

State of the Nations
research series

UK TRADE IN A
**GLOBAL CREATIVE
ECONOMY**

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(Newcastle University)

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**Creative Industries
Policy and
Evidence Centre**

Led by



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About the Creative Industries Policy and Evidence Centre

The Creative Industries Policy and Evidence Centre (Creative PEC) works to support the growth of the UK's creative industries through the production of independent and authoritative evidence and policy advice. Led by Newcastle University, with the Royal Society of Arts and funded by the Arts and Humanities Research Council, Creative PEC comprises a core consortium of Newcastle University, Work Advance, the University of Sussex and the University of Sheffield.

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About the State of the Nations reports

The Creative PEC's 'State of the Nations' series analyses the latest data across four thematic areas to inform the development of policies relating to the creative industries. Their scope is the whole of the United Kingdom, and wherever possible data is presented for all the nations and regions. Regular reports on each area will be published annually over the five years of the Arts and Humanities Research Council (AHRC) funding. The themes and corresponding Research Leads are:

- R&D, Innovation and Clusters (Sussex University)
- Internationalisation (Newcastle University)
- Arts, Culture and Heritage Sectors (Sheffield University)
- Education, Skills and Talent (Work Advance)

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The views expressed in this report are solely those of the authors.

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UK TRADE IN A GLOBAL CREATIVE ECONOMY

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Foreword

This report, produced by my colleagues at Newcastle University, is the second in the Creative PEC's new State of the Nations series, and the first on the theme of internationalisation of the creative industries. One of the most striking features of the UK's creative industries is their success in international markets: according to the latest figures from the Department of Culture, Media and Sport (DCMS), they account for over 14% of the UK's services exports and 3% of our goods exports. As the UK re-orientates itself in global markets having left the European Union, understanding the nature of growth opportunities and barriers is an obvious priority for policymakers. Yet, international trade is one of the areas of creative industries policy where data and analysis has been most lacking. This is why we have chosen in this State of the Nations report to focus on international trade.

We document how the UK's strength in creative industries exports is driven by services, and within that the IT, Software and Computer Services; Film, TV, video and photography, and Advertising and Marketing sub-sectors. These broad sub-sector groups are currently the most detailed available in the DCMS exports statistics, which we use because they permit comparisons across sub-sectors, within and beyond the creative industries. However, statistics published by trade bodies suggest that the DCMS sub-sector groups can mask significant divergences across individual sub-sectors. In the report, we detail a number of areas where more detailed data is needed, not least the rapidly growing area of digital creative exports. Researchers always call for more data! However, this call is especially urgent in this case, where there is a risk that the divergence between what the official exports statistics measure and what the creative industries – and the policymakers charged with supporting them – need grows to such an extent as to question the value of the data. In the meantime, the Creative PEC will continue to mine whatever evidence is available to maximise insight. As ever, I welcome any comments on what we have produced.

Hasan Bakhshi,
Director Creative PEC

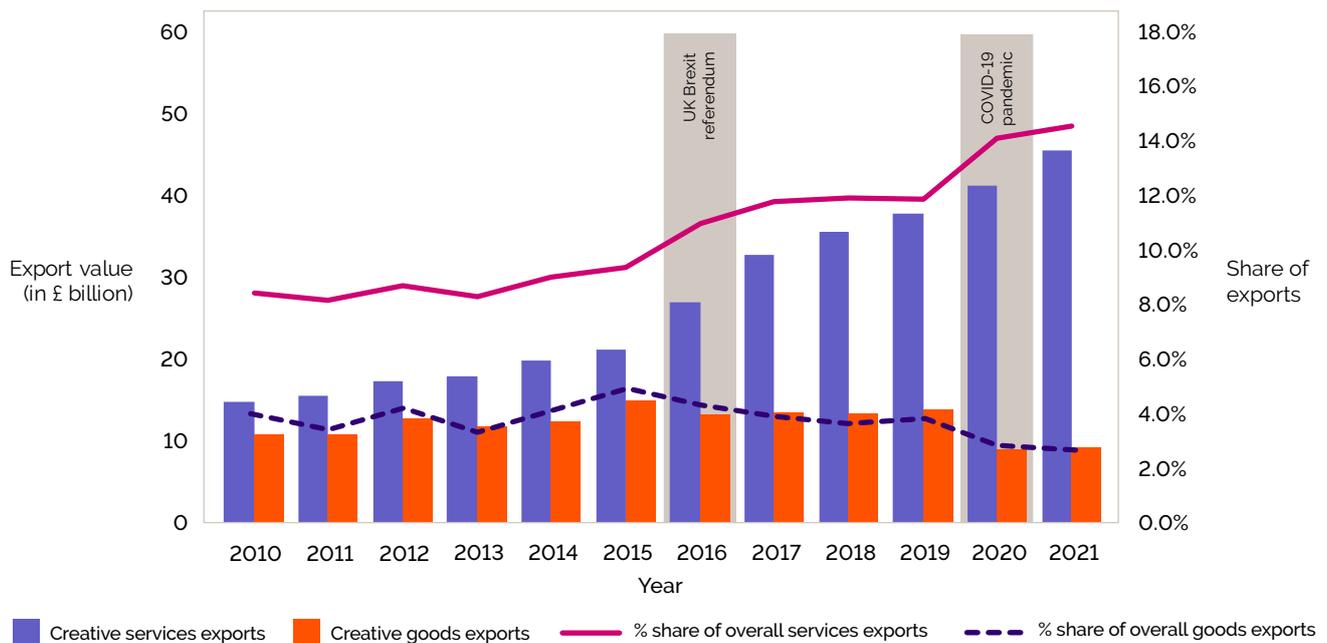
Executive summary

This report is the first of a series assessing the international outlook of the UK's creative industries, and it is focused on exports. We showcase both macro (national) and micro (firm-level) evidence on the export performance of the UK's creative industries. In addition, we present two deep dives into topics where industry and policy stakeholders have told us they want to see more evidence, namely digital trade in the creative industries (focusing on the video games sector) and the creative industries in South Korea, which are widely seen as having been successfully supported by that country's government.

We show that, overall, the UK's creative industries are strongly internationally oriented, but increasing global competition means that their strength cannot be taken for granted. Our macro and micro evidence shows a continued rise over the period 2010-2021 in UK creative services exports. This rise seems to exhibit a

slowdown after 2016, the year of the Brexit referendum, but does not show any reduction from 2020, which saw both the COVID-19 pandemic and the signing of the UK-EU Trade and Cooperation Agreement. The share of creative services exports in total services export grew as well.

Values and shares of UK's creative exports of goods and services 2010-2021



Source: Authors' calculations from export values (in current prices) reported in DCMS Sectors Economic Estimates.

By contrast, the growth of UK creative goods exports was stagnant and showed larger drops than even total UK goods exports in 2016 and 2020, with no sign of recovery in 2021. This presents a striking dichotomy in the recent performance of trade in services versus trade in goods for the UK's creative industries, and it likely partly reflects a growing comparative advantage of the UK in the production of services more generally.

Creative services exports are concentrated in a few sub-sectors with the most important being 'IT, software and computer services', followed by 'Film, TV, video, radio and photography' and 'Advertising and marketing'. These services exports have become more concentrated over time. Creative goods exports are largely found in 'Crafts', 'Music, performing and visual arts' and 'Publishing'. The impact of, and resilience to, Brexit and COVID-19 differed across sub-sectors. The data on these broad sub-sector groups is the most detailed available in the UK Department for Digital, Culture, Media and Sports' (DCMS) exports statistics, which we use because they permit comparisons across groups. However, statistics published at a more disaggregated level show that the DCMS groups can mask significant divergences across individual sub-sectors.

Europe and North America are generally the main market destinations for the UK's creative goods and services exports. However, bilateral trade statistics show that some sub-sectors export considerably outside these two blocs, and to Asia in particular. When we look at exports to the EU and North America, we see that since 2016 (the first year for which bilateral trade data is available) the share of European markets for creative services exports has declined while that of North America has increased. The opposite is true for creative goods exports.

We show that the UK enjoys a comparative advantage vis-à-vis many comparator countries in both creative goods (except for China, France and Italy) and creative services (except for Ireland). This position should not be taken for granted and is challenged by the rapid rise of countries such as China and the loss in comparative advantage against some competitors in 'Audiovisual and related services' and 'IT, software and computer services' in particular.

Using firm-level data from the Financial Analysis Made Easy company financial database, we uncover a number of key insights. A range of factors are found to impact on creative industries firms' ability to export as well as on their levels and intensity of exporting. These factors include their holdings of intangible assets and how productive they are. The export intensity of firms in the creative industries is also found to have been increasing over time. Exporting creative industries firms tend disproportionately to be based in the London and the South East of England. This is as expected, given this region's dominance in the UK's creative economy, although a more varied picture emerges across the nations and regions when looking at the percentage of creative industries firms that are exporters and the intensity of exporting (the share of overall revenues accounted for by foreign sales) in a region.

Using experimental data on digital trade from Stojkoski et al. (2024) for the period 2016-2021, the UK appears to be the fourth top exporter of video games in the world, with the US in pole position. UK exports growth in the video games sector seems to have accelerated during the COVID-19 pandemic, reaching a volume of exports in 2021 which was about 2.5 times bigger than in 2016.

The lack of data on trade in digitally ordered and digitally delivered goods and services more generally highlights the challenges in collecting digital trade data for the creative industries. In the absence of official statistics, Stojkoski et al. (2024) combine several sources of data and make use of novel estimation methodologies. Given the increasing digitalisation of the economy and the large share of digitally delivered services that is represented by creative industries, improving our statistical capabilities to record such trade is essential for providing a true picture of the sector's international performance. The growth of digital trade, reflecting technological change, also highlights how important it is that UK trade

policymakers increasingly negotiate digital agreements within existing and new trade agreements to future-proof international market access against such technological change.

The South Korea case study demonstrates that creative industries exports can thrive on the back of government investment in world-class digital infrastructure, and with integrated technology and industrial policy more generally. While its creative industries are export-oriented at early stages in the production process, such as employing foreign talent and languages in creative content like K-pop, South Korea also has a specialist agency tasked with promoting the creative content industries domestically and abroad.



