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Improving economic statistics in the creative industries

Towards multi-regional creative industries satellite accounts

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Summary

Measuring the economic character and contribution of the creative industries (CIs) is increasingly important to policymakers at both the national, regional and local level. In recent years we have seen increased emphasis on the ability of the CIs to catalyse growth, innovation, and export potential in other sectors. There is increasing evidence of the economic potential of CIs outside London and major urban areas with distinct clusters of CI activity present in all corners of the UK, from Video Games in Dundee and Leamington Spa, Fashion in Leeds, to Film & TV in Cardiff and Northern Ireland. Set across a backdrop of regional inequality in the UK and concerted policy efforts to 'Level Up' regions that lag behind London and the South East, CIs may have a role in addressing this imbalance.

The development of creative clusters has been a clear policy objective in the UK with support and investment in the sector to date informed by DCMS economic estimates of GVA and employment. This poses a problem as the economic evidence is not highly detailed and it fails to consider the regional spillover and feedback effects associated with changes in the economy. Part of the challenge is that the data available for the economic analysis of the CIs is not as straightforward as traditional industries, as some CIs are sub-sectors spread across different standard industrial classifications (SICs) and therefore, partially hidden from national statistics.

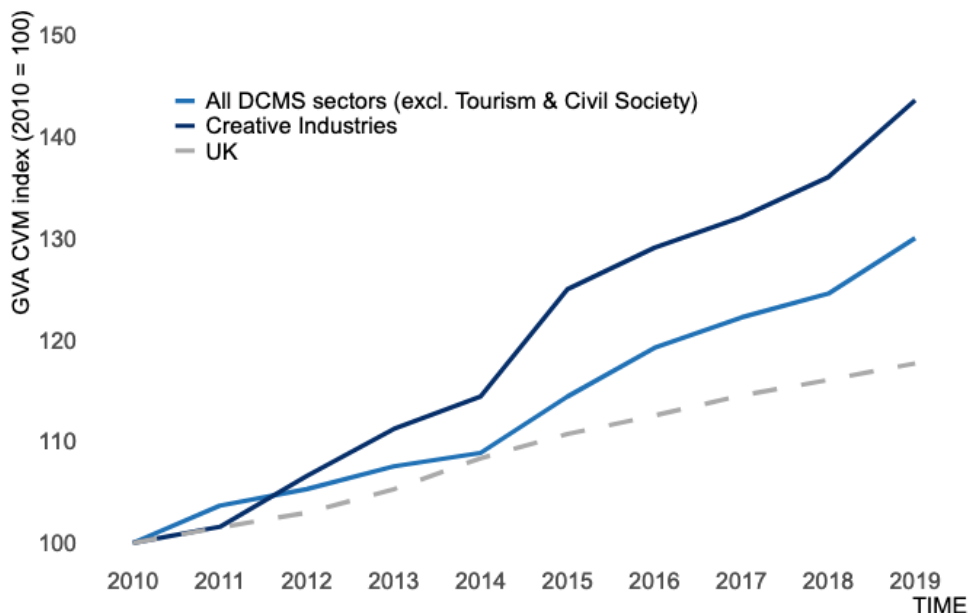
This report considers what steps would be required to advance the development of the statistics in the CIs. This is achieved through a review of international approaches, stocktaking of the data required and the presentation of an 'ideal case' Multi-regional Creative Industries Satellite Account (MR-CISA) for the UK. A MR-CISA developed to cover multiple regions of the UK will allow policy makers to see in more detail the value of CIs to regional economies and model the direct and indirect impact of policy measures and shocks across regions. The regional and sectoral spillovers revealed by a MR-CISA would provide important context to the extent spatially targeted funding decisions critical to the levelling up agenda. There are two key building blocks to developing a MR-CISA. Firstly, developing regional CISAs this reveals regional characteristics but, not the relationships between regions. Secondly, gathering detailed survey data on the inter-industry relationships between creative industries businesses in different regions.

1. Introduction

The value of creative industries

The creative industries represent a small, but fast-growing sector of the UK economy. In 2022, the creative industries contributed £124.6 billion in GVA representing 5.7% of UK GVA (DCMS, 2024). Between 2010 and 2022 the growth in creative industries GVA outperformed the UK economy between 2021 and 2022 (9.8% vs 4.4%) but also in the long-term growing 50.3% in real terms compared to 21.5% across all UK sectors.

Figure 1: GVA of DCMS sectors, the creative industries and all UK sectors 2010-2019.



