal stratification algorithms (it was always possible to match a sample's composition to that of the population from which it was drawn) it did have implications for the final data input templates of the multiplier model, as these require estimates to be in distinct categories without any Industry-Sector overlaps. We therefore developed a disaggregation algorithm to determine the contributions of every firm with a multiple Industry-Sector activity to each of its component parts.

In the absence of detailed knowledge it is always best to begin with the basic assumption that activities are evenly distributed. A disaggregation algorithm based on this assumption also has the added advantage of being straightforward to update (through simple re-weighting) as more detailed information becomes available as the survey progresses. We therefore assumed that in terms of the contributions to its component Industry-Sector population proportions a firm active in say: Film and TV, Production and Post-Production, contributed evenly to its four component parts. In other words, it adds a quarter to the population of each of its components: Film-Production, Film-Post-Production, TV-Production and TV-Post-Production.

To achieve this we gave each of the validated firms in our population database a 16 digit binary code representing the sixteen possible distinct Industry-Sector activities as outlined in the left-hand column of Table B5. Each digit in the code, which are logged in separate data cells ($a_i = a_1$ to a_{16}), therefore represents one of the 16 Industry-Sector options such that a firm with the code 0110011000000000 would be active in: Film-Production (= a_2), Film-Post-Production (= a_3), TV-Production (= a_6) and TV-Post-Production (= a_7). A firm's overall contribution (Z_i) to any given Industry-Sector is then given by the formula:

$$Z_i = \frac{a_i}{\sum_{i=1}^{i=16} a_i}$$

Summing up the Z_i's for any given activity (say Z_{14} = Commercials-Production) at regional or national level gives the relative count and hence the relevant population proportion of that Industry-Sector. The results of applying this algorithm are

TABLE B1: REGIONAL INDUSTRY-SECTOR POPULATION PROPORTIONS BY NUMBER OF FIRMS

Industry-Sector	London	South East	East of England	South West	West Midlands	East Midlands	Yorkshire & the Humber	North West	North East	Wales	Scotland	Northern Ireland	UK
													%
Film - Pre-Prod	0.7	0.6	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.9	0.7	0.6	0.5
Film - Prod	16.2	8.5	1.3	4.2	6.5	2.2	3.8	7.8	4.0	6.6	7.9	2.8	10.9
Film - Post-Prod	0.8	0.7	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Film - Dist	6.3	10.5	20.8	14.5	13.4	21.3	16.9	15.6	13.7	15.2	16.5	16.6	10.7
TV - Pre-Prod	0.1	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1
TV - Prod	10.5	10.8	8.3	14.0	6.9	7.1	12.5	9.1	1.6	13.7	13.5	6.1	10.3
TV - Post-Prod	0.9	0.6	0.3	1.2	0.4	1.1	0.6	0.0	1.6	0.0	0.3	1.7	0.8
TV - Dist	6.4	8.2	4.2	1.6	3.6	2.2	3.1	3.1	2.4	1.4	5.0	1.7	5.2
Corporate - Pre-Prod	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Corporate - Prod	4.8	23.5	4.2	2.3	19.8	23.5	20.6	21.9	5.6	9.0	14.5	2.8	9.7
Corporate - Post-Prod	0.1	0.7	0.0	0.2	0.0	1.1	0.0	0.0	2.4	0.0	0.0	0.0	0.2
Corporate - Dist	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Commercials - Pre-Prod	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Commercials - Prod	1.5	0.3	0.6	0.5	0.4	0.5	1.3	0.6	0.0	0.0	0.7	0.6	1.0
Commercials - Post-Prod	0.2	0.0	0.0	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Commercials - Dist	0.2	0.1	0.0	0.0	0.0	0.5	0.6	0.0	0.0	0.0	0.3	0.0	0.2
Multiple Industry-Sector Activities	51.1	35.1	58.8	60.6	49.0	39.9	40.6	41.3	68.5	52.6	40.6	67.4	49.5
Total	100	100	100	100	100	100	100	100	100	100	100	100	100

Source(s) : Optima.

summarised in Table B2. Table B3 provides our estimate of the industry and sector populations.

Using the methodology described above, a sample of 2,500 companies and freelancers was selected to survey. The survey process is described in Appendix C.

B3 Second Survey

The completion of the first survey resulted in several important implications for the conduct of the second survey which are outlined in this section.

The principal issue to arise from the first survey was the lower than expected response rate (129 questionnaires out of 1437 actually dispatched, a response rate of 9%). To improve on this we developed a simplified questionnaire, which covered the same principal questions (variables) as the full questionnaire but at a more aggregated level, and so data from this questionnaire were easily combined with the corresponding data from the full questionnaire to improve our estimates (i.e. reduce the standard error) of the headline variables.

We used the stratified sampling methodology outlined in Section B1 above to draw an additional 1000 firms from those firms in the population which had not been picked in the initial sample draw as part of the first survey, and these firms were the sample base for the second survey. The simplified questionnaire was also circulated to all the firms in the first survey that had not replied. The response rate from the second questionnaire was much more encouraging with 186 responses (a 12% response rate).

TABLE B2: DISAGGREGATED REGIONAL INDUSTRY-SECTOR POPULATION PROPORTIONS BY NUMBER OF FIRMS

Industry-Sector	London	South East	East of England	South West	West Midlands	East Midlands	Yorkshire & the Humber	North West	North East	Wales	Scotland	Northern Ireland	UK
													%
Film - Pre-Prod	3.7	2.5	5.0	1.9	1.7	1.5	0.7	3.2	5.2	4.8	3.1	3.6	3.3
Film - Prod	27.2	15.6	13.7	16.8	15.5	8.3	10.4	15.3	12.9	19.8	16.4	15.0	21.0
Film - Post-Prod	4.8	2.8	2.5	3.8	2.6	1.6	3.0	1.8	5.4	3.1	1.1	2.9	3.7
Film - Dist	7.7	10.9	21.3	15.4	14.6	22.1	17.5	16.6	13.8	15.4	17.0	17.2	11.8
TV - Pre-Prod	3.0	2.3	6.3	2.5	2.3	1.7	1.7	3.0	5.3	4.2	3.1	4.9	3.1
TV - Prod	21.6	19.7	22.2	29.7	18.6	16.2	21.4	17.9	12.5	27.3	24.4	22.6	21.7
TV - Post-Prod	5.2	3.0	2.8	5.2	4.4	3.8	4.9	2.3	7.7	4.5	2.0	6.2	4.5
TV - Dist	8.1	9.0	4.9	3.3	5.3	4.2	5.1	4.4	2.8	1.9	6.2	3.3	6.7
Corporate - Pre-Prod	0.2	0.8	1.5	0.8	0.9	1.4	1.2	0.9	3.6	0.4	0.5	1.9	0.7
Corporate - Prod	7.1	26.7	8.6	7.9	24.4	28.7	23.5	25.2	14.5	11.9	18.7	8.9	13.0
Corporate - Post-Prod	1.0	1.4	1.3	2.2	1.8	4.0	2.0	0.7	6.7	1.1	0.6	2.0	1.4
Corporate - Dist	0.3	0.6	0.7	0.8	0.5	0.5	0.5	0.4	0.0	0.2	0.4	0.4	0.4
Commercials - Pre-Prod	2.7	0.8	3.5	2.0	2.4	0.6	1.0	2.2	2.7	1.9	1.7	2.2	2.2
Commercials - Prod	5.1	2.7	4.4	5.6	3.3	3.2	3.9	4.5	4.2	2.5	3.2	7.1	4.5
Commercials - Post-Prod	0.8	0.6	1.0	1.3	0.7	1.6	1.1	0.7	2.2	0.4	0.1	1.1	0.8
Commercials - Dist	1.5	0.5	0.2	0.7	1.0	0.6	2.1	1.0	0.6	0.7	1.4	0.7	1.2
Total	100	100	100	100	100	100	100	100	100	100	100	100	100

Source(s) : Optima.

TABLE B3: NUMBER OF FIRMS IN THE POPULATION BY REGION

	London	South East	East of England	South West	West Midlands	East Midlands	Yorkshire & the Humber	North West	North East	England	Wales	Scotland	Northern Ireland	UK
Film - Pre-Production	161	30	38	10	6	3	3	15	8	273	14	9	8	305
Film - Production	1170	179	107	82	53	18	44	76	20	1750	66	51	33	1900
Film - Post-Production	205	32	21	18	9	3	12	9	8	318	9	3	6	337
Film - Distribution	327	121	159	73	50	45	72	80	21	948	46	52	34	1080
TV - Pre-Production	130	27	48	13	8	4	9	15	9	261	13	9	10	293
TV - Production	936	229	172	144	64	34	95	92	19	1785	88	76	47	1995
TV - Post-Production	224	34	24	25	15	8	22	11	12	375	14	6	12	407
TV - Distribution	346	100	36	15	18	9	21	21	4	571	6	19	7	602
Corporate - Pre-Production	10	9	11	4	3	3	5	5	6	57	1	2	4	64
Corporate - Production	308	298	65	37	84	59	98	126	22	1098	36	57	18	1209
Corporate - Post-Production	44	16	10	10	6	8	9	3	10	117	4	2	4	126
Corporate - Distribution	14	7	5	4	2	1	3	2	0	37	1	1	1	40
Commercials - Pre-Production	114	9	27	10	8	1	5	11	4	189	6	5	4	205
Commercials - Production	220	39	35	27	13	7	17	25	6	389	8	10	14	421
Commercials - Post-Production	35	6	8	6	3	3	5	3	3	74	2	0	2	79
Commercials - Distribution	66	5	2	4	3	1	9	5	1	96	2	4	1	104
Grand Total	4311	1142	768	482	346	208	428	498	155	8338	317	307	205	9167

Source(s) : Optima's population database

APPENDIX C: THE SURVEY PROCESS

C1 Overview

Two waves of sampling were conducted between May and November 2004 during which we approached over 3,500 companies and freelances and dispatched questionnaires to more than 2,000. The response rate from the first survey (conducted between early May and mid-September) was below expectations and so a substantial second survey was conducted between mid-October and November.