1 Introduction

Context and motivation

The international setting: increasingly globally competitive creative industries

The last decade has transformed the creative industries landscape into a globally competitive marketplace. The sector has increased its economic importance in countries across the globe and, in parallel, there has been a rise in global trade. Creative goods, like books and musical instruments, and creative services, like TV commercials and streaming services, are exchanged more than ever across borders.¹ According to the *Creative Economy Outlook 2022* published by the United Nations Conference on Trade and Development (UNCTAD), in 2020 the global exports of creative goods and services exceeded US\$500 billion and US\$1 trillion,² respectively, with the latter almost doubling over the ten years since 2010 (Figure a, p. 3, UNCTAD, 2022).³ Expansion of trade in the South–North and South–South directions in the years from 2010 to 2020 has allowed a reduction in the gap between developed and developing nations (see also Fazio, 2021). However, this shrinking gap mostly pertains to goods exports, with the dominance of developed countries in services exports persisting (see Figures b and c, pp. 3 and 4, UNCTAD, 2022). These global trends are driven

by several long-term developments linked to globalisation, including the historical reduction in overall trade costs and barriers, the increase in economic integration agreements and their depth, the inclusion of emerging economies in the world trade system and the ongoing process of digital transformation of the way creative products are produced, distributed and consumed. For example, some creative industries products are changing from tangible (e.g. books, movies, music and computer software in physical formats like paper, CD and DVD) to intangible goods (e.g. digital products like mp3 and mp4) and are, eventually, becoming services (e.g. streaming and download subscriptions of books, music or movies). Over time, while creative products will still appear both as goods and services exports, we would expect them to be increasingly exchanged in digital formats or as services rather than in physical format.

Many governments around the world have recognised the potential of creative industries and have either developed sector-specific industrial strategies or have included them in wider national industrial policies. The rise of emerging powers should be factored in when considering internationalisation strategies for the creative industries.⁴ To know more about specific policy initiatives from around the world, we refer the interested reader to UNCTAD (2022).⁵

The UK's creative industries international position and strategic ambitions

The UK's creative industries are a large contributor to gross value added (GVA) and jobs,⁶ as well as making the country fifth in the world in terms of creative services exports and seventh for creative goods exports (see UNCTAD, 2022). According to the latest statistics compiled by the Department for Culture, Media and Sport (DCMS, 2023), in 2021 the UK exported £9.1 billion of creative goods and £45.6 billion of creative services.⁷ In both goods and services, the country enjoys a positive trade balance of £2.1 billion and £18.7 billion, respectively. It should be noted, as detailed by Maioli et al. (2021), that official statistics could understate the exporting activities of UK firms, especially those of smaller service-oriented exporters, those more likely to export digitally and those operating in activities imperfectly captured by the Standard Industry Classification (SIC) codes, so these numbers should be considered as lower-bound estimates.

The international trade of goods and services is closely linked with the movement of capital, such as foreign investments, and the movement of people, such as the migration of skilled individuals. In terms of foreign direct investment (FDI), over the period 2013-2022 around 11% of the total number of projects in the UK fell within the creative industries, with around 13% on average between 2020 and 2022.⁸ The UK's success in the creative industries relies on access to a highly skilled workforce. In 2022, 15% of this workforce was made up of non-UK nationals, with 7% of these from the EU and 8% from outside the EU.⁹ Taken together, these numbers substantiate the claim that the UK's creative industries are very international.

The UK is also leading the way in terms of public policies for the sector. The creative industries are identified as one of five national priority sectors by the UK Government, together with digital technology, green industries, life sciences and advanced manufacturing. They have also been supported by sector-specific growth strategies like the 2018 Creative Industries Sector Deal and the Creative Industries Sector Vision published in 2023. In both, higher exports are a key objective.¹⁰ In the Sector Vision, internationalisation, via exports and FDI, is seen to support the growth objective.¹¹ While no explicit creative exports target is set, actions are identified to help the sector contribute towards the £1 trillion exports per year set in the UK Government's export strategy for the entire UK economy by 2030.

The Sector Vision also recognises the challenges and opportunities faced by the sector, such as the rising importance of digitalisation and new technologies, the need for increased presence in fast-growing emerging markets while keeping ties with the EU and North America, the current concentration of exporters in a few regions of the UK (i.e. London and the South East), the predominance of microbusinesses which have a particular need for export support and the need to protect UK creative industries businesses' intangible assets like trademarks and copyright. In response to these challenges, the Sector Vision sets out several specific actions, including:

- increased funding for the Music Export Growth Scheme (MEGS)¹²
- doubling creative industries-related trade missions
- expansion of creative industries-specific guidance and support via the Department of Business and Trade (DBT) Export Support Service and the Export Academy
- continued investment in the UK Global Screen Fund.

The UK Government has set a series of actions to ensure greater awareness among businesses of the support that is available,¹³ the pursuit of beneficial terms of trade via trade agreements, and the promotion of creative goods and services at international events and trade shows. The devolved nations are also working on increasing creative industries exports.¹⁴

The dynamic nature of the global creative industries and the interest of policymakers in leveraging the sector for national growth and international competitiveness create the need for regularly updated evidence to inform specific actions.

Brief review of the evidence base

In Creative PEC's first five years, the internationalisation of UK creative industries in terms of international trade, investment and migration was identified as an area with among the most serious literature and data gaps. For a review of the literature on creative trade and data sources, please refer to Fazio (2019) and Maioli et al. (2021).¹⁵

Here, we outline the current quantitative evidence on the UK's creative industries international position, as delineated by Creative PEC's previous research, and set out the specific aims of this State of the Nations report.

To begin to address this, for international trade Di Novo et al. (2020) presented 12 facts about the UK's international competitiveness, highlighting the rise over time in creative services trade, the exporting and productivity differences across creative sub-sectors, the international patterns of regulatory barriers faced by the sector, the role of creative trade in the UK's balance of payments, the importance of international talent and the share of domestic value added in trade. Di Novo et al. (2021) and Tether and Yu (2022) investigated firm-level behaviour using survey data. The former used a survey collected on behalf of the Creative Industries Council (CIC) which included questions on access to finance but also several questions on trade. This allowed the authors to look at how exporting differs across sub-sectors and location and is associated with business features like size, age

and managerial experience, use of financial instruments and perceived barriers to growth. Among the other evidence presented, the paper also shows exporting firms' greater innovative propensity, which signals a link between innovation and exporting that could be exploited by policymakers aiming to encourage both. Tether and Yu (2022) used data from a DCMS survey on research and development (R&D) and innovation to identify the distinguishing features of export-intensive creative industries businesses. The paper confirmed many of the findings in Di Novo et al. (2021) and further highlighted how greater investment in R&D and design separates out exporters from non-exporters and the importance of intellectual property rights protection to promote exporting.

Creative PEC also published two papers on the effects of Brexit on creative industries' trade. In the first of these reports, Du et al. (2023a) used World Trade Organisation (WTO) balanced international trade in services data to look at the role of policy uncertainty in the period following the Brexit referendum and before the final Brexit decision (2016-2019). Those researchers found a negative impact (relative to a counterfactual scenario without those events) on the services trade of five creative sectors – audiovisual distribution and licences, computer services, advertising and market research services, architecture services and audiovisual-related services, but they also found that the actual

export growth for these creative services was 2.8% during 2014-2017 and 10.7% during 2017-2019. This means that, despite the accelerated growth in creative services exports in the period after the Brexit referendum, it can be demonstrated using causal inference analysis that the growth would have been even higher without the Brexit referendum. In a second paper, Du et al. (2023b) used data from the Office for National Statistics' (ONS) Business Insights and Conditions Survey to disentangle the trade challenges for creative industries businesses arising from the conclusion of the transition period and COVID-19 in 2021 and to assess the effectiveness of support measures. The findings of that paper highlight how many creative businesses either met disruptions or stopped exporting in 2021. Compared with businesses from the wider economy, creative businesses faced more uncertainty around the causes of such disruptions. Exporters to the EU, however, faced greater disruption. Diminished demand, custom duties, work permit and visa restrictions, and logistical issues are mentioned in the survey as the most prominent challenges. Heterogeneity in impact emerged across sub-sectors and across businesses, depending on size and productivity. Larger and more productive businesses were less affected by Brexit but not COVID-19. Overall, export support worked, especially for smaller businesses.

The nature of and motives for inwards FDI were investigated by Jones and Fazio (2022) and Jones and Maioli (2023), respectively. The first study showed how the UK's creative industries attract a considerable share of FDI projects, especially related to information and communication technology (ICT). Compared with non-creative industries, many of these projects take the form of mergers and acquisitions. While these projects are concentrated in London and the South East of England, other areas (e.g. Northern Ireland, Wales, Scotland, and Yorkshire and the Humber) attract considerable investment relative to the size of the creative industries in their regions. The second study analysed the motives of inward investors in the UK's creative

industries and revealed a varied set of drivers. It highlighted not only the importance of market access and a skilled workforce in regions but also a range of institutional and agglomeration factors, such as access to anchor institutions like universities, as well as the broader technological and business environment of regions. There is also variability in the UK in the importance of the different motivations for investment, especially outside London and the South East, suggesting a nuanced approach is needed by policymakers, nationally and regionally, wanting to attract FDI into the creative industries.

Regarding migration and the workforce, Bakhshi and Spilbury (2019) used information from the CIC Creative Industries Employers' Skills survey to look at skills gaps and shortages and the use of migrant workers, providing evidence on the period before the UK exited the EU. Those authors reported that 22% of UK creative businesses relied on at least one non-UK worker (with 18% employing EU workers), with this percentage being greater for larger establishments and businesses in London. Vermeulen et al. (2020) focused on international students enrolled in creative university degrees and their distribution across creative sub-sectors and UK regions, and they assessed the reliance on EU students before the implementation of the new fee structure post-Brexit. International students represent a services export success story for the UK and, by helping the sustainability of the degree offer by local higher education institutions, they also facilitate the upskilling of local students across creative disciplines and across all UK regions and nations. Haddoud et al. (2023) used a mix of qualitative and quantitative methods to underline the challenges faced by creative industries small to medium-sized enterprises, particularly in recruiting international workers following the entry into force of the post-Brexit migration system. They highlighted insufficient supply of creative skills in the UK and the large costs of hiring creative talent from abroad under the post-Brexit visa system.

Objectives and outline of this report

Increasing competition from across the globe means that the strength of the UK's creative industries in international markets cannot be taken for granted and requires the assistance of effective evidence-based policies. These policies need to be responsive to the fast pace of change of the creative industries globally and, therefore, timely evidence.

Our consultations with industry and policymakers highlight the need for evidence on internationalisation of the creative industries in several areas. These include a need for more evidence on the specific international competitive strengths of the UK and more information on the factors driving the exporting behaviour of UK firms. Both are needed to understand how to support the UK's leading exporting creative industries firms and remove barriers from those currently not accessing international markets. We have heard that a better understanding is also needed of the impact on exporting of new technologies, such as the evolution of digital trade, an area where international trade statistics generally are sorely lacking. There is also appetite for more evidence on the evolution of the creative industries and sector-specific policies in other (competitor) countries.

In this report, we focus on international trade, and exports in particular, with the aim of trying to address some of the above-mentioned evidence gaps. Other emerging priorities, like the impact of artificial intelligence (AI) on internationalisation of the creative industries, the role of regulation and intellectual property protection in international competitiveness, and the attractiveness of the UK for international investment and overseas talent, will be addressed in future reports. It is also important to note that imports of creative goods or services are not within the scope of this report.