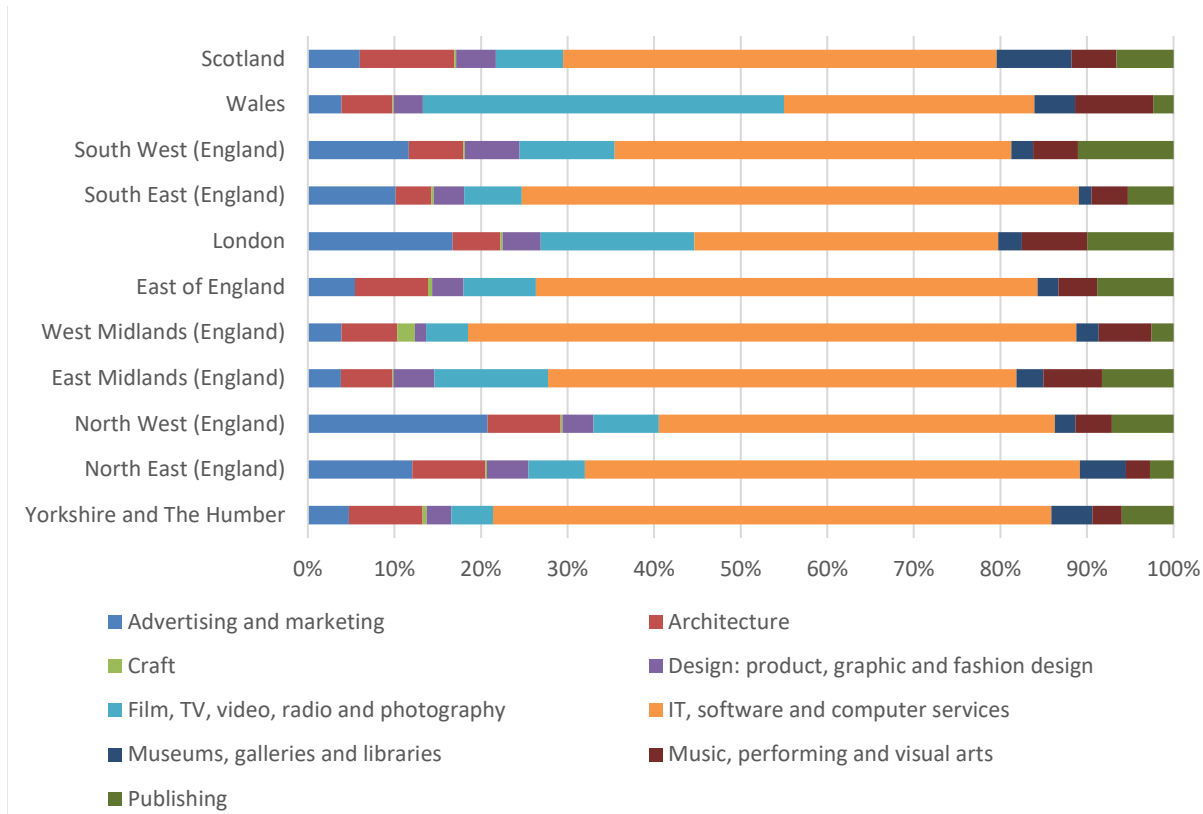
Source: (DCMS, 2021)

The creative industries have a reputation for their clustering in cities, most notably London (Hesmondhalgh, 2012; Bloom et al., 2020). There is, however, growing evidence about the value of 'microclusters' (Siepel et al., 2020) and pockets of creative industries activity in rural and coastal economies (Velez et al., 2022).

The creative industries are not homogenous, with each region having a different mix and specialism in sub-sectors. For example, video games in the West Midlands or the Film and TV sector in Cardiff city-region (Lyons & Davies, 2022). Figure 2 shows the breakdown of 2021 Full Time Equivalent (FTE) employment in creative industries sub-sectors across the 11 ITL-1 regions of the UK (excluding Northern Ireland). The figure illustrates that some sub-sectors are significantly larger employers than others; IT, software and computer services typically making up over half of creative industries employment in many of the 11 regions. Figure 2 also demonstrates that the regional mix of sub-sectors differs significantly. It is important to note that the FTE figures may distort the picture with some sub-sectors heavily dependent on self-employed freelancers, volunteers or unpaid

labour¹.

Figure 2: Percentage of FTE employment 2021 in the creative industries in each ITL 1 region (excluding Northern Ireland)



Source: ONS

The perceived economic potential of the creative industries has increasingly led to the sector being featured in economic growth plans at the sub-national level². As such, funding is being targeted into sub-sectors of the creative industries with the view that this will benefit the local economy through GVA uplift and employment. There are two central questions which cannot yet be answered with the available economic intelligence.

- What is the total economic impact to a region, including indirect and induced impacts, from investment in a sub-sector of the creative industries?
- To what extent does the economic impact of such an investment stay within a region and how does this differ between regions?