A third survey of 300 firms in the interactive media industry in the South East and the North East was conducted in February 2005. This survey is described in Chapter 5.

C2 Distribution of Full Questionnaire

The first survey using the full questionnaire, was conducted between May and September 2004.

A full questionnaire consisting of thirty questions covering revenue, sales, receipt of public subsidy, employment and expenditure was distributed to about 1,450 companies and freelancers in the screen industries. At the request of the Steering Group, the questionnaire also contained a question about expenditure on location shoots.

The sample list was created from the initial sample base of 2,500 companies and freelances, the selection of which is described in Appendix B. Each of the 2,500 companies and freelances was contacted initially by telephone:

a) to verify contact details;

b) to check that the company had been correctly classified for the study – to ensure a representative sample;

c) to explain the purpose of – and encourage participation in – the study; and

d) to identify a named individual in each organisation to whom the questionnaire could be sent – and an email address for that person.

As a result, the initial sample of 2,500 was reduced to 1,437 – of which 1,336 were companies and 101 were freelances. Questionnaires were dispatched to a named individual in each organisation. Eighty per cent (1,171) questionnaires were dispatched by email as an attachment in Excel format and the remainder (266) by post with a reply paid envelope for return postage.

A pilot survey was initially conducted, with the questionnaire being distributed to a small number of contacts. Comments received from the pilot survey were included in the final format of the full questionnaire.

C3 Response Rate Using the Full Questionnaire

129 completed questionnaires were obtained from the first survey, of which 110 were from companies and 15 from freelances – a response rate of 9% of questionnaires dispatched (8.2 per cent for companies and 14.9 per cent for freelances). In operational terms the following conclusions may be drawn:

a) The relatively high response rate from small and medium sized production companies was probably a reflection of the fact that this is the group most likely to benefit from any policy changes resulting from the research. Also, owner managers were well placed to complete the questionnaire, which required information about financial and regional aspects of the business that may not be held by a single person in a larger organisation.

b) The high response rate from freelances probably reflects the fact that their accounts are relatively straightforward and their turnover is frequently generated in a single region – therefore the questionnaire was easier to complete. They may also have been more attracted by the prospect of the holiday draw, which was offered to those who returned a completed questionnaire!

c) The poorest response rate was for large, diversified media companies. The most significant factor in this low response rate would seem to be that these firms could identify no direct benefit from the study and completion of the questionnaire was not therefore a priority.

d) The response rate was also low for cinemas, which we attribute to the high degree of centralisation in the major cinema chains. While independent cinemas in our sample were able to complete the questionnaire, cinemas that were part of a larger chain could not do so. This was addressed in the survey of large firms which formed part of the second survey (see below).

C4 The Second Survey

The second survey was conducted between mid-October and November 2004 and comprised two parallel approaches – a supplementary sample of new firms using the simplified questionnaire, and targeted approaches to 24 large firms across the UK regions with the objective of obtaining answers to the full questionnaire from each.

A simpler questionnaire

The response rate from the first survey, which used the full questionnaire, was below expectations. The size and complexity of the questionnaire was considered to be the primary reason for the low response rate. Specifically, the requirement that respondents provide a regional breakdown of their sales and expenditure proved a step too far for many, as it is not contained in annual accounts and needs to be calculated separately.

It was therefore decided to approach a substantial supplementary sample using a simplified questionnaire containing only six questions and requiring no regional breakdown of sales. The only spatial requirement was the breakdown of sales to home sales and abroad. The simplified questionnaire was piloted by the Regional Screen Agencies on a small number of companies first to check for ease of use.

Supplementary sample

The starting point for the supplementary sample was a sample base of 1,000 companies that we had not previously approached. The new list of companies was first distributed to each Regional Screen Agency with an invitation to them to comment on or amend the list using their knowledge of the industry locally. The companies on the amended list were then approached using the procedure employed in the first survey to check details and identify a named contact in each organisation. The initial list of 1,000 companies yielded a list of 606 validated companies who received the simplified questionnaire. Of the questionnaires dispatched, 60 went by post and 546 by email.

The decision was also taken to send the simplified questionnaire to those companies in the first survey that had neither returned a completed questionnaire nor told us that they would not take part in the survey. The list was distributed to the Regional Screen Agencies for their comments. 1,020 questionnaires were distributed to companies in this category, 835 of which were distributed by email and 185 by post.

As in the first survey, every company that had not returned a questionnaire after a couple of weeks was contacted again by telephone to encourage them to complete and return the questionnaire. Further follow-up communications were emailed to non-respondents as the deadline for the return of the questionnaires approached.

Response rate

The second survey elicited 186 responses (12.0%). This is considered a good result given a smaller sample size than the first survey and the shorter period in which the survey was conducted (six weeks, compared with twenty weeks for the first survey). The response rate reflects the ease of use of the simplified questionnaire and the contribution of the Regional Screen Agencies to improve the response rate locally.

Response rate from large firms

In order to improve the response rate from larger organisations (upwards of 50 employees) it was decided to target 24 of these and to approach directly at senior level with a request to complete the full questionnaire. In order to facilitate the completion of the questionnaire it was further decided that – if necessary – an interviewer would attend the company's premises to help complete the questionnaire. The 24 organisations were selected in consultation with the Regional Screen Agencies. From this exercise we obtained responses from six large firms (25% response rate).

C5 The Questionnaires

The questionnaires are contained in Appendix F to this report. They are summarised below. The questionnaires were dispatched in Excel format (for completing on-screen) and in pdf format (a better format for printing). The questionnaires requested information for the calendar year to 31 December 2002. If no figures were available for that period, respondents were invited to reply for the business year that ended between 6 April 2002 and 5 April 2003. This is consistent with the ABI survey.

The full questionnaire

The full questionnaire is reproduced in Appendix F. The groups of questions are described below.

Revenue

Question 1 relates to revenue. We invited respondents to identify three categories of turnover from sales:

- sales to industry – these are business to business transactions
- retail sales – sales to households and individual consumers. The box office takings of a cinema or the sale of DVDs are examples of retail sales
- other sales – for example sales to the Government

Respondents were then asked about public subsidy they received, including income from public grants or subsidies, and any revenue from sale and leaseback arrangements to pre-finance a film or TV programme. More information about public subsidy was requested in question 3.

Sales to industry

Question 2 focuses on sales to industry only. It invited respondents to identify the proportion of their sales to the five screen industries in this study (film, television, advertising, corporate communications and interactive media) and to identify which of the screen industries is their main customer. Sales to the main customer are divided by industry sector (2.3) and then sales to each sector are further divided by the region in which the customer is based (2.4). As a simplifying assumption we asked only for the two main sales regions, outside a respondent's own region, and then the percentage of sales made in these regions, in other UK regions and as exports. A map was supplied as part of the questionnaire pack to give respondents the boundaries of the official regions used in this survey.

Public sector financial assistance

Question 3 sought information about the impact that the withdrawal of public subsidy would have on the respondent's activities – both operationally and financially. It helped us establish whether public subsidy is additive or substitutional.

Employment and wages

Question 4 asked about employment and wages, including the size and spend on freelance workers, which form an important part of total employment in the screen industries.

Expenditure and purchases

Question 5 gathered information on the company's expenditure. Question 6 isolated the respondent's purchases of goods, materials and services from companies in the screen industries, and identified the most important industry supplier. The main industry supplier is then subdivided by sector and region in the same way that sales to industry are disaggregated in question 2.

Shoots

Question 7 captures directly the impact and location of shooting, and the kinds of expenditure incurred on location.

The simplified questionnaire

The simplified questionnaire is reproduced in Appendix F. The objective of the simplified questionnaire was to obtain top line data to augment the first survey in a simple format that would improve the response rate.

Turnover from sales

Question 1 divided turnover from sales into sales to industry, retail sales and other sales. It is analogous to question 1.1 in the full questionnaire.

Respondents were invited to divide sales to industry into four screen industries – film, TV, advertising and corporate communications. This is analogous to question 2.1 in the full questionnaire, although it has been simplified through the exclusion of internet and interactive media from the list of industries. Respondents were also asked to state the percentage of sales that were exports.

Employment and wages

Question 2 is analogous to question 4 in the full questionnaire. It has been simplified by removing the requirement to supply data on freelance staff.

Spending on goods and services

Question 3 is analogous to question 6 in the full questionnaire. The number of categories has been reduced to make the question simpler, for example it is not necessary to quantify purchases from each of the screen industries separately.

The simplified questionnaire was constructed in such a way that the data collected were easily joined with the data from the full questionnaire to provide a fuller picture of the UK screen industries on which modelling was based.