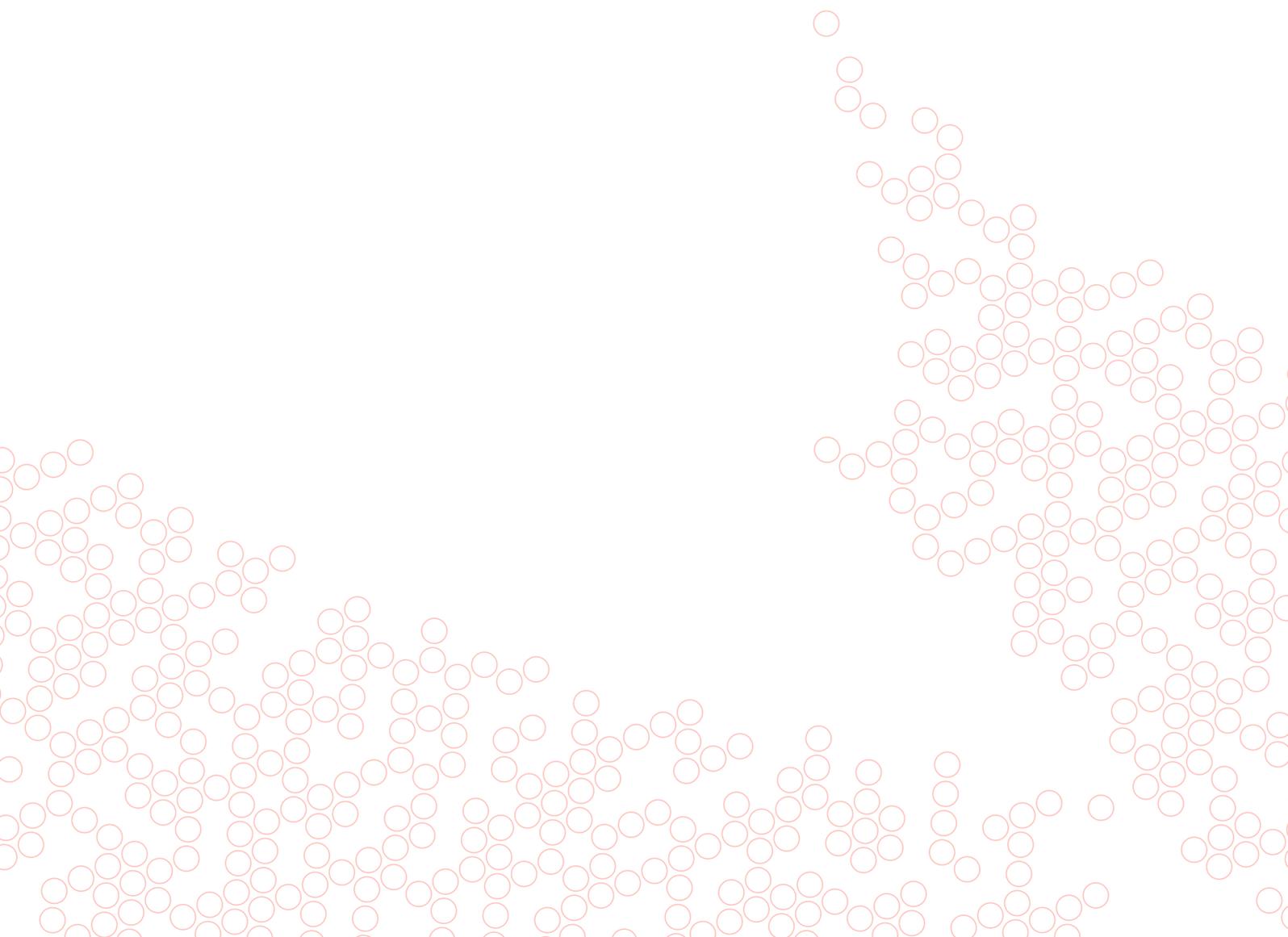
Our analysis relies on data from different sources. In the investigation of export trends, in this report, we take an industry-level perspective rather than a product-level one. Of particular importance for our exercise is to present export statistics that are comparable both within the creative industries and with the rest of the economy. Whenever possible, therefore, we map our analysis against the official definition of the creative industries from DCMS and use its exports statistics. As mentioned earlier, official trade statistics are likely to miss part of the sector's trade and should more likely be viewed as a lower bound of what is actually traded.

While the use of DCMS export statistics enables cross-sector comparability, a major limitation is that they refer to the nine DCMS sub-sector groups which are the mainstay of the [DCMS Sectors Economic Estimates](#). This means that important trends at the level of individual sub-sectors can be masked by the aggregation in the DCMS statistics. In other cases, the boundaries of DCMS sub-sectors, which are based on SIC codes, may not correspond to how those in the industry think of themselves, as will be discussed later.

Furthermore, international comparisons require the use of statistics which are comparable at the international level, which gives rise to a further source of measurement error, as different countries' statistics may only imperfectly capture information on creative goods and services in different ways. Wherever possible, we use data produced by multilateral organisations, such as UNCTAD and the Organisation for Cooperation and Economic Development (OECD). Finally, in our case study on digital creative trade, we make use of an experimental data set, with all the caveats and qualifications this entails, as official statistics are simply not available.

In the next section specifically, we begin by using sectoral and sub-sectoral official data from DCMS to provide an update on recent exporting trends in creative goods and services. A combination of graphical analysis and econometric modelling are used to assess the evolution of the UK's exports. Then, based on international data from UNCTAD, we also uncover new evidence on the comparative advantage of the UK's creative industries and, where data is available, their sub-sectors over time. In Section 3, we present new evidence on exporting behaviour of UK firms using data from the Financial Analysis Made Easy (FAME) company financial database. While this data presents some limitations when it comes to analysing the creative industries, in particular, in that it may miss those typically smaller firms that may not be required to submit their

financial accounts, FAME allows us to capture how an extended list of factors, such as firm size, age, productivity, liquidity and intangible assets may determine the exporting behaviour of firms in the creative industries. Using simple descriptive analysis and econometric modelling, we investigate both the factors that distinguish exporters from non-exporters and the factors that are associated with higher export volumes and export intensity. Sections 4 and 5 provide two deep dives. The former reports evidence from a novel experimental data set on the digital exports of some UK creative industries, and games-related products in particular, and the latter examines the case of creative industries policy in South Korea. Finally, Section 6 offers a summary of the results, some policy considerations and future research ideas.



2 The state of UK creative exports: sectoral and sub-sectoral evidence

Recent trends in the UK's creative industries' exports

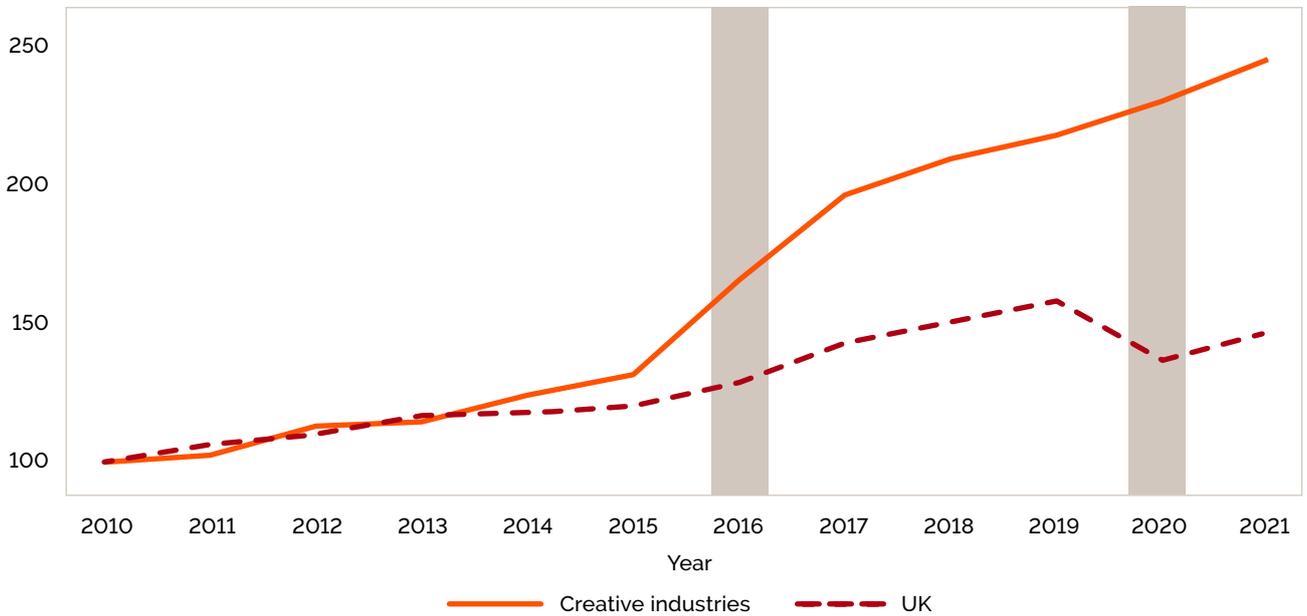
As mentioned in the introduction, the latest statistics from DCMS (DCMS, 2023) show that in 2021 the UK exported £9.1 billion of creative goods and £45.6 billion of creative services. In the same year, with a positive balance of trade in creative goods and services of £2.1 billion and £18.7 billion, respectively, the creative industries contributed to reducing the overall UK trade deficit. In this sub-section, we look at the trends in creative industries exports, update and extend the analysis carried out by Di Novo et al. (2020). We reiterate that for the reasons explained in the introduction and in Maioli et al. (2021) these statistics could be underrepresenting these trends.

Figure 1 plots the evolution of total versus creative UK goods and services exports between 2010 and 2021 based on DCMS statistics. This is a period marked by the Brexit referendum in 2016, the interim period of uncertainty until the UK's exit from the EU and implementation of the UK-EU Trade and Cooperation Agreement (TCA) in 2021, and the COVID-19 pandemic in 2020.