A major problem for regionally focused investment from national and sub-national plans is the

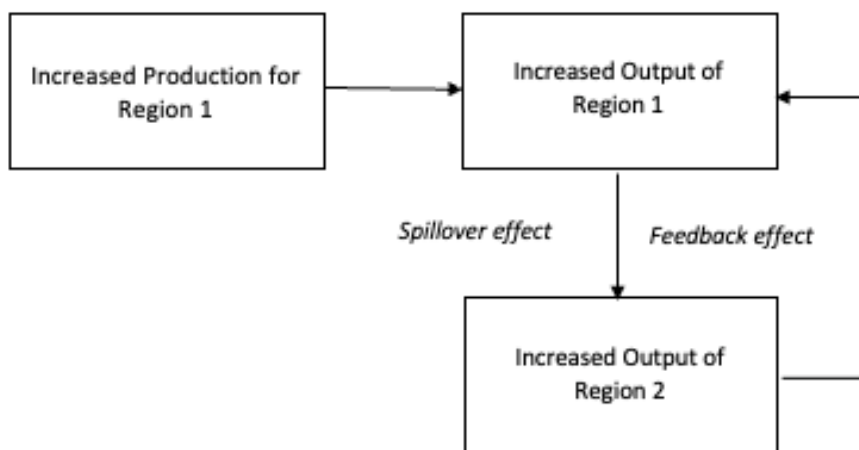
¹ There are many headline statistics related to output, employment, trade and R&D helpfully gathered here: <https://pec.ac.uk/news/national-statistics-on-the-creative-industries>

² Examples from the [West Midlands](#) and the [Cardiff Capital Region](#) and the now outdated Creative industries [Sector Deal](#)

assumption that the benefits of the investment in the CIs – or a sub-sector of the CIs - will remain within the region. Lyons (2023) shows that the indirect and particularly induced impacts of an increase of investment in creative industries sub-sectors is larger than the impact of initial direct investment. However, despite recent efforts to capture these spillovers (Frontier Economics, 2023) they are not yet routinely captured in published economic statistics. Research by Hewings & Carrascal-Incera (2023) illustrates that when incomes are earned from increased economic activity the net flow of incomes varies considerably by region. This suggests that that the majority of the impact of a change in demand (such as an investment) in a regional CI sub-sector may bleed out of the region and remain unrecorded.

As such there are two issues related to investment focused in CI sub-sectors of a region. First is the expectation that investment in the CI sub-sectors will benefit the local region and second is that significant proportion of the economic impacts will be in the indirect, and particularly the case of CIs, induced impacts. These indirect and induced impacts will depend on the region and sector and will vary in the extent they impact to host region or spillover into others. For traditional sectors, regional or multi-regional input-output tables such as the SEIM-UK (Carrascal-Incera et al., 2021) can be utilized to record the extent of these regional spillovers (Figure 3).

Figure 3. Spillover and feedback effects in multi-regional input–output (MRIO) models.



Source: (Carrascal-Incera, et al., 2021. p.896)

The creative industries are however, partially hidden in national accounts and require further extension to reveal their characteristics before such a table can be produced. The next section will detail where important detail is missing in national tables.

An incomplete picture: the creative Industries in UK national tables

The difficulty of defining the creative industries and creative employment is a well-covered topic in the literature (Cruz & Teixeira, 2012; Florida, 2014; Kemeney et al., 2020). The difficulty of defining CIs poses a challenge for economists as even relatively small differences in their interpretation can have significant consequences for basic estimations like creative employment and in turn economic modelling (Cruz & Teixeira, 2012). There are two main approaches to defining the creative industries. i) an industry-based approach reliant on standard industrial classification codes (SICs) ii) An occupation-based approach reliant on standard occupational classification codes (SOCs). Or a blend of the two approaches.

The CIs in the UK are defined by the DCMS³ into nine creative sub-sectors:

- Advertising and marketing
- Architecture
- Crafts
- Design: product, graphic
- Film, TV, video, radio and photography
- IT, software and computer services
- Publishing
- Museums, galleries and libraries
- Music, performing and visual arts

These sub-sectors have corresponding SICs and SOCs that are captured at the fine four-digit SIC level. National statistics in the input-output framework are reported at the two-digit SIC level (and often aggregated beyond this). The level of aggregation, therefore, means that some important detail within the creative industries is missing from any analysis.