Interactive industry questionnaire

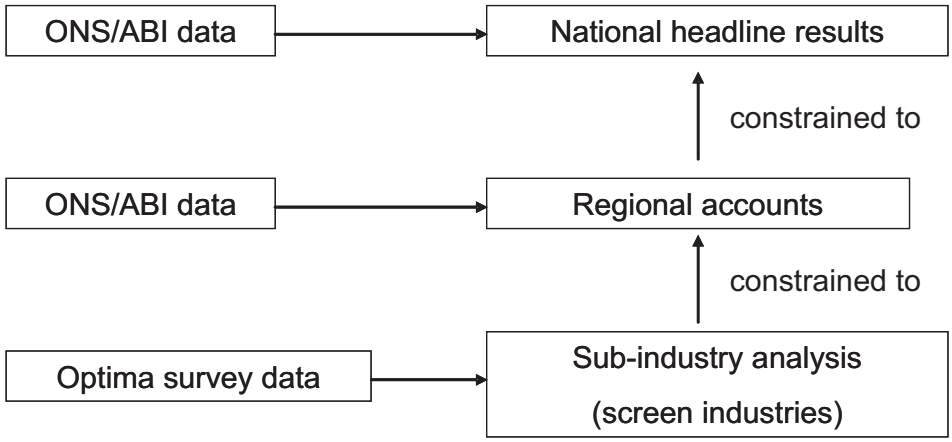
Interactive industry questionnaire was similar in structure to the simplified questionnaire. Question 3.3 was included to allow us to isolate the proportion of turnover from sales that was earned from the production of audiovisual content. The interactive industry questionnaire is also reproduced in Appendix F.

APPENDIX D: ACCURACY OF RESULTS

D1 MDM's Data Structure

In assessing the accuracy and sensitivity of the scenario results, it is necessary to consider the overall structure of MDM and the data which goes into it. There are effectively three layers of data within the current version of MDM (MDM95R8): National data, regional data, and the screen industries data (see Chart D1). One would expect a diminishing level of accuracy as the data becomes more disaggregated and this is very much the case with MDM. This is, however, partially compensated by the fact that each layer of the model is fitted into the framework of the layer above. For example, GVA data for the screen industries is scaled to be consistent with the available regional GVA data from the Annual Business Inquiry (ABI). Therefore, while the ABI data determined the size of the aggregate industries, the survey results provided the data necessary to define the structure of the disaggregated screen industry, within the specified SIC2003 sectors (92.1 and 92.20/2). This effectively means that the survey results allow the model to distinguish between the screen industries while at the same time it maintains its current regional framework. The key linkage between the screen industry layer and the regional and national layers is given by the estimated input-output tables for the screen industries. An input-output table was estimated for each of the 12 Government Office regions from the survey results. The input-output tables determine how the screen industries interact with each other (ie within the bottom layer), but also how the screen industries interact with the other more aggregated MDM sectors across the regions. It is therefore of particular importance to note that the estimated

CHART D1: MDM DATA STRUCTURE



input-output tables were forced to be consistent with both ABI data for sales and purchases (row and column sums for the input-output table), and with the input-output data for the wider miscellaneous services sector within which the screen industries exist in the model. In summary, errors from the survey may distort the effects of the four screen industries relative to each other, but will have only a limited effect on the overall sector and the wider economy.

D2 Accuracy of Input Data

Data accuracy at national level

The ABI 2002 survey received a response rate of over 85% for the broader services sector in the UK. While this is not enough information on its own to determine non-sampling errors, it is an indication of a much higher level of accuracy than any other comparable source, and much greater accuracy than the accuracy of the results from the Optima survey. The standard errors (estimates of survey results - true results) are calculated and shown in Table D1 for each of the main indicators. The coefficient of variation is the standard error divided by the survey results, ie the error as a proportion of the total.

Data accuracy at regional level

The ABI data sets and the model constrain results to meet national totals. While this will not provide results with the level of accuracy at the national level, it does ensure that the errors are limited in magnitude, and the ABI uses the same techniques as for the national data to maintain consistency and the highest possible level of accuracy.

Data accuracy in the screen industries

The Optima survey results have a much lower level of accuracy due both to covering a smaller proportion of firms than the ABI and to the more disaggregated nature of the results. The difficulties experienced in gathering the data and the lower response rate from the screen industries survey indicate the possibility of non-sampling error, and Appendix B summarises the ways in which the potential bias that may have resulted from this was addressed. Table D2 shows an analysis of sampling errors at the UK level

TABLE D1: ACCURACY OF THE ABI DATA AT THE UK LEVEL

	Turnover	GVA	Purchases	Capital exp
	SIC sector 92.1 Motion picture and video activities			
Survey Results (£ million)	3863	1788	2085	135
Standard Error (£ million)	309.0	178.8	166.8	14.9
Coefficient of Variation (%)	0.08	0.10	0.08	0.11
	SIC sector 92.2 Radio and television activities			
Survey Results (£ million)	17610	6943	9477	564
Standard Error (£ million)	176.1	277.7	284.3	28.2
Coefficient of Variation (%)	0.01	0.04	0.03	0.05

Source(s) : ABI.

TABLE D2: ACCURACY OF THE OPTIMA SURVEY DATA AT THE UK LEVEL

		Survey results (number of firms)	Standard error (number of firms)	Coefficient of Variation (%)
TV	Pre-Production	194	12.5	0.06
TV	Production	1355	31.2	0.02
TV	Post-Production	281	18.7	0.07
TV	Distribution	418	18.7	0.04
Film	Pre-Production	206	12.5	0.06
Film	Production	1312	31.2	0.02
Film	Post-Production	231	12.5	0.05
Film	Distribution	737	0.0	0.00
Corporate video	Pre-Production	44	6.2	0.14
Corporate video	Production	812	25.0	0.03
Corporate video	Post-Production	87	6.2	0.07
Corporate video	Distribution	25	6.2	0.25
Advertising	Pre-Production	137	12.5	0.09
Advertising	Production	281	18.7	0.07
Advertising	Post-Production	50	6.2	0.13
Advertising	Distribution	75	6.2	0.08

Source(s) : Optima and Cambridge Econometrics.

based on the number of firms in each sector. The large sampling variation in the Optima survey results at regional level (see Table D3) highlights the importance of maintaining consistency between the survey results and official regional data.

TABLE D3: ACCURACY OF THE OPTIMA SURVEY DATA ACROSS THE REGIONS

Coefficient of Variation across the regions for number of firms

		LO	SE	EE	SW	WM	EM	YH	NW	NE	WA	SC	NI
TV	Pre-Production	0.10	0.26	0.22	0.32	0.39	0.59	0.59	0.33	0.38	0.33	0.32	0.33
TV	Production	0.03	0.08	0.10	0.07	0.13	0.17	0.15	0.12	0.24	0.11	0.10	0.14
TV	Post-Production	0.08	0.23	0.32	0.21	0.30	0.37	0.35	0.35	0.31	0.31	0.40	0.29
TV	Distribution	0.06	0.12	0.24	0.27	0.26	0.36	0.33	0.25	0.54	0.47	0.23	0.39
Film	Pre-Production	0.08	0.24	0.24	0.37	0.47	0.60	0.86	0.31	0.38	0.31	0.32	0.39
Film	Production	0.03	0.09	0.14	0.11	0.15	0.24	0.23	0.13	0.23	0.14	0.13	0.18
Film	Post-Production	0.08	0.21	0.36	0.24	0.38	0.56	0.43	0.39	0.37	0.39	0.55	0.41
Film	Distribution	0.13	0.09	0.09	0.13	0.14	0.14	0.17	0.12	0.22	0.19	0.12	0.17
Corporate video	Pre-Production	0.50	0.38	0.47	0.50	0.67	0.64	0.75	0.56	0.47	1.00	0.80	0.53
Corporate video	Production	0.07	0.06	0.19	0.16	0.11	0.11	0.14	0.10	0.22	0.18	0.12	0.24
Corporate video	Post-Production	0.20	0.29	0.46	0.32	0.50	0.35	0.55	0.71	0.33	0.64	0.67	0.50
Corporate video	Distribution	0.33	0.50	0.71	0.50	0.80	1.00	1.20	1.00	N/A	1.50	0.75	1.25
Advertising	Pre-Production	0.11	0.38	0.29	0.35	0.42	1.00	0.80	0.36	0.56	0.47	0.41	0.50
Advertising	Production	0.08	0.22	0.27	0.20	0.33	0.41	0.38	0.27	0.43	0.44	0.31	0.27
Advertising	Post-Production	0.25	0.50	0.60	0.38	0.71	0.56	0.73	0.71	0.59	1.25	2.00	0.73
Advertising	Distribution	0.13	0.60	1.50	0.57	0.60	1.00	0.52	0.50	1.17	0.86	0.50	0.86

Source(s) : Optima and Cambridge Econometrics.

APPENDIX E: OVERVIEW OF OFFICIAL DATA AND MULTIPLIERS

E1 Official Statistics

This section presents employment data in the screen industries drawn from the Annual Business Inquiry (ABI). Employment data are for 2002 and exclude self employment.

The specialisation of a region relative to the UK in the screen industries is represented by location quotients. Location quotients express the share of screen industries employment in total employment in a county/region as a ratio of the share of the UK screen industries employment in total UK employment. A location quotient greater than one means that there is higher concentration of the screen industries in that area than the UK average.

The chapter includes one section for each region. The maps highlight the location quotients. The first table in each section presents the share of employment in the screen industries as a whole, and in software consultancy and supply, in total employment, and compares them with the average for Great Britain.