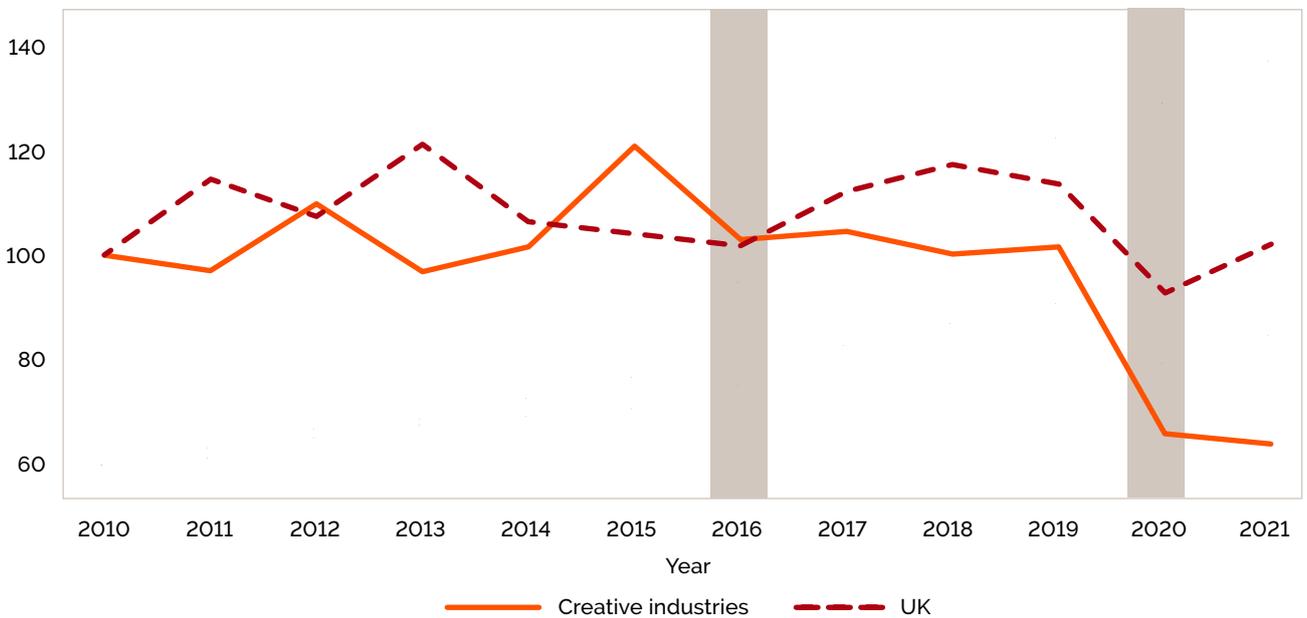
The data has been transformed into an index to illustrate changes over time more easily and after removing the effects of inflation. Between 2010 and 2020, the UK's creative goods and services exports were showing visibly different trends (see also Di Novo et al., 2020, on this point).¹⁶ While both UK total and creative industries services exports expanded, the latter showed a three times faster increase than the former (around 150% versus 50%). Creative goods exports showed a more complex trajectory over this period; after an initial growth of 10%, they fluctuated around the 2012 level before two large drops, in 2016 and in 2020. A marked difference in behaviour emerged after 2020. That year, the UK's overall exports of both goods and services fell by 18.6% and 13.3%, respectively, before making a moderate recovery in 2021. By contrast, in 2020 and 2021, creative services exports continued their upward trend, rising by 4.3% and 6.8%, respectively, while creative goods exports contracted especially sharply.¹⁷

Figure 1. UK's creative vs total exports in goods and services between 2010 and 2021

Services



Goods

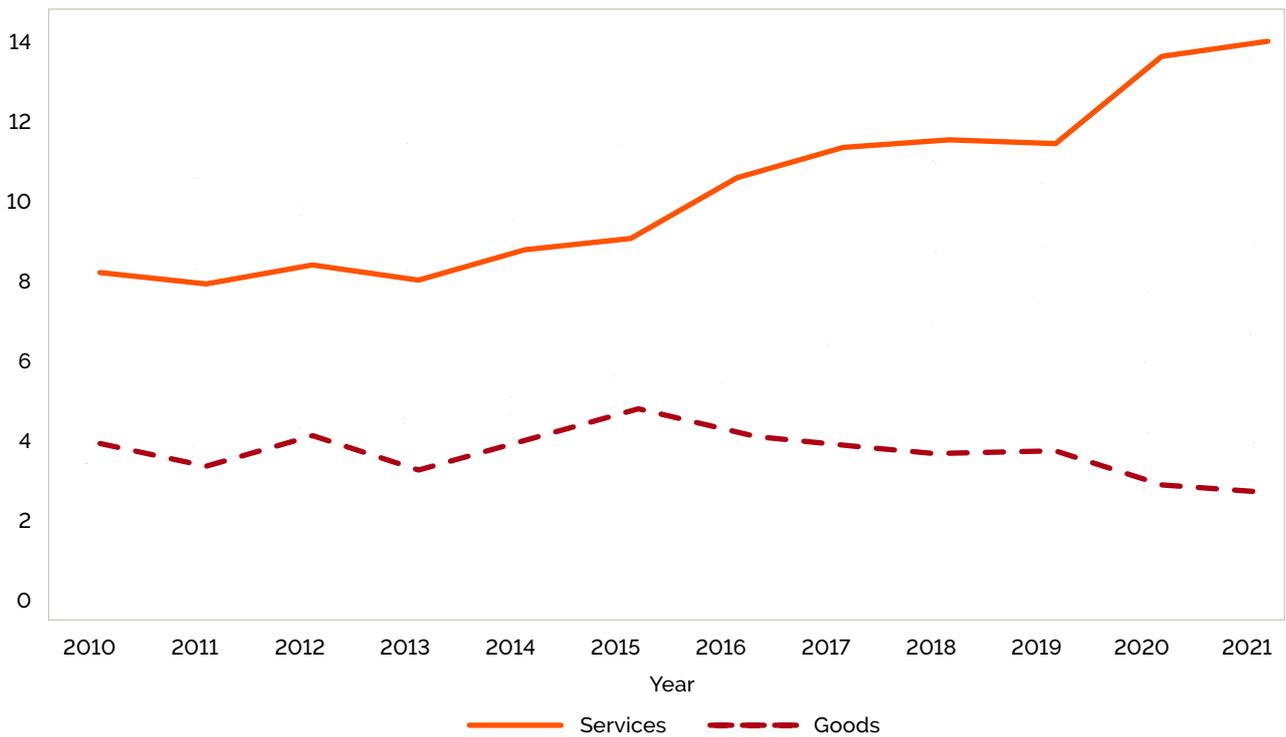


Source: Authors' calculations based on DCMS Sectors Economic Estimates (2019, 2021 and 2023). Creative export values are deflated using the average of industry-level deflators at 2-digit SIC level produced by the ONS (2022) that are related to creative industries. The GDP deflator for the economy from the HM Treasury is used for aggregate services and goods values. The series are set to be equal to 100 in 2010. Changes over time can be interpreted as in real terms relative to 2010.

Figure 2 brings out these patterns in a different way, by plotting the share of creative industries services over total services exports (creative intensity in services exports) and creative goods exports over total goods exports (creative

intensity in goods exports). The former increased over the past decade from just above 8% to just above 14%, while the creative intensity in goods exports fell from 4% to below 3%.

Figure 2. UK's creative exports in goods and services as share of UK's exports (2010-2021)



Source: Authors' calculations based on DCMS Sectors Economic Estimates (2019, 2021 and 2023).



Recent trends in sub-sectoral creative industries' exports

We next look at sub-sectoral trends. We do this by again relying on the official data from DCMS (2023) at the level of the nine creative industries sub-sector groups. These are: 'Advertising and marketing', 'Architecture', 'Crafts', 'Design and designer fashion', 'Film, TV, video, radio and photography', 'IT, software and computer services', 'Museums, libraries and galleries', 'Music, performing and visual arts', and 'Publishing'.

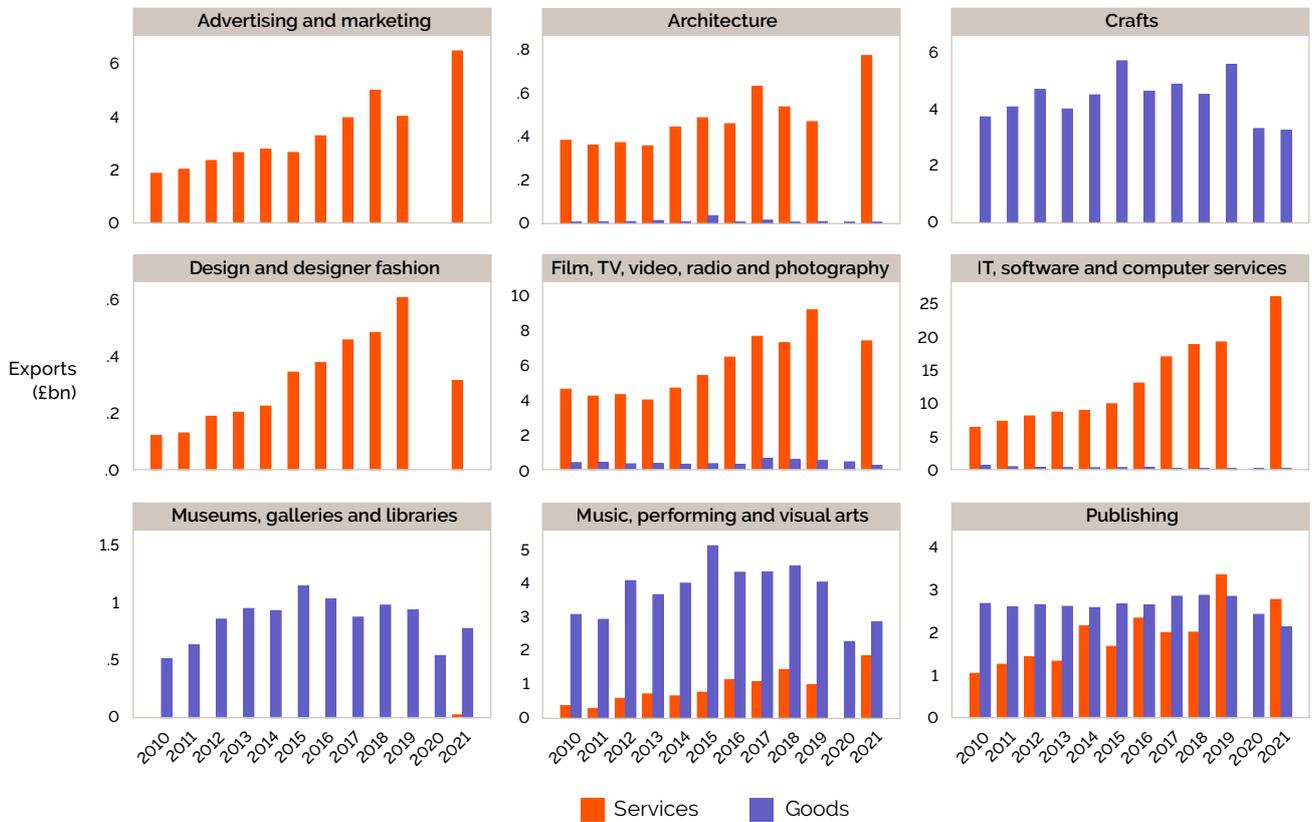
As mentioned in the introduction, the main benefit of relying on official statistics is that they have been constructed from common standards, which allows comparability within the creative industries and with the rest of the economy. The drawback is that the nine DCMS sub-sector groups which form the cornerstone of the [DCMS Sectors Economic Estimates](#) are too broadly categorised to capture the specific nuances within individual industries. Any possible finer disaggregation would still be based on the boundaries defined by SIC codes which may not correspond with those which the industries think of themselves as being in and, hence, may not capture their full breadth of activities (and exports).