Table 2 shows the creative industries as defined by the DCMS SIC codes and their corresponding SIC aggregation in the UK input-output tables (IOTs). What can be observed is that some CI sub-sectors are found across different SICs in the UK IOTs and some UK IOTs industries are too broad with only small portions of the UK IOT SICs corresponding to the CI sub-sector. For example, consider the crosswalk between the CI sub-sector *Publishing* and the corresponding SICs in the UK IOT. *Publishing* includes much of SIC category 58.1 (Publishing of books, periodicals and other publishing activities) but not 58.2 (Software Publishing) which is instead part of the CI sub-sector *IT, software and computer services*. *Publishing* should also include 74.30 (Translation and interpretation activities), however, the corresponding SIC in the IOT is the very broad M74 which

³ DCMS methodology can be found here:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/499683/CIEE_Methodology.pdf

includes specialised design activity, photographic activities and other professional and scientific technical services.

To take another example, the CI sub-sector *Design: product, graphic* is defined in DCMS terms as the four-digit SIC sector 74.10 (Specialised design activities). However, in the UK IOTs the nearest sector is the broader M74 Other professional, scientific and technical services. M74 is a diverse category which includes activities from environmental consulting and quantity surveying (74.90) to Photography 74.2 and translation services 74.3. As such the inter-industry relationships that are revealed in the UK IOTs under these broad industrial classifications are unlikely to provide an accurate representation of the creative sub-sectors.

Table 2: Comparing the DCMS defined creative industries with the disaggregation of industries within the UK IOTs. **Source:** Author elaboration

CI sub-sector	DCMS defined SICs	Corresponding SIC in UK IOTs
Advertising and marketing	70.21 Public relations and communication activities 73.11 Advertising agencies 73.12 Media representation	M70 Services of head offices; management consulting services M73 Advertising and market research services
Architecture	71.11 Architectural activities	M71 Architectural and engineering services; technical testing and analysis services
Crafts	32.12 Manufacture of jewellery and related articles	C32 Other manufactured goods
Design: product, graphic	74.10 Specialised design activities	M74 Other professional, scientific and technical services
Film, TV, video, radio and photography	59.11 Motion picture, video and television production 59.12 Motion picture, video and television post-production 59.13 Motion picture, video and television distribution 59.14 Motion picture projection activities 60.10 Radio broadcasting 60.20 Television programming and broadcasting activities 74.20 Photographic activities	J59 & J60 Motion Picture, Video & TV Programme Production, Sound Recording & Music Publishing Activities & Programming And Broadcasting Activities M74 Other professional, scientific and technical services
IT, software and computer services	58.21 Publishing of computer games 58.29 Other software publishing 62.01 Computer programming activities 62.02 Computer consultancy activities	J58 Publishing services J62 Computer programming, consultancy and related services
Publishing	58.11 Book publishing 58.12 Publishing of directories and mailing lists 58.13 Publishing of newspapers 58.14 Publishing of journals and periodicals 58.19 Other publishing activities 74.30 Translation and interpretation activities	J58 Publishing services M74 Other professional, scientific and technical services
Museums, galleries and libraries	91.01 Library and archive activities 91.02 Museum activities	R91 Libraries, archives, museums and other cultural services
Music, performing and visual arts	59.20 Sound recording and music publishing activities 85.52 Cultural education 90.01 Performing arts 90.02 Support activities to performing arts 90.03 Artistic creation 90.04 Operation of arts facilities	J59 & J60 Motion Picture, Video & TV Programme Production, Sound Recording & Music Publishing Activities & Programming And Broadcasting Activities P85 Education services R90 Creative, arts and entertainment services

2. Creative industries satellite accounts

Introduction to satellite accounts in the UK

An input-output satellite account is a framework connected to national accounts which enables attention to a sector which is not traditionally captured in a standard system of national accounts (such as the CIs)⁴. The most widespread application of this framework is in the production of Tourism Satellite Accounts (TSAs). Tourism is a distinct economic activity; however, tourism spending occurs across a series of different economic sub-sectors such as hospitality, transport, culture and recreation, and food services. Tourism is a key DCMS sector for some national and regional economies and therefore, high-quality data on the supply and consumption of these sectors is valuable to policymakers. TSAs are well integrated within international accounting frameworks and are published regularly for the UK economy by the ONS, the UK-TSA⁵.

The UK-TSA reports on various aspects of tourist related activity:

- Inbound tourism expenditure by products and classes of visitors,
- Domestic tourism expenditure by products, classes of visitors and types of trips,
- Outbound tourism expenditure by products and classes of visitors,
- Internal tourism consumption by products,
- Production accounts of tourism industries and other industries,
- Total domestic supply and internal tourism consumption,
- Employment in tourism industries.