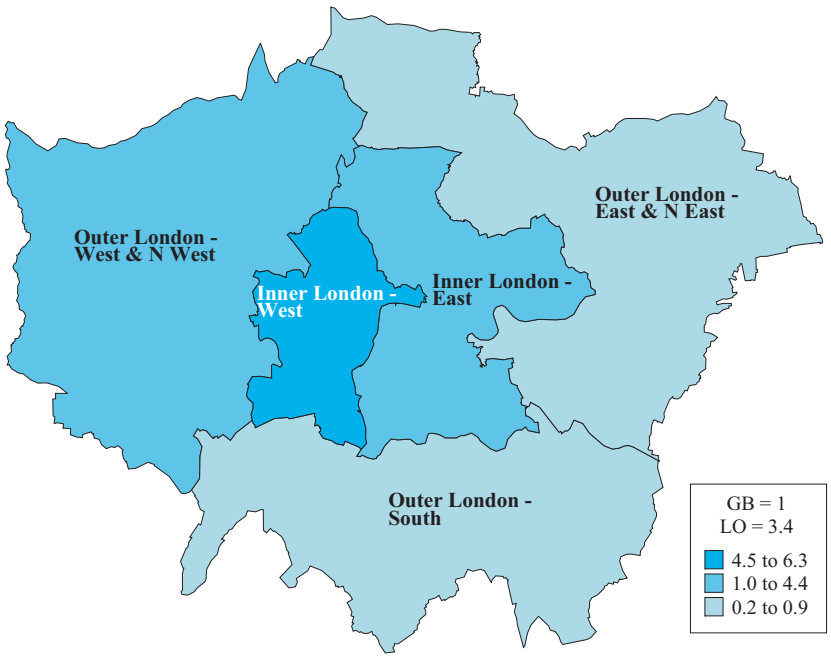
For each region tables A and B present employment in each of the screen industries identified in the ABI. Data are presented by county/sub-region. It should be noted that the significance of the TV is overstated because the data for this sector also include radio activities. Table A presents levels of employment while Table B highlights the concentration of the screen industries in certain counties/sub-regions.

E2 Multipliers

Table C presents the regional and UK dynamic multipliers for each of the screen industries identified in the survey and in the screen industry input-output model. The regional multipliers show the impact on a region's total value-added when demand for screen-industry output increases by £1. The UK multipliers summarise the impact this increase will have not only in the specific region but also the impact that it may have on any other region, ie they show the overall impact that this increase will have on the total UK value-added over the following four years.

REGION 1: LONDON

SCREEN INDUSTRIES LOCATION QUOTIENTS[1], 2002



Note(s) : 1 The share of employment in the screen industries in a county/region divided by the equivalent share in the UK. Employment in the screen industries includes employment in radio and excludes employment in the interactive industry.
Source(s) : ABI.

TABLE 1: EMPLOYMENT IN LONDON, 2002

	Screen Industries		Software Consultancy and Supply		Total	
	level	%	level	%	level	%
Inner London West	41152	2.8	23650	1.6	1453930	100
Inner London East	6068	0.7	12622	1.5	836778	100
Outer London East & North East	670	0.1	3603	0.8	461622	100
Outer London South	879	0.2	6796	1.6	425908	100
Outer London West & North West	10444	1.4	14425	1.9	742526	100
London	59213	1.5	61096	1.6	3920764	100
Great Britain	113936	0.4	280682	1.1	25380255	100

Note(s) : Employment in the screen industries includes employment in radio.

TABLE 1A: EMPLOYMENT IN LONDON, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduct. of Video Recording	Reproduct. of Computer Media	Software Consultancy and Supply
Inner London West	7666	2643	1369	29321	114	39	23650
Inner London East	1168	91	696	4078	14	21	12622
Outer London E&NE	131	129	281	115	13	1	3603
Outer London South	205	32	273	192	74	103	6796
Outer London W&NW	1271	370	1497	6265	847	194	14425
London	10441	3265	4116	39971	1062	358	61096

TABLE 1B: EMPLOYMENT IN LONDON, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduct. of Video Recording	Reproduct. of Computer Media	Software Consultancy and Supply
							(% of total)
Inner London West	73.4	80.9	33.3	73.4	10.7	10.9	38.7
Inner London East	11.2	2.8	16.9	10.2	1.3	5.9	20.7
Outer London E&NE	1.3	4.0	6.8	0.3	1.2	0.3	5.9
Outer London South	2.0	1.0	6.6	0.5	7.0	28.8	11.1
Outer London W&NW	12.2	11.3	36.4	15.7	79.8	54.2	23.6
London	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 1C: LONDON DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	Film	TV	Corporate video	Advertising
				(£ increase in value added output per £1 increase in export sales)
Regional dynamic multiplier	1.1	1.1	1.2	1.2
UK dynamic multiplier	1.8	1.9	2.1	2.1

Note(s) : Regional dynamic multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Note(s) : UK dynamic multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

REGION 2: THE SOUTH EAST

SCREEN INDUSTRIES LOCATION QUOTIENTS[1], 2002

Note(s) : 1 The share of employment in the screen industries in a county/region divided by the equivalent share in the UK. Employment in the screen industries includes employment in radio and excludes employment in the interactive industry. Location quotients are presented for administrative areas as defined before the introduction of Unitary Authorities.
Source(s) : ABI.

TABLE 1: EMPLOYMENT IN THE SOUTH EAST, 2002

	Screen Industries		Software Consultancy and Supply		Total	
	level	%	level	%	level	%
Berkshire	1585	0.3	26317	5.7	460056	100
Buckinghamshire	1749	0.5	8540	2.5	337324	100
East Sussex	695	0.2	1766	0.6	280937	100
Hampshire	1665	0.2	10626	1.4	739632	100
Isle of Wight	113	0.2	247	0.5	50916	100
Kent	1050	0.2	4022	0.6	628681	100
Oxfordshire	476	0.2	4172	1.4	298152	100
Surrey	1793	0.4	18201	3.7	495100	100
West Sussex	368	0.1	4764	1.3	355507	100
South East	9494	0.3	78655	2.2	3646305	100
Great Britain	113936	0.4	280682	1.1	25380255	100

Note(s) : Employment in the screen industries includes employment in radio.

TABLE 2A: EMPLOYMENT IN THE SOUTH EAST, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
Berkshire	174	23	417	800	55	116	26317
Buckinghamshire	800	30	318	475	120	6	8540
East Sussex	226	41	197	221	7	3	1766
Hampshire	284	53	426	883	10	9	10626
Isle of Wight	10	0	68	35	0	0	247
Kent	106	37	416	476	3	12	4022
Oxfordshire	83	19	128	209	3	34	4172
Surrey	715	52	282	734	8	2	18201
West Sussex	108	19	105	122	10	4	4764
South East	2506	274	2357	3955	216	186	78655

TABLE 2B: EMPLOYMENT IN THE SOUTH EAST, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
							(% of total)
Berkshire	6.9	8.4	17.7	20.2	25.5	62.4	33.5
Buckinghamshire	31.9	10.9	13.5	12.0	55.6	3.2	10.9
East Sussex	9.0	15.0	8.4	5.6	3.2	1.6	2.2
Hampshire	11.3	19.3	18.1	22.3	4.6	4.8	13.5
Isle of Wight	0.4	0.0	2.9	0.9	0.0	0.0	0.3
Kent	4.2	13.5	17.6	12.0	1.4	6.5	5.1
Oxfordshire	3.3	6.9	5.4	5.3	1.4	18.3	5.3
Surrey	28.5	19.0	12.0	18.6	3.7	1.1	23.1
West Sussex	4.3	6.9	4.5	3.1	4.6	2.2	6.1

TABLE 2C: THE SOUTH EAST DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	Film	TV	Corporate video	Advertising
				(£ increase in value added output per £1 increase in export sales)
Regional dynamic multiplier	1.0	1.1	1.1	1.2
UK dynamic multiplier	2.0	2.0	2.0	2.5

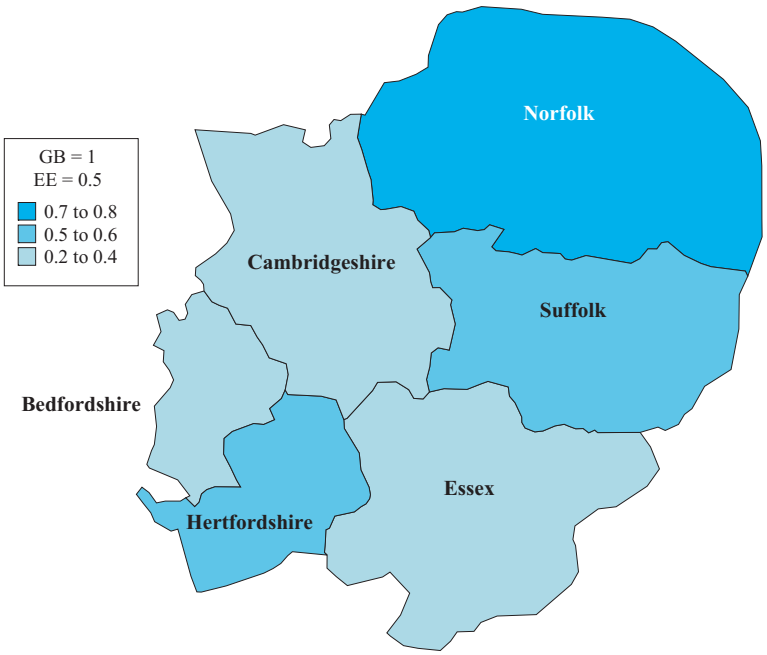
Note(s) : Regional dynamic multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Note(s) : UK dynamic multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

REGION 3: THE EAST OF ENGLAND

SCREEN INDUSTRIES LOCATION QUOTIENTS[1], 2002



Note(s) : 1 The share of employment in the screen industries in a county/region divided by the equivalent share in the UK. Employment in the screen industries includes employment in radio and excludes employment in the interactive industry. Location quotients are presented for administrative areas as defined before the introduction of Unitary Authorities.
Source(s) : ABI.