Several trade bodies and associations produce their export statistics, usually by surveying their members. The resulting statistics can be very informative, highlighting how official statistics may imperfectly capture the nature of the industry and its trade activities. We can consider [music](#) as an example. DCMS reports exports statistics for goods and services separately under 'Music, performing and visual arts'.¹⁸ These include activities that fall under the SIC codes for 'Sound recording and music publishing activities', 'Cultural education', 'Performing arts', 'Support activities to performing arts', 'Artistic creation' and 'Operation of arts facilities'. While the first of these contains only activities related to music, it cannot be considered fully representative, given that the other SIC codes will also include activities related to music.

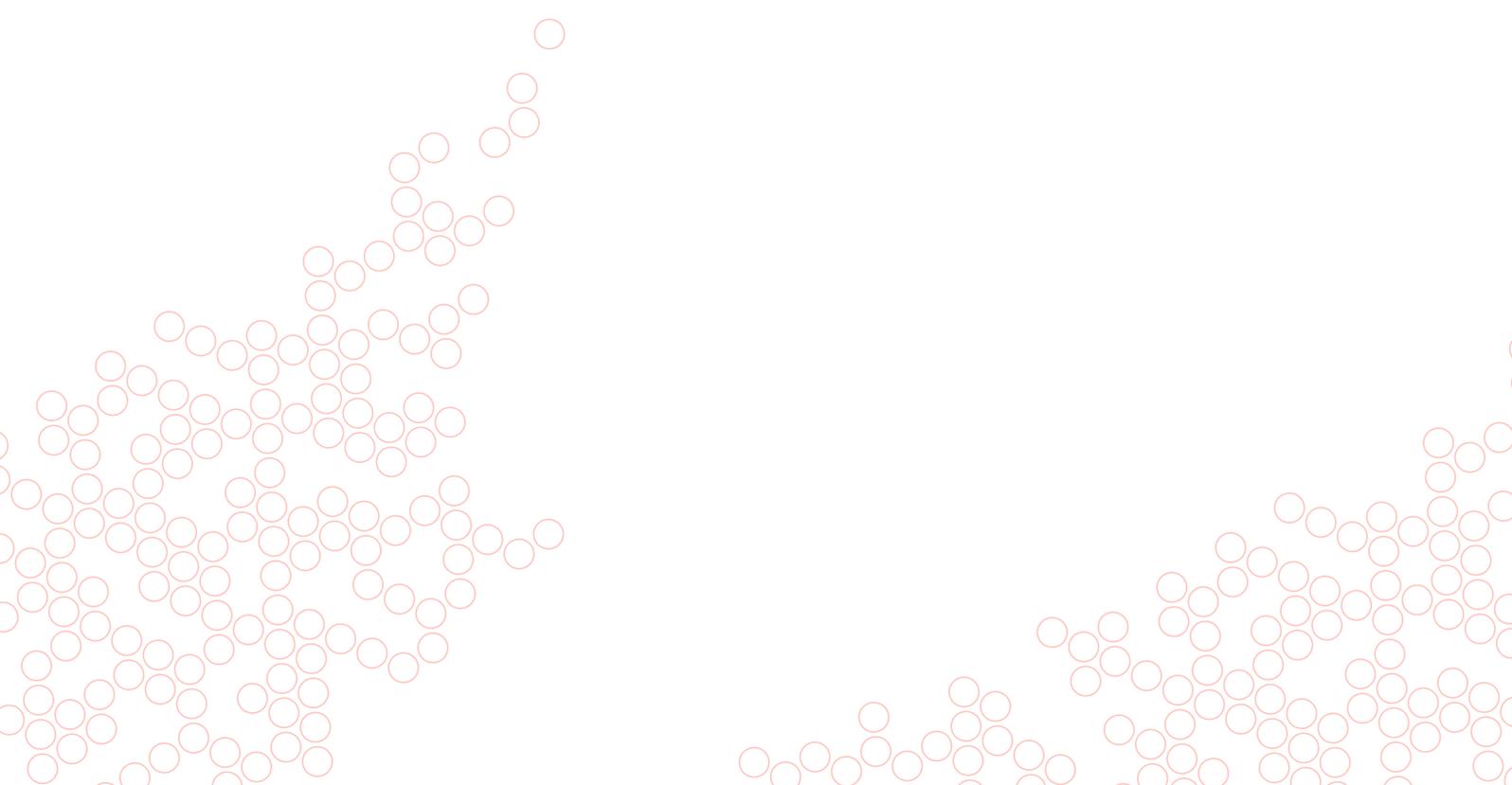
Unfortunately, however, they will also include activities related to other industries, making it difficult to obtain the exact picture of the music industry. At the same time, some activities may not be accounted for by the above SIC codes. The [This is Music](#) report by UK Music and the accompanying [methodology](#) are illustrative in this respect. While we draw here on the example of Music, other industries may also consider their boundaries as different from the ones implied by activities under the SIC codes (see [Publishing](#), for another example).

Bearing in mind the above caveats, Figure 3 charts the volumes of creative goods and services exports by sub-sector over the period 2010-2021. As previously mentioned, this period is characterised by the Brexit referendum – and later exit from the EU – and COVID-19. The impact of each of these shocks is difficult to assess from simple visual inspection. Separating out the impacts of the formal UK's exit from the EU and COVID-19 is even more challenging given that they may overlap from 2020 onwards. Nonetheless, sub-sectoral differences in experience are apparent. The figure suggests that the combined effects of these two shocks was relatively benign on the 'Advertising and marketing', 'Architecture' and 'IT, Software and computer services' sub-sectors compared with what happened in other sub-sectors (although some of these enjoyed somewhat of a rebound in 2021, namely 'Museums, galleries and libraries' and 'Music, performing and visual arts'). Note that, in the DCMS definition of creative industries, 'IT, software and computer services' comprises of 'publishing of computer games', 'other software publishing', 'computer programming activities' and 'computer consultancy activities'. While a computer game sold to residents in a foreign country in a physical copy would be classed as a creative goods export, the same sold as a subscription would be classed as a service.

Figure 3 Trends of UK creative exports by sub-sector



Source: DCMS Sectors Economic Estimates for services exports (2019, 2021 and 2023) and goods exports (2019, 2021 and 2023) values in current prices. Due to different methods of measurement, export values for goods and services should not be directly compared. The sub-sectoral breakdown of services exports for the year 2020 was not available at the time of writing.

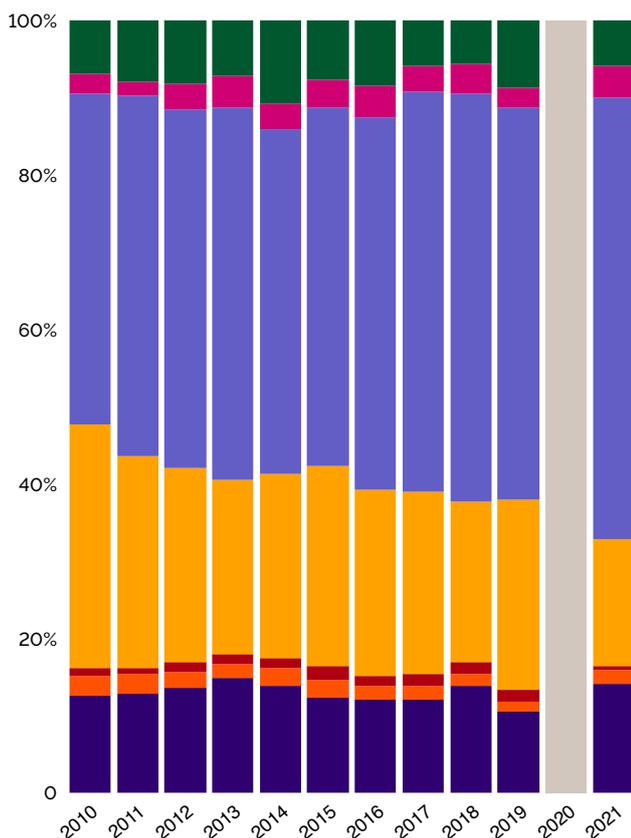


We can also look at which sub-sectors are most important for exports. Looking at the share of sub-sectoral exports over total creative industries exports, we can see how these tend to be concentrated in a few sub-sectors, as seen in Figure 4, with the main service exporting sub-sectors being 'IT, software and computer services', 'Film, TV, video, radio, and photography' and 'Advertising and marketing'. Creative goods exports meanwhile are dominated by 'Crafts', 'Music, performing and visual arts' and

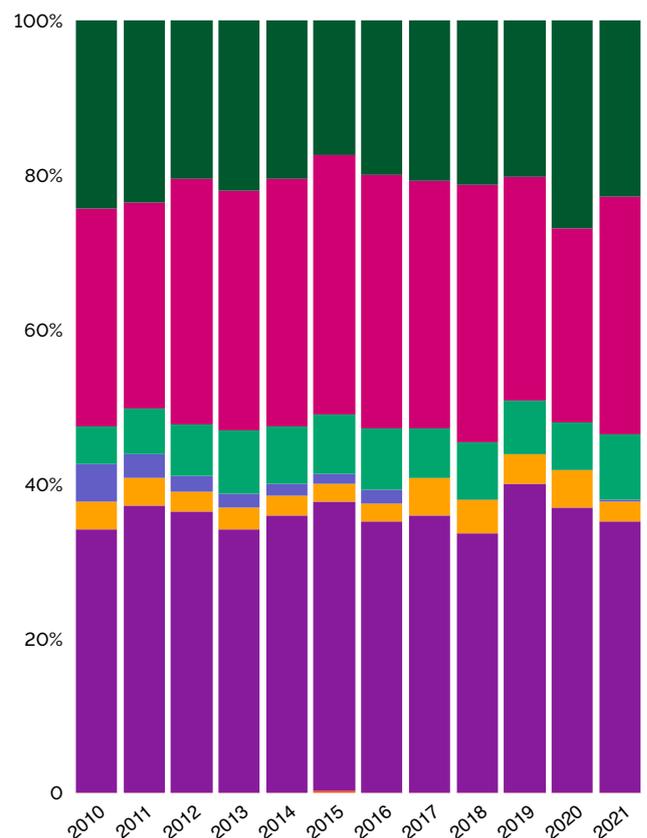
'Publishing' (in that order). Figure 4 also shows that the UK's service exports are becoming more concentrated in 'IT, software and computer services' over time, with that sub-sector's share expanding from less than half in 2010 to over 57% in 2021.¹⁹ In contrast, the sub-sectoral concentration of the UK's creative goods exports, as shown in Figure 4, remains broadly unchanged over the period with averages of around 36%, 30% and 22% for the three main exporting sub-sectors.

Figure 4. Share of UK's creative exports by sub-sector 2010-2021

A: Services exports



B: Goods exports



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

A Source: Authors' work based on DCMS Sectors Economic Estimates (2019, 2021 and 2023). The 'Crafts' sub-sector has no services exports. The sub-sectoral breakdown of services exports for the year 2020 was not available at the time of writing.