The UK-TSA is compiled using a series of data sources including regular detailed surveys. Examples surveys include the International Passenger Survey (IPS), Great Britain Tourism Survey (GBTS) and the Great Britain Day Visits Survey (GBDVS). These primary surveys provide critical information to produce the UK-TSAs as they capture unique tourism spending that would otherwise be hidden within other sectors of the UK SUTs. The data sources for the UK-TSA are detailed in the ONS UK TSA methodology guide⁶.

The relevance of the TSA to a creative industries satellite account is that it shows the level of detail a sufficiently developed satellite account can deliver and the data required. The creative industries do not yet have a published satellite account in the UK. However, international examples do exist, and some scoping work has been completed in the UK context.

⁴ More detail on satellite accounts can be found in Eurostat:
<https://ec.europa.eu/eurostat/esa2010/chapter/view/22/>

⁵ The UK Tourism Satellite Account (UK-TSA):
<https://www.ons.gov.uk/economy/nationalaccounts/satelliteaccounts/datasets/uktourismsatelliteaccounttsatables>

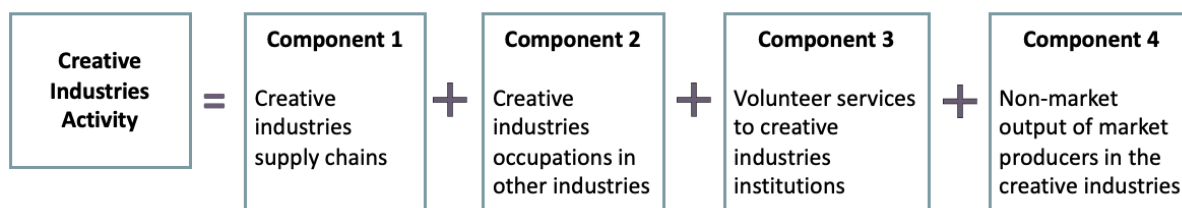
⁶<https://www.ons.gov.uk/economy/nationalaccounts/satelliteaccounts/methodologies/uktourismsatelliteaccountmethodologyguide2017>

Satellite accounts for the creative and cultural industries

Creative and cultural industries satellite accounts, like tourism satellite accounts, attempt to capture the creative and cultural economic activity contained within other industries in national accounts. Due to the lack of uniformity of definitions and differing priorities of their compilers some will focus on the extraction of the more cultural side (Heritage, Museums etc.) and others on the commercial side of the sector (e.g. IT, software and computer services). As such the distinction between creative satellite accounts (CSAs) and creative industries satellite accounts (CISAs) is down to the definitions used which have changed over time and by nation. In a UK context, a CISA is the most appropriate descriptor.

At a basic level creative satellite accounts seek to capture elements of the economic relationship between sub-sectors of the CIs in a way that nestles within a countries system of national accounts (SNAs). This is shown in **Figure 4** as 'component 1'. Others seek to capture different components of the CIs which are less straightforwardly reported **Figure 4** components 2-4.

Figure 4. The different components of creative industries satellite accounts



Source: (adapted from Smith & White, 2014)/ ABS 2013

Cultural and creative industries satellites have been developed for many different territories generally at the national level with examples from: Australia, Canada, Czech Republic, Finland, Mexico, the United States and the EU⁷. In some of these cases CSAs have been developed alongside a methodological note but the CSA is experimental and not regularly updated. Two illustrative examples of CSAs are those produced in the United States the ACPSA and the most recent work to develop a methodology in the EU.

United States - The Arts and Cultural Production Satellite Account (ACPSA)

Creative industries satellite accounts have been in development across the world for some years, however, few countries have completed their development to the stage of frequently updated tables. The Bureau of Economic Analysis has one of the most comprehensive and frequently

⁷ Australian Bureau of Statistics 2013:

<https://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/5271.0.55.001Main%20Features112013?opendocument&abname=Summary&prodno=5271.0.55.001&issue=2013&num=&view=>

Canada Culture Satellite Account: <https://www.canada.ca/en/canadian-heritage/corporate/publications/general-publications/culture-satellite-account.html>

Statistics Finland Culture satellite account: https://www.stat.fi/til/klts/index_en.html

updated. Kern et al (2014) detail the development of the Arts and Cultural Production Satellite Account (ACPSA).

The ACPSA allowed, for the first time, the evaluation of the contribution arts and culture provided the United States economy in GDP terms. The ACPSA followed the conceptual framework of concentric circles of the creative industries (Throsby, 2008). The concentric circles concept acknowledged that there is a chain of creative activities linked to a core creative output which must be adequately captured to show the value of the sector. The methodology for developing the account is presented in seven steps:

1. Identifying ACP commodities
2. Developing ACP industries
3. Identifying the arts and culture portions
4. Estimating ACP output
5. Estimating value added
6. Estimating employment and compensation
7. Estimating total and indirect output and employment

The ACPSA is an early iteration of creative satellite accounts and effectively fits under components 1 and 2 of Figure 3 as it provides additional detail about the supply chain for ACP.