TABLE 3: EMPLOYMENT IN THE EAST OF ENGLAND, 2002

	Screen Industries		Software Consultancy and Supply		Total	
	level	%	level	%	level	%
Bedfordshire	253	0.1	2653	1.2	223098	100
Essex	950	0.2	5514	0.9	614448	100
Hertfordshire	1242	0.3	9946	2	487617	100
Cambridgeshire	613	0.2	8181	2.4	340842	100
Norfolk	1166	0.4	1057	0.3	307331	100
Suffolk	709	0.3	1401	0.5	280404	100
East of England	4933	0.2	28752	1.3	2253740	100
Great Britain	113936	0.4	280682	1.1	25380255	100

Note(s) : Employment in the screen industries includes employment in radio.

TABLE 3A: EMPLOYMENT IN THE EAST OF ENGLAND, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
Bedfordshire	46	10	28	166	2	1	2653
Essex	109	31	423	274	8	105	5514
Hertfordshire	364	18	320	485	22	33	9946
Cambridgeshire	44	5	257	251	2	54	8181
Norfolk	76	16	178	892	3	1	1057
Suffolk	72	13	255	157	211	1	1401
East of England	711	93	1461	2225	248	195	28752

TABLE 3B: EMPLOYMENT IN THE EAST OF ENGLAND, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
							(% of total)
Bedfordshire	6.5	10.8	1.9	7.5	0.8	0.5	9.2
Essex	15.3	33.3	29.0	12.3	3.2	53.8	19.2
Hertfordshire	51.2	19.4	21.9	21.8	8.9	16.9	34.6
Cambridgeshire	6.2	5.4	17.6	11.3	0.8	27.7	28.5
Norfolk	10.7	17.2	12.2	40.1	1.2	0.5	3.7
Suffolk	10.1	14.0	17.5	7.1	85.1	0.5	4.9
East of England	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3C: EAST OF ENGLAND DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	Film	TV	Corporate video	Advertising
				(£ increase in value added output per £1 increase in export sales)
Regional dynamic multiplier	0.9	1.1	1.0	1.0
UK dynamic multiplier	2.1	2.3	2.1	2.3

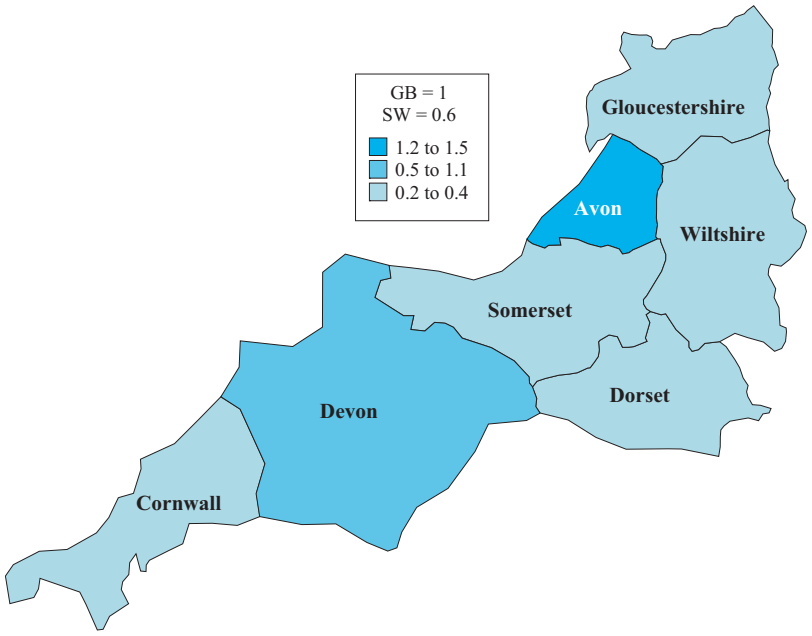
Note(s) : Regional dynamic multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Note(s) : UK dynamic multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

REGION 4: THE SOUTH WEST

SCREEN INDUSTRIES LOCATION QUOTIENTS[1], 2002



Note(s) : 1 The share of employment in the screen industries in a county/region divided by the equivalent share in the UK. Employment in the screen industries includes employment in radio and excludes employment in the interactive industry. Location quotients are presented for administrative areas as defined before the introduction of Unitary Authorities.
Source(s) : ABI.

TABLE 4: EMPLOYMENT IN THE SOUTH WEST, 2002

	Screen Industries		Software Consultancy and Supply		Total	
	level	%	level	%	level	%
Avon	2161	0.7	3893	1.2	324354	100
Cornwall	344	0.2	445	0.3	177346	100
Devon	1147	0.3	1159	0.3	422175	100
Dorset	453	0.2	1884	0.7	269114	100
Gloucestershire	517	0.1	5524	1.5	358503	100
Somerset	348	0.1	1696	0.7	258009	100
Wiltshire	448	0.2	3418	1.2	276777	100
South West	5418	0.3	18019	0.9	2086278	100
Great Britain	113936	0.4	280682	1.1	25380255	100

Note(s) : Employment in the screen industries includes employment in radio.

TABLE 4A: EMPLOYMENT IN THE SOUTH WEST, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
Avon	411	20	361	1360	8	1	3893
Cornwall	73	6	134	128	2	1	445
Devon	244	5	335	548	4	11	1159
Dorset	43	1	281	124	4	0	1884
Gloucestershire	87	31	145	251	3	0	5524
Somerset	85	2	141	119	0	1	1696
Wiltshire	75	6	171	190	6	0	3418
South West	1018	71	1568	2720	27	14	18019

TABLE 4B: EMPLOYMENT IN THE SOUTH WEST, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
							(% of total)
Avon	40.4	28.2	23.0	50.0	29.6	7.1	21.6
Cornwall	7.2	8.5	8.5	4.7	7.4	7.1	2.5
Devon	24.0	7.0	21.4	20.1	14.8	78.6	6.4
Dorset	4.2	1.4	17.9	4.6	14.8	0.0	10.5
Gloucestershire	8.5	43.7	9.2	9.2	11.1	0.0	30.7
Somerset	8.3	2.8	9.0	4.4	0.0	7.1	9.4
Wiltshire	7.4	8.5	10.9	7.0	22.2	0.0	19.0
South West	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 4C: THE SOUTH WEST DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	Film	TV	Corporate video	Advertising
				(£ increase in value added output per £1 increase in export sales)
Regional dynamic multiplier	0.9	0.9	0.9	0.9
UK dynamic multiplier	2.4	2.2	2.0	2.2

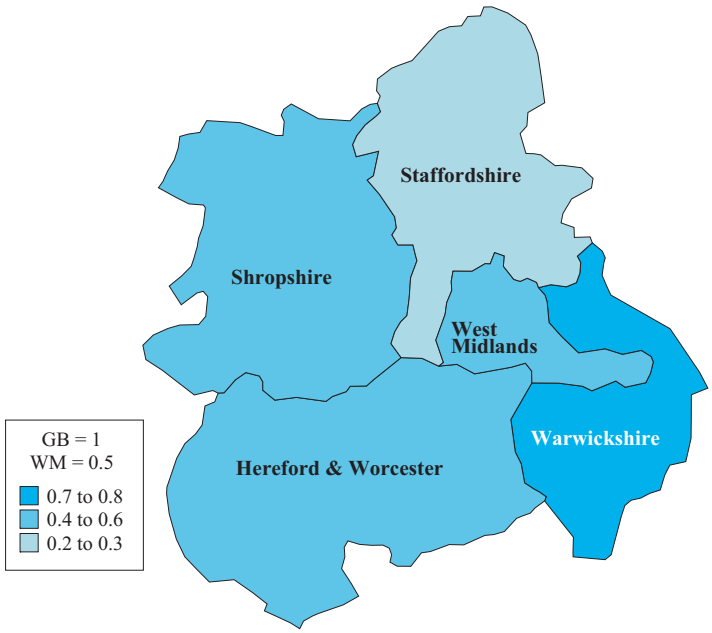
Note(s) : Regional dynamic multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

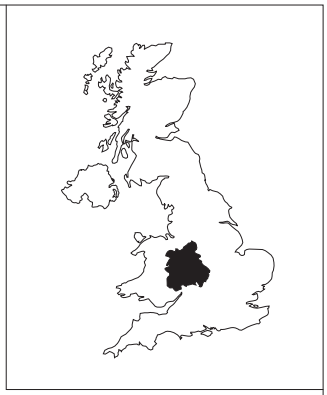
Note(s) : UK dynamic multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

REGION 5: THE WEST MIDLANDS

SCREEN INDUSTRIES LOCATION QUOTIENTS[1], 2002





Note(s) : 1 The share of employment in the screen industries in a county/region divided by the equivalent share in the UK. Employment in the screen industries includes employment in radio and excludes employment in the interactive industry. Location quotients are presented for administrative areas as defined before the introduction of Unitary Authorities.
Source(s) : ABI.

TABLE 5: EMPLOYMENT IN THE WEST MIDLANDS, 2002

	Screen Industries		Software Consultancy and Supply		Total	
	level	%	level	%	level	%
Hereford & Worcester	592	0.2	2314	0.8	276183	100
Shropshire	392	0.2	814	0.4	187361	100
Staffordshire	632	0.1	3530	0.8	422533	100
Warwickshire	706	0.3	3763	1.7	225785	100
West Midlands	3091	0.3	12674	1.1	1194136	100
West Midlands	5413	0.2	23095	1	2305998	100
Great Britain	113936	0.4	280682	1.1	25380255	100

Note(s) : Employment in the screen industries includes employment in radio.