B Source: Authors' work based on DCMS Sectors Economic Estimates (2019, 2021 and 2023). The 'Design and designer fashion' and 'Advertising and marketing' sub-sectors have no goods exports.

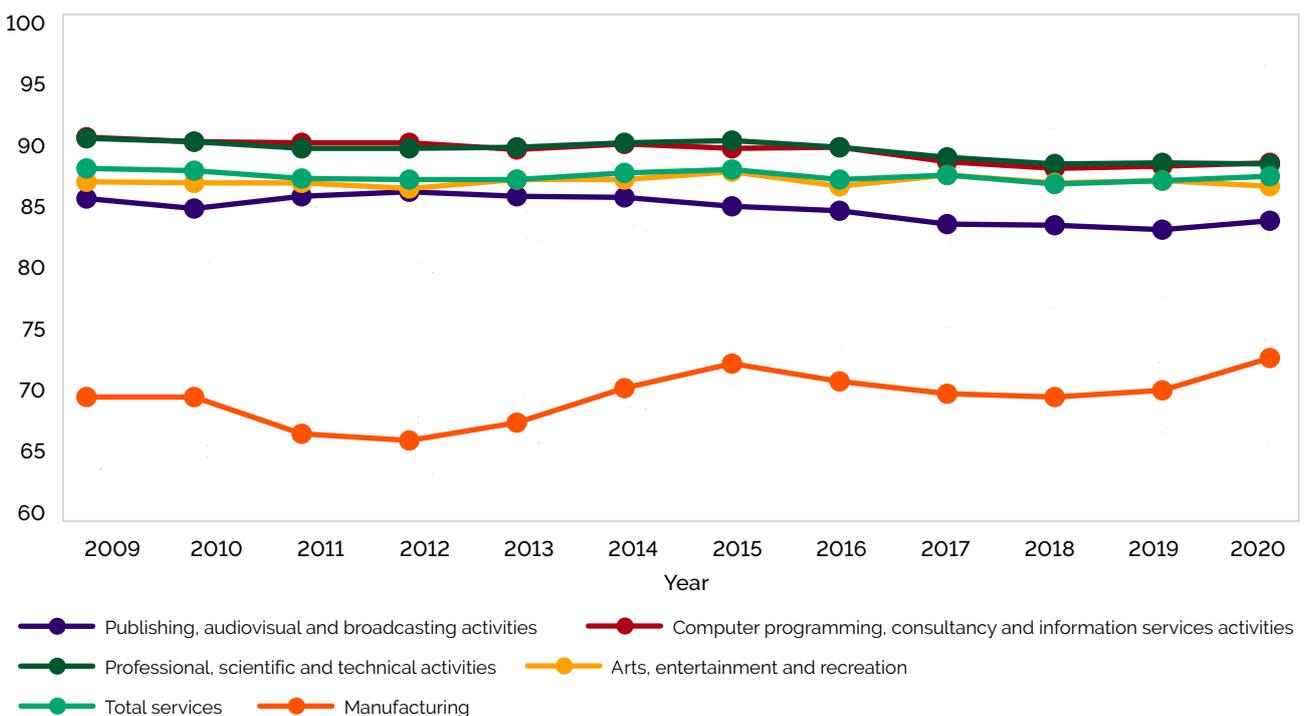
Share of domestic value added in exports

The previous sections looked at the values of creative exports but, given the importance of global supply chains, it is also interesting to look at how much of the exported value is generated domestically in the UK rather than imported from elsewhere. The share of domestic value added in international trade for different countries and sectors is calculated by the OECD in its trade in value added (TiVa) statistics. As mentioned before, the trade-off when using international statistics is a departure from the DCMS sector definitions. However, based on the data, we can compare the TiVa of five broad creative industries-related groupings ('Publishing, audiovisual and broadcasting activities', 'Computer programming, consultancy and information services activities', 'Professional, scientific and technical activities' and 'Arts, entertainment and recreation') with that

of manufacturing and services in general (see Table A2 in Appendix A of the online supplementary materials).

Figure 5 shows how, for the years 2009 to 2020, relative to manufacturing, a higher share of the value of UK's creative goods and services exports was generated domestically (e.g. here, a 90% share would mean that out of £1 exported, 90 pence was produced in the UK), and how this contribution appears to have been consistent and unaffected by the shocks affecting the economy over the observed period. The data also suggests that, compared with unspecified 'Total service', 'Computer programming, consultancy and information services' activities showed higher TiVa and 'Publishing, audiovisual and broadcasting activities', while still high, had a lower TiVa.²⁰

Figure 5. Domestic value added share of gross exports by economic activity (%) 2009-2020



Source: Authors' work based on OECD (2023e) [TiVa 2023 Principal Indicators](#). Variable plotted is EXGR_DVASH.

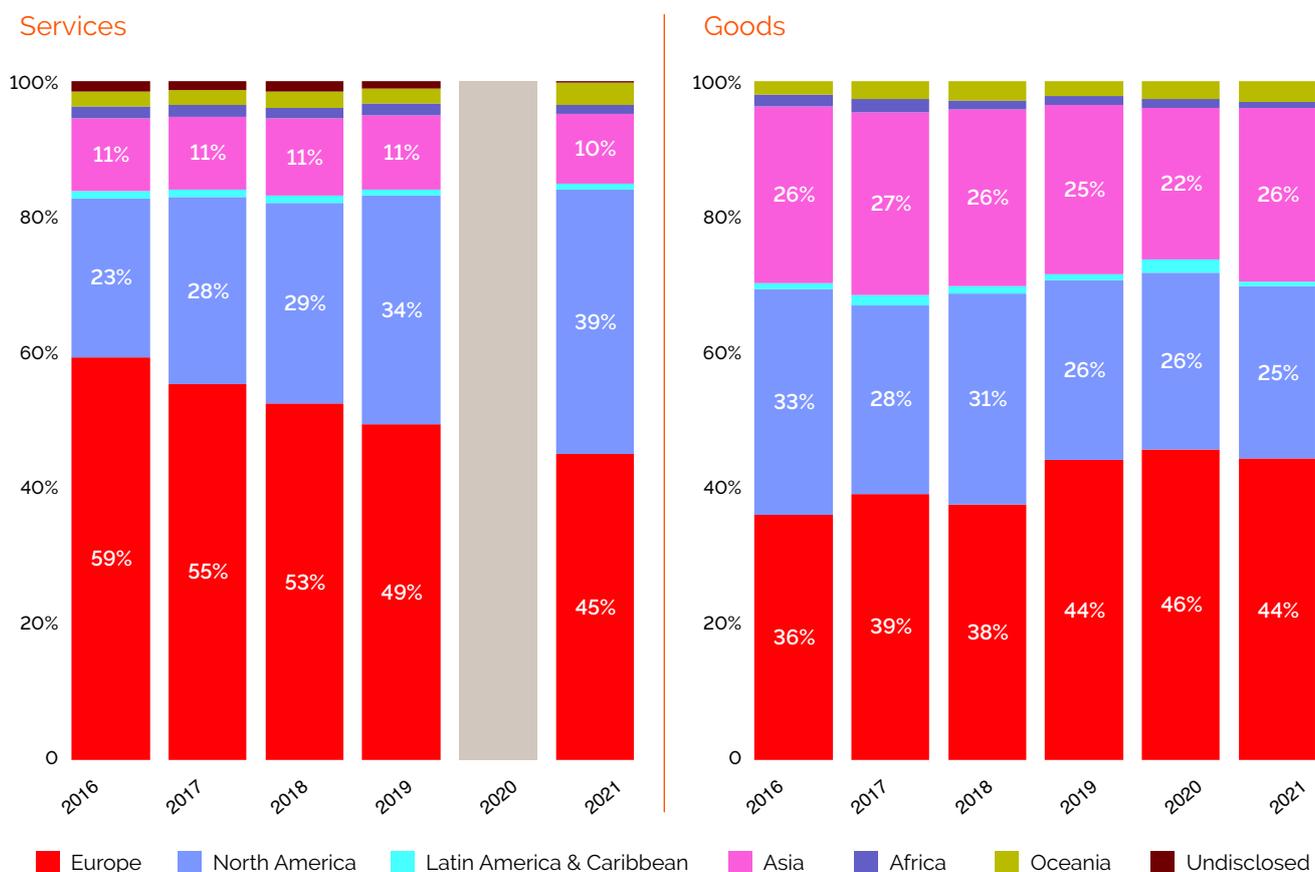
Where are the most important market destinations for UK creative goods and services exports?

Top destinations and their evolution over time

Where are the main international markets for the UK's creative goods and services exports? Have they changed over time? In Figure 6, the evolution of creative exports (as a share of total creative exports) is plotted by destination between 2016 and 2021.²¹ The figure shows the continued importance of Europe and North

America as creative services export destinations (Easton, 2021). Figure 6 also shows how, in terms of creative goods exports, Europe's share has slowly expanded to 44% during the period, while America and Asia's shares remain at around a quarter each. However, Europe's share of creative services exports has fallen from around 60% to under 50% over this period, a trade diversion matched by an increase in trade with North America, whose share of total exports from the UK has increased from around 23% to 39%.²²

Figure 6. Destinations of UK creative exports (% of total creative exports by region) 2016-2021



Source: Authors' calculations based on DCMS Sectors Economic Estimates (2021 and 2023). The sub-sectoral breakdown of services exports for the year 2020 was not available at the time of writing.

Empirical evidence on export destination by bilateral flows

Creative industries bilateral export flows

To better assess the above trends, and with a focus on the observed changes in trade between the UK and its two main market destinations, the EU and the North America Free Trade Agreement (NAFTA) countries – US, Canada and Mexico,²³ we use what is called a gravity model of the bilateral trade flows from the UK to other countries from 2016 to 2021 published by DCMS.²⁴ In this model, the bilateral creative export flows of the UK are modelled in relation to the size of the destination market, measured by its gross domestic product (GDP), and the inclusion of additional dummy variables controlling for any time-invariant attribute of the destination country (e.g. language and culture) and pertinent to bilateral relations (distance, common history, etc.), for any factor that is specific to a year and that is common across all bilateral creative trade flows, and whether or not the destination market falls within the trade blocs for the EU and NAFTA. The trade bloc dummy variables allow for systematic differences in average UK trade volumes with countries from the two major trade blocs in the northern hemisphere and the two main UK partners for creative trade. Interaction terms between the year dummies and trade bloc dummies then capture the evolution of UK creative exports to each of the trade blocs over time. The gravity models allow us to provide a descriptive analysis of the changes over time in creative bilateral exports while controlling for many of their determinants.