A satellite account for the European Union creative industries

The EU Creative Industries Satellite Account (CISA) is described in a report by the EUIPO (2019) but is not yet compiled. The report scopes the feasibility of introducing additional components of the creative industries into a CISA most notably around the treatment of 'free' or subsidized digital services and the inclusion of IPR infringements. The report notes however that there are data challenges across different EU countries, meaning that while desirable these additional components are unlikely to be achievable. The report summarises that there are the main areas that should be covered by a future EU CISA:

- Supply and use tables that distinguish between 'principal, secondary and ancillary activities'
- Distinctions between SNA and non-SNA output
- Distinctions between legitimate and IPR infringing goods
- Production and generation of income by sector and domain

The Cardiff capital region creative industries input-output table (CCRC-IO)

In the UK there has been some initial work on the development of a creative industries satellite account, a scoping piece by Smith & White (2014) and the development of a functional creative

industries satellite account for the Cardiff Capital Region (Lyons, 2022).

The Cardiff Capital Region (CCR) Creative Industries Input-output table (CCRC-IO) shows the nine DCMS defined sub-sectors of the creative industries for 2018 in the Cardiff Capital Region. The CCR is a relatively small region in the South of Wales with a population of just over 1.5 million, around half of the Welsh population, yet the region is home to a significant cluster of creative industries activity notably in Film & TV production.

The CCRC-IO was compiled through six steps detailed in (Lyons, 2022):

1. Defining the creative industries
2. Defining 'parent sectors' to creative industries
3. Estimating creative industries GVA at the CCR level
4. Regionalising the IO tables for Wales
5. Developing column vectors of the creative industries (defining portions)
6. Estimating final demand in the creative industries

The development of the CCRC-IO allows the narration of the economic character of the creative industries in the CCR through greater disaggregation of sectors than is available in national tables (**component 1 of Figure 4**). Additionally, the CCRC-IO can be used for basic economic modelling, showing the impact of changes in the economy such as the impact of the COVID-19 shock (Lyons, 2023). Lyons (2023) find in the CCR example that the regions specialism in the Film & TV sector meant the region was especially vulnerable to the COVID-19 shock. Future trends and crises will expose different sub-sectors to supply and demand changes which can be modelled in this way. **Figure 5** provides an outline of the structure of the CCRC-IO. The components of the table were gathered from a number of sources and regionalisation techniques (Lyons, 2022)

Figure 5. The CCRC-IO for 2018 outline.

$I \times I$	HH Consumption	Government	Exports (RWales, RUK, ROW)	Total Output
GVA Compensation of Employees Taxes less subsidies Imports (RWales, RUK, Row)				
Total Input				

Adapted from Source: (Lyons, 2022)

3. Data required to produce a creative industries satellite account

One of the factors that has stymied the development of creative satellite accounts is the intensive data requirements to produce the tables (Throsby, 2008). As shown in earlier sections the production vectors published by the ONS are not sufficiently disaggregated for the creative industries even at the national level. A more detailed analysis at the regional level is therefore even more data intensive.

At a basic level data is required to satisfy a number of areas:

- Intermediate demand: data is required on CI inter-industry purchases and sales at the required geography⁸ (ITL1, ITL2). This will include inter-industry transactions between CIs and some or all other industries in the SNA.
- Primary inputs: compensation of employees, taxes and imports.
- Employment: Data will be required to capture creative employment within industries of interest.
- Final Demand: the demand for CI outputs from households, government and exports.
-

A more advanced satellite account that seeks to uncover more detail than is typically produced in an SNA (see components 2-4 of **Figure 4**) will have additional data requirements:

- Trade in creative industries products and services potentially at the regional level.
- Separation of digital paid services from digital free services.
- Capture of freelance and self-employed wages (especially important in CIs⁹)
- Hours worked by volunteers in the CI industries
- Valuation of non-market goods & services

Table 4 provides a summary of the potential data sources to satisfy the various components of a CISA table.

⁸ The geography could start at a basic Greater South East and Rest of UK or drill down into quite specific local geographies such as NUTS-2 as demonstrated in (Lyons, 2023).