TABLE 5A: EMPLOYMENT IN THE WEST MIDLANDS, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
Hereford & Worcs	94	16	95	379	8	0	2314
Shropshire	13	4	166	58	151	0	814
Staffordshire	34	31	398	169	0	0	3530
Warwickshire	70	25	139	472	0	0	3763
West Midlands	153	54	928	1802	5	149	12674
West Midlands	364	130	1726	2880	164	149	23095

TABLE 5B: EMPLOYMENT IN THE WEST MIDLANDS, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
							(% of total)
Hereford & Worcs	25.8	12.3	5.5	13.2	4.9	0.0	10.0
Shropshire	3.6	3.1	9.6	2.0	92.1	0.0	3.5
Staffordshire	9.3	23.8	23.1	5.9	0.0	0.0	15.3
Warwickshire	19.2	19.2	8.1	16.4	0.0	0.0	16.3
West Midlands	42.0	41.5	53.8	62.6	3.0	100.0	54.9
West Midlands	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 5C: THE WEST MIDLANDS DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	Film	TV	Corporate video	Advertising
				(£ increase in value added output per £1 increase in export sales)
Regional dynamic multiplier	0.8	0.9	0.8	0.8
UK dynamic multiplier	1.8	2.0	1.6	1.5

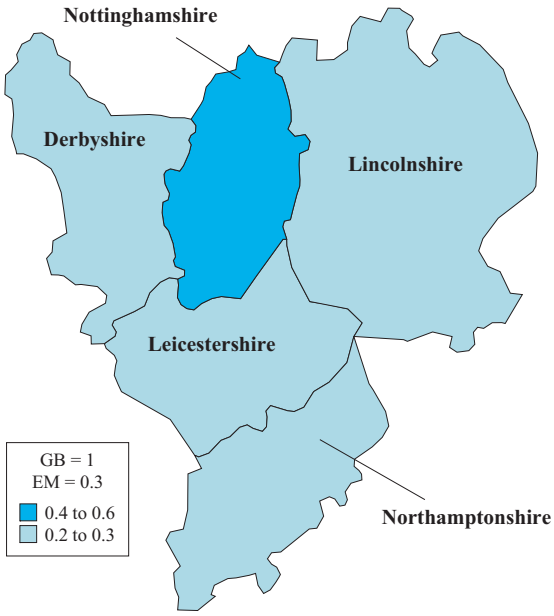
Note(s) : Regional dynamic multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Note(s) : UK dynamic multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

REGION 6: THE EAST MIDLANDS

SCREEN INDUSTRIES LOCATION QUOTIENTS[1], 2002



Note(s) : 1 The share of employment in the screen industries in a county/region divided by the equivalent share in the UK. Employment in the screen industries includes employment in radio and excludes employment in the interactive industry. Location quotients are presented for administrative areas as defined before the introduction of Unitary Authorities.
Source(s) : ABI.

TABLE 6: EMPLOYMENT IN THE EAST MIDLANDS, 2002

	Screen Industries		Software Consultancy and Supply		Total	
	level	%	level	%	level	%
Derbyshire	493	0.1	2278	0.6	378092	100
Leicestershire	439	0.1	2154	0.6	388376	100
Lincolnshire	286	0.1	659	0.3	235061	100
Northamptonshire	335	0.1	2277	0.8	282602	100
Nottinghamshire	1170	0.3	3542	0.8	450116	100
East Midlands	2723	0.2	10910	0.6	1734247	100
Great Britain	113936	0.4	280682	1.1	25380255	100

Note(s) : Employment in the screen industries includes employment in radio.

TABLE 6A: EMPLOYMENT IN THE EAST MIDLANDS, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
Derbyshire	60	1	259	168	2	3	2278
Leicestershire	69	9	165	194	2	0	2154
Lincolnshire	20	3	62	196	3	2	659
Northamptonshire	66	0	93	159	5	12	2277
Nottinghamshire	92	13	386	672	1	6	3542
East Midlands	307	26	965	1389	13	23	10910

TABLE 6B: EMPLOYMENT IN THE EAST MIDLANDS, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
							(% of total)
Derbyshire	19.5	3.8	26.8	12.1	15.4	13.0	20.9
Leicestershire	22.5	34.6	17.1	14.0	15.4	0.0	19.7
Lincolnshire	6.5	11.5	6.4	14.1	23.1	8.7	6.0
Northamptonshire	21.5	0.0	9.6	11.4	38.5	52.2	20.9
Nottinghamshire	30.0	50.0	40.0	48.4	7.7	26.1	32.5
East Midlands	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 6C: THE EAST MIDLANDS DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	Film	TV	Corporate video	Advertising
				(£ increase in value added output per £1 increase in export sales)
Regional dynamic multiplier	0.8	0.9	0.8	0.9
UK dynamic multiplier	1.8	2.1	1.4	1.4

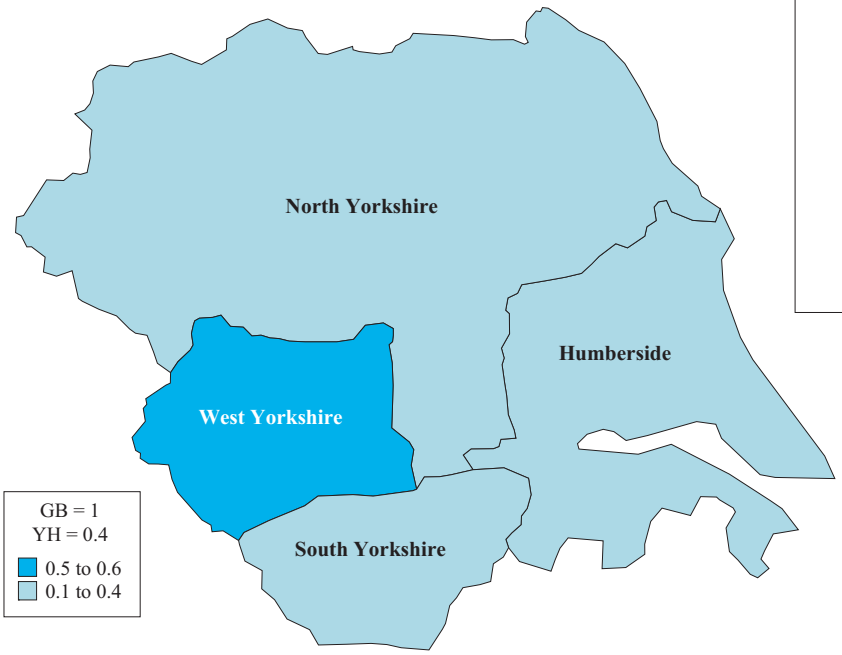
Note(s) : Regional dynamic multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Note(s) : UK dynamic multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

REGION 7: YORKSHIRE & THE HUMBER

SCREEN INDUSTRIES LOCATION QUOTIENTS[1], 2002



Note(s) : 1 The share of employment in the screen industries in a county/region divided by the equivalent share in the UK. Employment in the screen industries includes employment in radio and excludes employment in the interactive industry. Location quotients are presented for administrative areas as defined before the introduction of Unitary Authorities.
Source(s) : ABI.

TABLE 7: EMPLOYMENT IN YORKSHIRE. & THE HUMBER, 2002

	Screen Industries		Software Consultancy and Supply		Total	
	level	%	level	%	level	%
Humberside	330	0.1	1619	0.5	353691	100
North Yorkshire	557	0.2	2553	0.8	328342	100
South Yorkshire	726	0.1	2205	0.4	503450	100
West Yorkshire	2278	0.2	6338	0.7	950015	100
Yorkshire & the Humber	3891	0.2	12715	0.6	2135498	100
Great Britain	113936	0.4	280682	1.1	25380255	100

Note(s) : Employment in the screen industries includes employment in radio.

TABLE 7A: EMPLOYMENT IN YORKSHIRE & THE HUMBER, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
Humberside	54	0	195	76	5	0	1619
North Yorkshire	45	27	131	344	6	4	2553
South Yorkshire	96	7	374	241	8	0	2205
West Yorkshire	140	27	580	1488	13	30	6338
York & the Humb.	335	61	1280	2149	32	34	12715

TABLE 7B: EMPLOYMENT IN YORKSHIRE & THE HUMBER, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
							(% of total)
Humberside	16.1	0.0	15.2	3.5	15.6	0.0	12.7
North Yorkshire	13.4	44.3	10.2	16.0	18.8	11.8	20.1
South Yorkshire	28.7	11.5	29.2	11.2	25.0	0.0	17.3
West Yorkshire	41.8	44.3	45.3	69.2	40.6	88.2	49.8
York & the Humb.	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 7C: YORKSHIRE & THE HUMBER DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	Film	TV	Corporate video	Advertising
				(£ increase in value added output per £1 increase in export sales)
Regional dynamic multiplier	0.8	0.9	0.9	0.9
UK dynamic multiplier	2.0	2.4	1.6	1.7