In Figure 7, we plot the estimated coefficients on these dummies and their confidence intervals in the gravity models to gauge the statistical significance and size of the time and

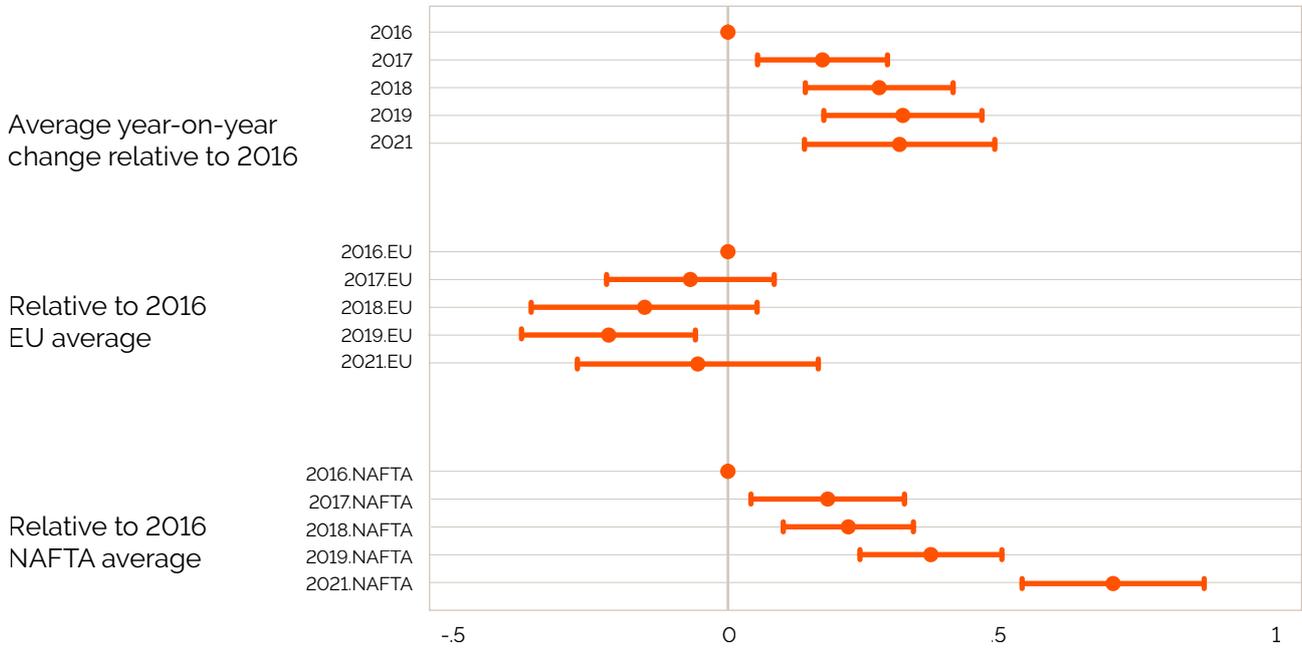
geographical variations in average bilateral trade flows between the UK and its trading partners in the EU and NAFTA blocs.

We find that, relative to 2016, on average, UK's creative services exports to any other country in the years 2017-2021 increased in value and creative goods exports to any other country in 2020 and 2021 reduced in value. In addition, we see that, on average, the UK's creative services exports to any country in the NAFTA region increased in value relative to 2016 while creative goods exports to any country in the EU region increased in value after 2017.

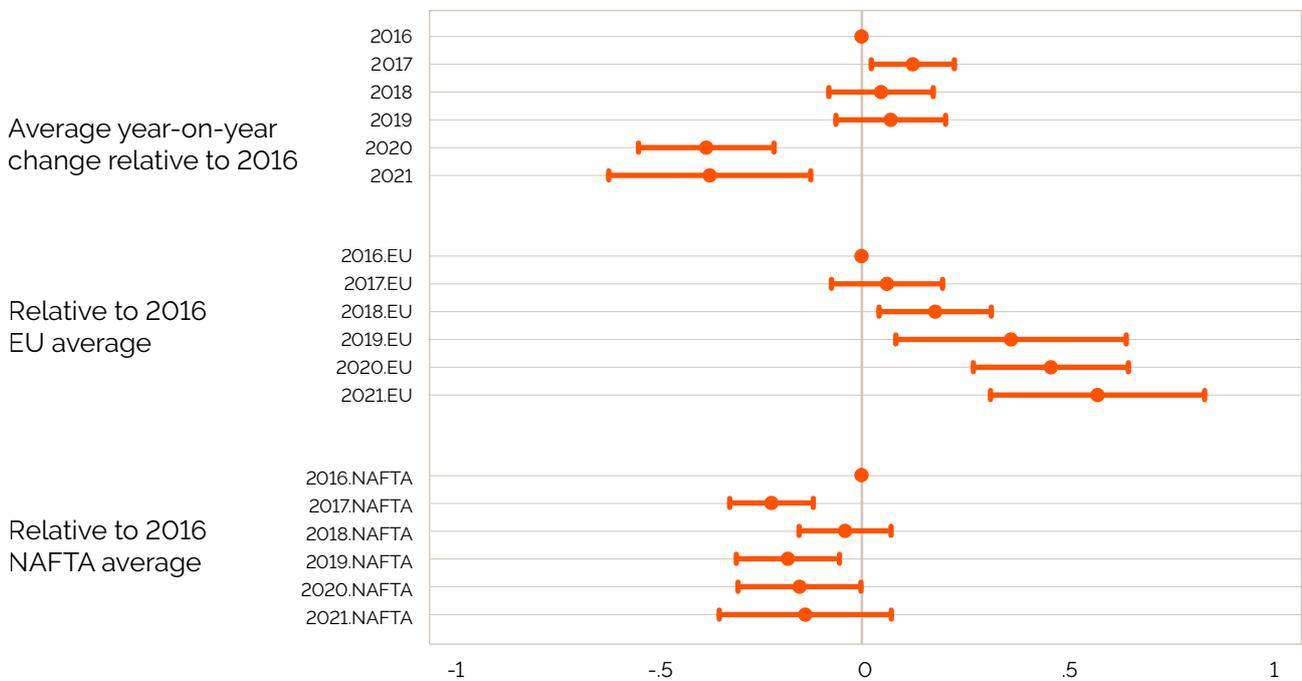
For creative goods, we observe that, on average, UK's exports to any other country in the years 2020 and 2021 fell (relative to 2016), coinciding with the start of the COVID-19 pandemic and the first year under the new UK-EU TCA. Unlike the case of creative services exports, however, we do not find statistically significant differences in trends in bilateral creative goods exports to NAFTA except drops in 2017 and 2019. In conclusion, for creative services exports, the analysis points towards a decrease in value of average country-to-country trade (i.e. trade divergence) between the UK and the EU in 2019, an increase in such trade (i.e. trade convergence) between the UK and NAFTA between 2017 and 2021, as well as a general increase in UK's export values to any single country since 2017. For creative goods exports, there is evidence of increased bilateral trade between the UK and individual countries from EU since 2018, along with evidence of a general reduction in UK's export values to any single country in 2020 and 2021. It should be noted, however, that the analysis presented in this sub-section (and in the next) should be considered as descriptive rather than causal. As in Du et al. (2023a), a counterfactual analysis would be required to understand the impacts of events like Brexit or COVID-19.

Figure 7. Average changes in UK's bilateral creative exports over time and by main trade bloc

A: Services exports



B: Goods exports



Source: Authors' estimates (dots) and 95% confidence intervals (bars) from simple gravity model regressions of bilateral exports from DCMS Sectors Economic Estimates (2019, 2021 and 2023) in current prices. The sub-sectoral breakdown of services exports for the year 2020 was not available at the time of writing.

Creative industries sub-sectoral bilateral export flows

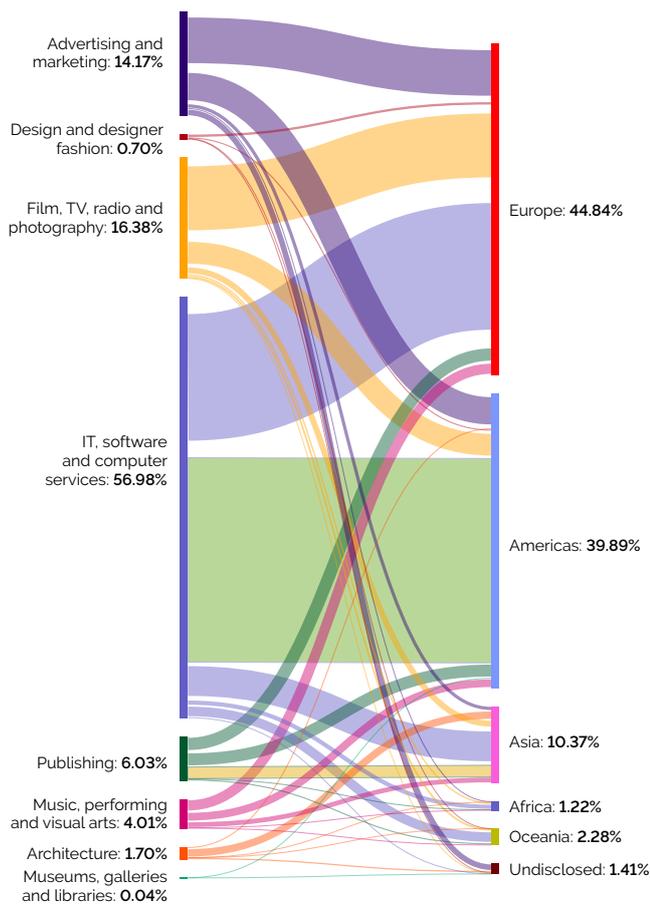
We also look the market destinations of each DCMS sub-sector.

Figure 8 shows, separately for services and goods, for the year 2021, exports from the nine DCMS creative sub-sectors to various market destinations identified by macro geographical region – Europe, Americas, Asia, Africa and

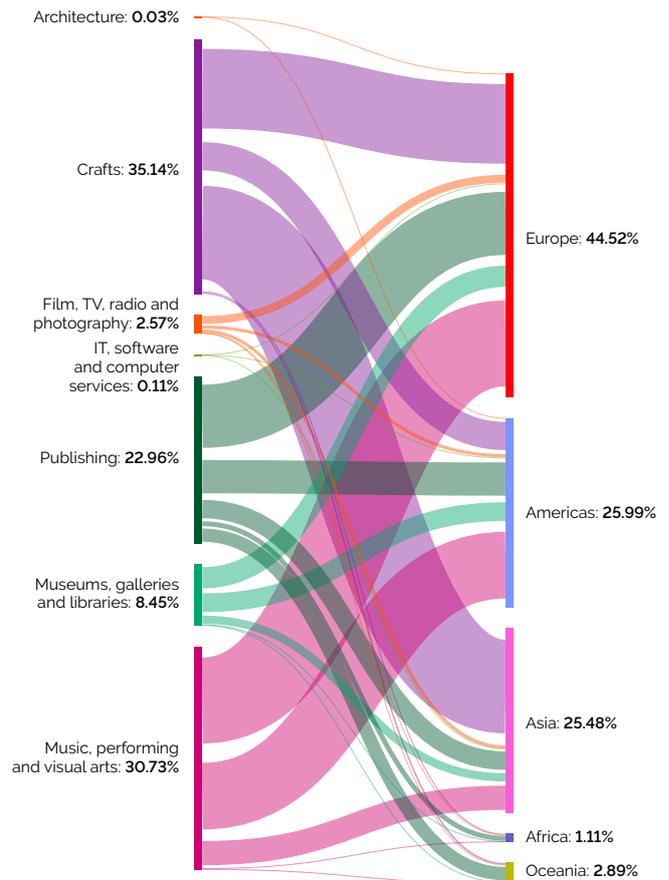
Oceania. It shows that European and American countries, are the main destinations for most sub-sectors. Among services exports, for example, in Figure 9 we can see the importance of the North America market for 'IT, software and computer services', 'Advertising and marketing', 'Design and designer fashion', 'Film, TV, radio and photography', 'Music, performing and visual arts', 'Museums, galleries and libraries' and 'Publishing'.