⁹ As much as 47% of the creative workers are self-employed up from the 15% average in the UK workforce see (Creative Industries Federation, 2017)

Table 4. Summary of table components and data sources required to compile a CISA

Table Component	Data Sources
Employment data	Annual Population Survey (APS)
Intermediate input/outputs CI Intermediate demand & supply	Annual Business Survey (ABS) UK Supply and Use Tables (SUTs)
Final Demand Household CI Consumption Government CI Consumption CI Exports Capital investments	Living Costs and Food Survey (LCFS) CI businesses financial statements DCMS, International Trade in Services (IT IS) EUKLEMS: capital, labour, energy, materials and service
Primary inputs CI Wages & taxes	Annual Business Survey (ABS) UK Supply and Use Tables (SUTs) HMRC
CI Imports	DCMS

Source: Own elaboration

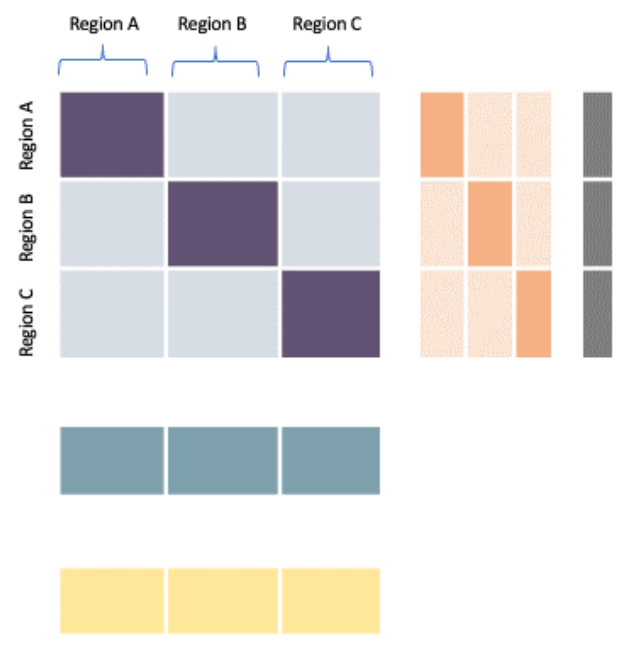
To produce these statistics at the regional level additional issues arise in the form due to the reduction in survey sample size below national level. This could be improved by increasing the sample, but this comes at significant cost which may outweigh the benefits.

4. A multi-regional creative industries satellite account for the UK

The examples of CISAs detailed in **section 2** show how different components of the creative industries could be better understood at the national level. In the UK, there are a range of statistics that are routinely produced by the DCMS which reveal some of this information already. However, as elaborated earlier, the creative industries have distinctly different features in regions across the UK (see **Figure 2**). There are key questions that cannot yet be answered with the data published by the ONS and DCMS about the trade, consumption and value-added of creative sub-sectors in regions.

A potential route to answering these questions is by using a multi-region input-output table extended to reveal the creative industries such as with an MR-CISA. **Figure 6** shows the basic outline of a three region multi-regional input-output model. The model consists of the same basic components of a standard IO model (inter-industrial sales primary inputs, final demand) but, expanded to include trade between regions, final demand of imported products.

Figure 6. Outline of a three-region multi-regional input-output table (MRIO)



A MR-CISA would expand the model outlined in **Figure 6** to reveal the sub-sectors of the creative industries. At the finest level of disaggregation this would reveal the nine DCMS defined creative sub-sectors, however, a more aggregated grouping would likely be required separating key sectors digital, creative and cultural.

While the ultimate goal is a *multiregional* IO table with creative industries disaggregated (MR-CISA), the first stage in development would be the creation of *regional* creative satellite accounts. Regional creative satellite accounts would be developed using a similar method to national creative satellite accounts, albeit adapted to overcome regional specific issues – this would reveal the scale and composition of the creative industries in each of the region. The ideal case would be to develop accounts of CIs at the regional level that maps most closely to the clusters of creative activity in the UK, as identified in previous and ongoing research by the Creative PEC and DCMS. However, the greater the regional disaggregation in general the more challenging it is to gather sufficiently detailed data of inter-industry and trade relationships. The ITL 1 geography would be a potentially valuable starting point capturing the key regional differences and importantly separating out the outliers of London and the South East of England. These regional creative satellite accounts would be used as the basis in the production of the multiregional framework using the methodology outlined in Lyons (2022).

Moving towards a multiregional framework there would be additional data requirements and challenges that would need to be overcome. Firstly, inter-regional trade data would need to be gathered at a level granular enough to capture distinct CIs previous work in this area has not been sufficiently disaggregated (Thissen et al., 2019). Secondly, one of the key issues which would be encountered in producing an CI extended relates the reporting units (RUs) and local units (LU). Many CI many companies will have head offices in population centres, such as London, but much of the activity (filming etc) may take place in other regions. This causes problems in which region

the income and expenditure of the company are allocated to. To address these challenges primary survey data would be required following the example set out in **appendix 1**.