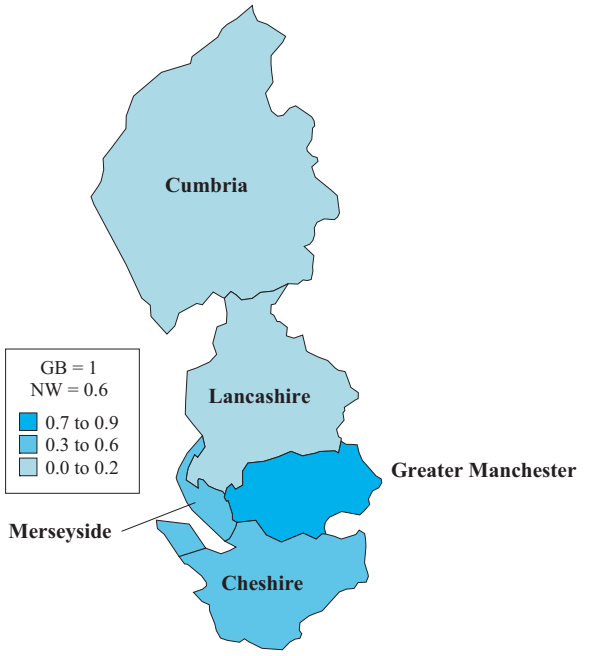
Note(s) : Regional dynamic multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Note(s) : UK dynamic multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

REGION 8: THE NORTH WEST

SCREEN INDUSTRIES LOCATION QUOTIENTS[1], 2002



Note(s) : 1 The share of employment in the screen industries in a county/region divided by the equivalent share in the UK. Employment in the screen industries includes employment in radio and excludes employment in the interactive industry. Location quotients are presented for administrative areas as defined before the introduction of Unitary Authorities.
Source(s) : ABI.

TABLE 8: EMPLOYMENT IN THE NORTH WEST, 2002

	Screen Industries		Software Consultancy and Supply		Total	
	level	%	level	%	level	%
Cheshire	836	0.2	5197	1.1	469549	100
Greater Manchester	4480	0.4	9943	0.9	1151833	100
Lancashire	566	0.1	4582	0.8	594729	100
Merseyside	1352	0.2	2088	0.4	549789	100
Cumbria	282	0.1	340	0.2	196362	100
North West	7516	0.3	22150	0.7	2962262	100
Great Britain	113936	0.4	280682	1.1	25380255	100

Note(s) : Employment in the screen industries includes employment in radio.

TABLE 8A: EMPLOYMENT IN THE NORTH WEST, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
Cheshire	98	255	296	117	1	69	5197
Gr. Manchester	483	156	801	2840	12	188	9943
Lancashire	89	12	273	180	12	0	4582
Merseyside	98	22	507	722	1	2	2088
Cumbria	77	4	123	78	0	0	340
North West	845	449	2000	3937	26	259	22150

TABLE 8B: EMPLOYMENT IN THE NORTH WEST, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
							(% of total)
Cheshire	11.6	56.8	14.8	3.0	3.8	26.6	23.5
Gr. Manchester	57.2	34.7	40.0	72.1	46.2	72.6	44.9
Lancashire	10.5	2.7	13.7	4.6	46.2	0.0	20.7
Merseyside	11.6	4.9	25.4	18.3	3.8	0.8	9.4
Cumbria	9.1	0.9	6.2	2.0	0.0	0.0	1.5
North West	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 8C: THE NORTH WEST DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	Film	TV	Corporate video	Advertising
				(£ increase in value added output per £1 increase in export sales)
Regional dynamic multiplier	0.9	1.0	1.0	1.0
UK dynamic multiplier	1.9	2.0	1.6	1.8

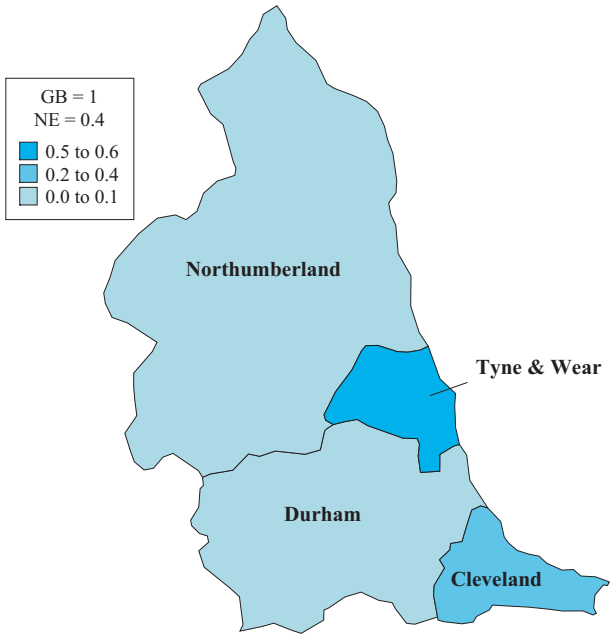
Note(s) : Regional dynamic multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Note(s) : UK dynamic multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

REGION 9: THE NORTH EAST

SCREEN INDUSTRIES LOCATION QUOTIENTS[1], 2002



Note(s) : 1 The share of employment in the screen industries in a county/region divided by the equivalent share in the UK. Employment in the screen industries includes employment in radio and excludes employment in the interactive industry. Location quotients are presented for administrative areas as defined before the introduction of Unitary Authorities.
Source(s) : ABI.

TABLE 9: EMPLOYMENT IN THE NORTH EAST, 2002

	Screen Industries		Software Consultancy and Supply		Total	
	level	%	level	%	level	%
Cleveland	345	0.2	741	0.3	213798	100
Durham	76	0	1108	0.5	206577	100
Northumberland	28	0	224	0.2	98691	100
Tyne and Wear	1229	0.3	3283	0.7	477286	100
North East	1678	0.2	5356	0.5	996352	100
Great Britain	113936	0.4	280682	1.1	25380255	100

Note(s) : Employment in the screen industries includes employment in radio.

TABLE 9A: EMPLOYMENT IN THE NORTH EAST, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
Cleveland	17	0	172	155	1	0	741
Durham	14	0	42	12	4	4	1108
Northumberland	6	5	6	11	0	0	224
Tyne and Wear	93	6	346	761	6	17	3283
North East	130	11	566	939	11	21	5356

TABLE 9B: EMPLOYMENT IN THE NORTH EAST, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
							(% of total)
Cleveland	13.1	0.0	30.4	16.5	9.1	0.0	13.8
Durham	10.8	0.0	7.4	1.3	36.4	19.0	20.7
Northumberland	4.6	45.5	1.1	1.2	0.0	0.0	4.2
Tyne and Wear	71.5	54.5	61.1	81.0	54.5	81.0	61.3
North East	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 9C: THE NORTH EAST DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	Film	TV	Corporate video	Advertising
				(£ increase in value added output per £1 increase in export sales)
Regional dynamic multiplier	0.8	0.9	0.9	0.9
UK dynamic multiplier	2.1	1.8	2.1	1.9

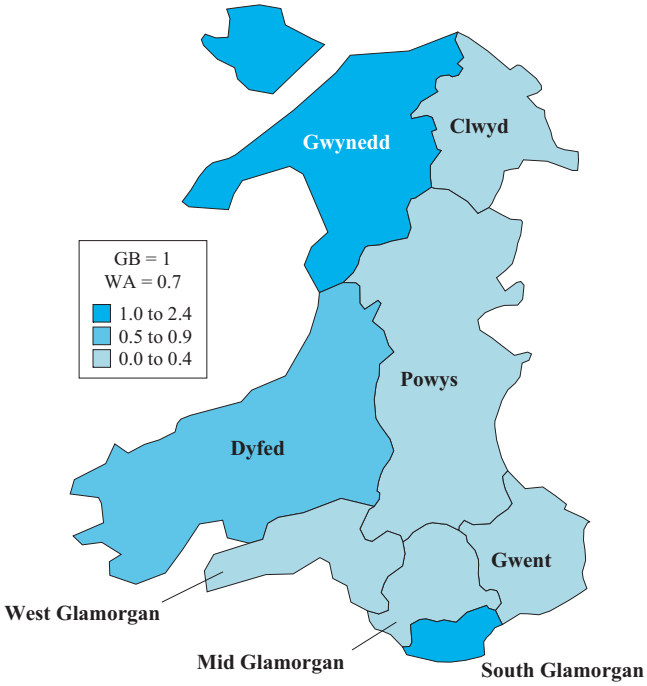
Note(s) : Regional dynamic multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Note(s) : UK dynamic multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

REGION 10: WALES

SCREEN INDUSTRIES LOCATION QUOTIENTS[1], 2002



Note(s) : 1 The share of employment in the screen industries in a county/region divided by the equivalent share in the UK. Employment in the screen industries includes employment in radio and excludes employment in the interactive industry. Location quotients are presented for administrative areas as defined before the introduction of Unitary Authorities.
Source(s) : ABI.

TABLE 10: EMPLOYMENT IN WALES, 2002

	Screen Industries		Software Consultancy and Supply		Total	
	level	%	level	%	level	%
Clwyd	141	0.1	451	0.3	143809	100
Dyfed	226	0.2	159	0.2	104800	100
Gwent	101	0.1	852	0.5	158474	100
Gwynedd	448	0.5	116	0.1	93644	100
Mid Glamorgan	255	0.1	478	0.3	190898	100
Powys	24	0.1	148	0.4	41573	100
South Glamorgan	2288	1.1	821	0.4	213203	100
West Glamorgan	109	0.1	704	0.5	138222	100
Wales	3592	0.3	3729	0.3	1084623	100
Great Britain	113936	0.4	280682	1.1	25380255	100

Note(s) : Employment in the screen industries includes employment in radio.