What questions could regional creative industries satellite accounts (CISA) help answer?

- How valuable are the creative industries to each region's economy in terms of output, GVA, FTE?
- What are the value-added multipliers for sub-sectors of the creative industries and how do they vary across regions?
- How much is produced locally vs imported from the rest of the UK or the rest of the world in each creative sub-sector?
- How do regions differ in their export intensity of high value-added CI sub-sectors such as IT, software and computer services?

What additional questions could a multi-regional creative industries satellite accounts (MR-CISA) answer?

- What does the supply chain of the creative industries look like i.e. is the video games sector in Dundee linked to the video games cluster in Leamington?
- How 'sticky' are incomes in the creative industries i.e. to what extent do incomes 'earned' within a spatially defined creative cluster remain (or stick) within the region?
- How does changes in CI demand in one region impact upon others.

5. Recommendations and next steps

As the creative industries remain in focus for policymakers at various spatial scales there is value in compiling better quality statistics and models that can inform policy decisions. Government investment initiatives like the Creative Clusters Programme¹⁰ targeted eight clusters of creative industries activity. These clusters were in different geographies and had different sub-sectors of focus. It would have been valuable if prior to these spending commitments a simulation could have been run to determine the potential economic consequences. Policy initiatives like the £100 million innovation accelerators may include a creative industries focus constrained to a region West Midlands, Greater Manchester or Glasgow. However, as noted the value to a region of such an accelerator requires greater attention to the regional spillover and feedback effects than is currently available.

The much-anticipated creative sector vision (DCMS, 2023) includes regionally specific investments focused on growth of clusters and place. Objectives of the Sector Vision include aggregate aims such as boosting growth and exports by 2030. But also, spatially targeted investments through programmes like the UK Shared Prosperity Fund, The Cultural Development Fund and sector specific programmes such as the UK Games Fund and the Music Growth Exports Scheme. The

¹⁰ Creative Industries Clusters Programme: <https://creativeindustriesclusters.com/>

development of a CISA would significantly upgrade the quality of efforts to monitor and evaluate the impacts of such investments and bring them to a standard seen in other important but *hidden* sectors like tourism.

The COVID-19 impacted regions and sectors heterogeneously as the shock changed the nature of supply and demand for non-essential goods (Lyons, 2023). In the COVID example the Film & TV sector was particularly impacted and therefore, the Cardiff Capital Region which specializes in Film & TV was particularly vulnerable. Future crises, linked to global megatrends such as advancing technology and digitization, climate change, rising geopolitical tensions and demographic trends will pose different challenges that impact sectors differently. For example, an rise in the use of AI could disrupt the Video Games sector which is concentrated in clusters in Leamington Spa and Dundee. Regional CISAs therefore, present an opportunity to better prepare for and mitigate against these shocks.

This paper has shown that CISAs have the potential to provide much greater detail on creative industries supply chains and their contribution to regional and national economies. The paper has outlined that despite progress at the international level the UK has not yet developed a functional CISA. Furthermore, with an understanding that the creative industries look quite different in regions of the UK there is value in going a step further than previous national CISAs to develop regional or even a multi-regional MR-CISA. The spillover and feedback effects to changes in the economy are often underestimated. The impact of a significant investment in a CI sub-sector may, depending on the region or sector, leak out to other regions to such an extent the impact is felt most outside the region of the initial investment. A MR-CISA could assist policymakers in understanding the likely spatial distribution of impacts with far greater precision.

One significant challenge for the development of a regional CISAs and more acutely for MR-CISAs is gaining sufficiently detailed data on inter-regional trade data of creative industries businesses. This data can be inferred through regionalisation processes (Lyons, 2022). However, a more precise approach would be through a hybrid technique informed by primary surveys targeted at samples of creative industries businesses across regions and sectors (**appendix 1**). The scale of such a survey would require considerable resource at a similar scale to those conducted for the tourism satellite accounts. Creative satellite accounts are not a new idea, initial scoping work was conducted in the UK in 2014 (Smith & White, 2014) but the momentum has been lost. The next steps to further this research should be through the development of regional CISAs to reveal the regional differences in creative industries supply chains and refine our understanding of CIs to regional economies.

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Appendix

Appendix 1. Survey for creative industries businesses

A survey of creative industries businesses in the UK would be helpful to determine the industries and location of spending to develop row and column vectors within a MRIO table. A key part of this would be through spending information that may already be gathered through other Government reporting requirements. For example, a requirement of tax credits in the Film & TV sector in Wales requires a proportion of spending within Wales to be evidenced.

	Cost Item	Expenditure total (£)	% purchased in region i	% purchased in region n	% Purchased outside UK
Cost item i					
...					
...					
Cost item n					