TABLE 10A: EMPLOYMENT IN WALES, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
Clwyd	9	0	64	65	3	0	451
Dyfed	43	12	16	155	0	0	159
Gwent	13	0	57	31	0	0	852
Gwynedd	18	0	98	328	3	1	116
Mid Glamorgan	42	0	186	27	0	0	478
Powys	5	1	13	5	0	0	148
South Glamorgan	162	18	262	1834	3	9	821
West Glamorgan	3	0	67	39	0	0	704
Wales	295	31	763	2484	9	10	3729

TABLE 10B: EMPLOYMENT IN WALES, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
							(% of total)
Clwyd	3.1	0.0	8.4	2.6	33.3	0.0	12.1
Dyfed	14.6	38.7	2.1	6.2	0.0	0.0	4.3
Gwent	4.4	0.0	7.5	1.2	0.0	0.0	22.8
Gwynedd	6.1	0.0	12.8	13.2	33.3	10.0	3.1
Mid Glamorgan	14.2	0.0	24.4	1.1	0.0	0.0	12.8
Powys	1.7	3.2	1.7	0.2	0.0	0.0	4.0
South Glamorgan	54.9	58.1	34.3	73.8	33.3	90.0	22.0
West Glamorgan	1.0	0.0	8.8	1.6	0.0	0.0	18.9
Wales	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 10C: WALES DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	Film	TV	Corporate video	Advertising
				(£ increase in value added output per £1 increase in export sales)
Regional dynamic multiplier	0.8	0.8	0.8	0.8
UK dynamic multiplier	2.4	1.8	2.2	2.1

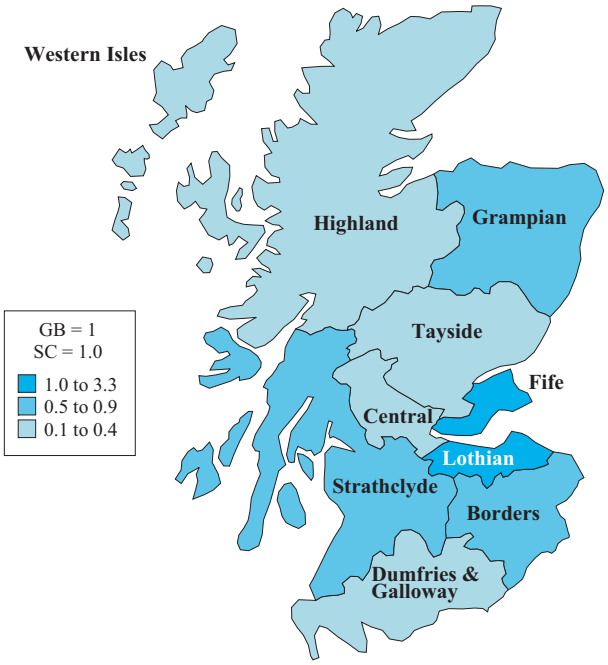
Note(s) : Regional dynamic multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Note(s) : UK dynamic multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

REGION 11: SCOTLAND

SCREEN INDUSTRIES LOCATION QUOTIENTS[1], 2002



Note(s) : 1 The share of employment in the screen industries in a county/region divided by the equivalent share in the UK. Employment in the screen industries includes employment in radio and excludes employment in the interactive industry. Location quotients are presented for administrative areas as defined before the introduction of Unitary Authorities.
Source(s) : ABI.

TABLE 11: EMPLOYMENT IN SCOTLAND, 2002

	Screen Industries		Software Consultancy and Supply		Total	
	level	%	level	%	level	%
Borders	151	0.4	134	0.3	39946	100
Central	117	0.1	463	0.4	112329	100
Dumfries and Gall	93	0.2	70	0.1	52762	100
Fife	1974	1.5	471	0.4	133482	100
Grampian	553	0.2	1234	0.5	266597	100
Highland	175	0.2	248	0.3	89918	100
Lothian	3572	0.8	5020	1.2	425658	100
Strathclyde	3184	0.3	8131	0.9	948829	100
Tayside	177	0.1	385	0.2	161516	100
Western Isles	7	0.1	24	0.4	6586	100
Scotland	10003	0.4	16180	0.7	2237623	100
Great Britain	113936	0.4	280682	1.1	25380255	100

Note(s) : Employment in the screen industries includes employment in radio.

TABLE 11A: EMPLOYMENT IN SCOTLAND, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
Borders	27	2	27	8	0	87	134
Central	8	0	93	16	0	0	463
Dumfries & Gall.	6	6	36	45	0	0	70
Fife	26	4	73	1869	0	2	471
Grampian	151	7	139	255	1	0	1234
Highland	22	3	57	93	0	0	248
Lothian	164	42	322	2661	10	373	5020
Strathclyde	309	30	754	2028	15	48	8131
Tayside	15	2	94	66	0	0	385
Western Isles	0	0	0	7	0	0	24
Scotland	728	96	1595	7048	26	510	16180

TABLE 11B: EMPLOYMENT IN SCOTLAND, 2002

	Motion Picture Production	Motion Picture and Video Distribution	Motion Picture Projection	Radio and TV Activities	Reproduction of Video Recording	Reproduction of Computer Media	Software Consultancy and Supply
							(% of total)
Borders	3.7	2.1	1.7	0.1	0.0	17.1	0.8
Central	1.1	0.0	5.8	0.2	0.0	0.0	2.9
Dumfries & Gall.	0.8	6.3	2.3	0.6	0.0	0.0	0.4
Fife	3.6	4.2	4.6	26.5	0.0	0.4	2.9
Grampian	20.7	7.3	8.7	3.6	3.8	0.0	7.6
Highland	3.0	3.1	3.6	1.3	0.0	0.0	1.5
Lothian	22.5	43.8	20.2	37.8	38.5	73.1	31.0
Strathclyde	42.4	31.3	47.3	28.8	57.7	9.4	50.3
Tayside	2.1	2.1	5.9	0.9	0.0	0.0	2.4
Western Isles	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Scotland	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 11C: SCOTLAND DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	Film	TV	Corporate video	Advertising
				(£ increase in value added output per £1 increase in export sales)
Regional dynamic multiplier	0.9	0.9	0.9	0.9
UK dynamic multiplier	2.5	2.1	1.7	2.2

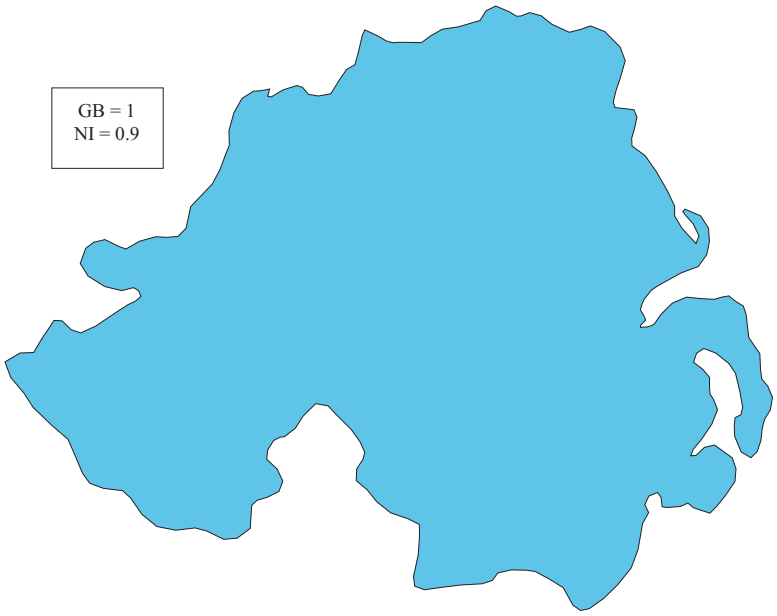
Note(s) : Regional dynamic multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

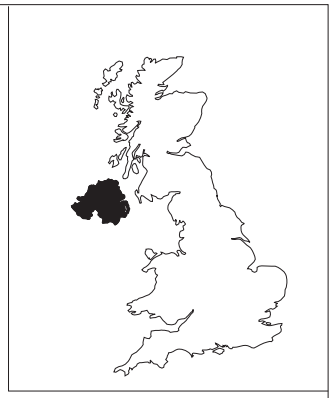
Note(s) : UK dynamic multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.

Source(s) : Cambridge Econometrics.

REGION 12: NORTHERN IRELAND

SCREEN INDUSTRIES LOCATION QUOTIENTS[1], 2002





Note(s) : 1 The share of employment in recreational, cultural & sporting activities in Northern Ireland divided by the equivalent share in the UK.
Source(s) : ONS.

TABLE 12: EMPLOYMENT IN NORTHERN IRELAND, 2002

Recreational, Cultural & Sporting Activities		Computer & Related Activities		Total	
level	%	level	%	level	%
14974	2.3	5236	0.8	655775	100

Note(s) : Employment in the table is for the industries SIC 92 and SIC 72.

TABLE 12C: NORTHERN IRELAND DYNAMIC MULTIPLIERS FOR VALUE ADDED OUTPUT

	Film	TV	Corporate video	Advertising (£ increase in value added output per £1 increase in export sales)
Regional dynamic multiplier	0.8	0.8	0.8	0.8
UK dynamic multiplier	1.6	2.2	1.9	2.0

Note(s) : Regional dynamic multiplier = increase in the region's entire value added over four years per unit increase in export sales by firms in the specified industry and region.
Note(s) : UK dynamic multiplier = increase in the UK's entire value added over four years per unit increase in export sales by firms in the specified industry and region.
Source(s) : Cambridge Econometrics.