Figure 8. UK creative industries sub-sectoral export flows 2021

A: Creative services exports



B: Creative goods exports



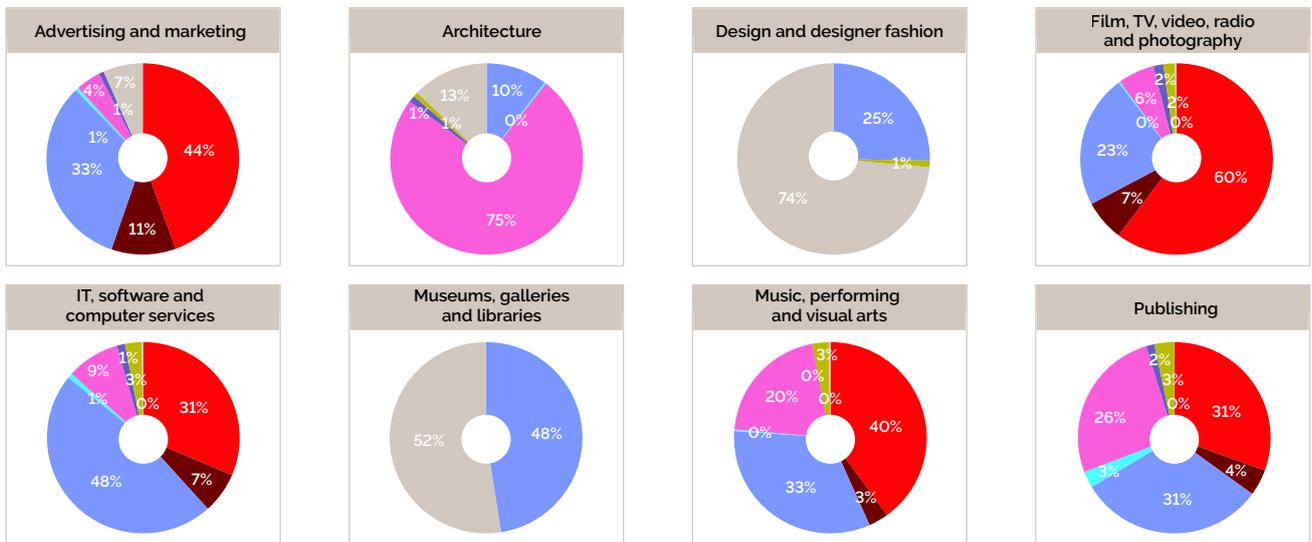
Source: Authors' work. Market shares are based on export values in DCMS Sectors Economic Estimates (2023).

However, some sub-sectors also export considerably to other countries. Figure 9 shows how a high share of 'Architecture' service exports are destined to Asian countries (75%). For creative goods, we can see the importance

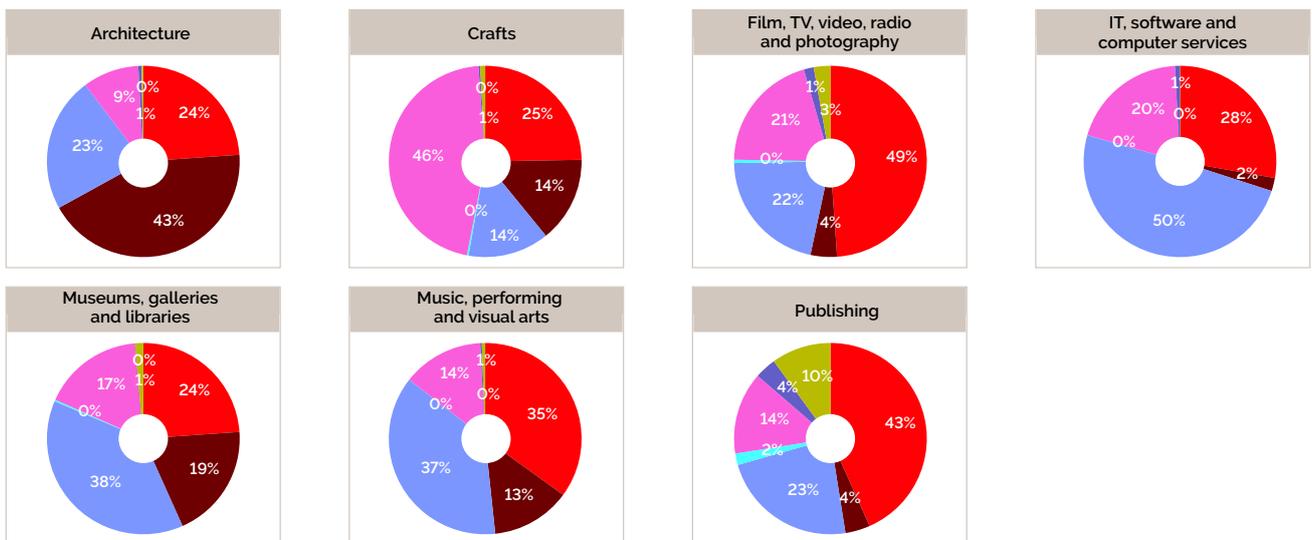
of EU countries and the North America in most sub-sectors. High shares of exports in the 'Crafts', 'Film, TV, video, radio and photography' and 'Publishing' sub-sectors also go to other countries in Asia and Oceania.

Figure 9. Major destinations of UK's creative exports by sub-sectors 2021

A: Creative services exports



B: Creative goods exports



Source: Authors' work based on DCMS Sectors Economic Estimates (2023).

Where does the UK's comparative advantage lie?

In the above analysis, we have explored exports from the UK's creative industries and their individual sub-sectors. A key question is, however, whether the UK enjoys a comparative advantage in this sector. In this section, we answer this question using the notion of revealed comparative advantage (RCA). This is a way to reveal underlying relative differences in productivity that economic theory suggests should drive export patterns.²⁵

The RCA indicator for a tradeable product is a simple statistic calculated by expressing the share of exports of that product in the total exports of the country relative to the share of exports of the same product in the total exports of a reference entity, such as the world, a trade bloc or another comparator country.²⁶ An RCA in a tradeable good or service which exceeds 1 for a country means that the country is said to enjoy a revealed comparative advantage in that product, reflecting underlying differences, which are more difficult to observe, between countries in productivity in that product relative to productivity in the whole economy.

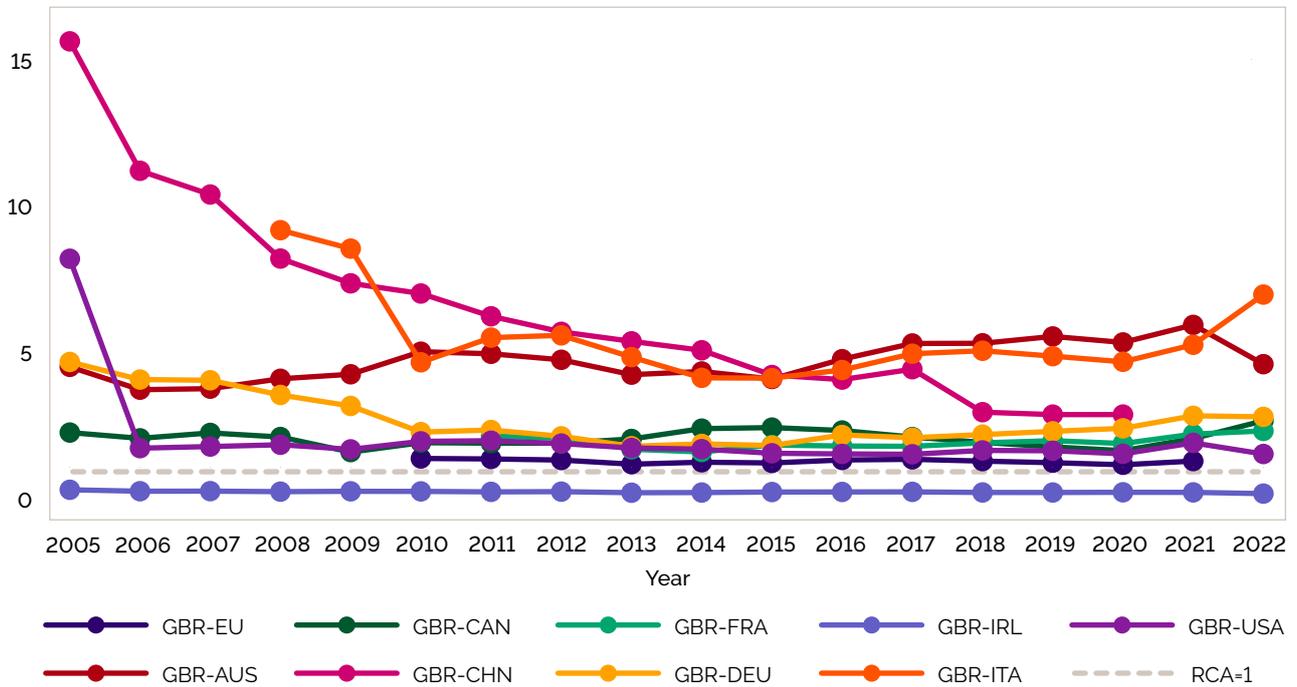
To calculate RCA indicators, we need to have internationally comparable trade data, which takes us away from the DCMS creative industries definitions and, as explained in the introduction, requires the use of international data sources (see Maioli et al., 2021). In line with previous Creative PEC analysis, we use the creative services data, total and by groupings (Licences

and distribution of audiovisual products and Licences to reproduce and/or distribute audiovisual and related products; Computer services; Advertising, market research and public opinion polling services; Architectural services; Audiovisual and related services) as in Du et al. (2023a) and the creative goods data as defined by UNCTAD.²⁷

The UK's RCA indices for creative services versus selected trade partners for the period 2005-2022 are presented in Figure 10. This shows how the UK has enjoyed comparative advantage in creative services vis-à-vis all comparator countries except for Ireland.²⁸ What is more, the UK has maintained this comparative advantage against other European countries over time. This does not mean that success can be taken for granted as, for example, the comparative advantage has been eroding over time vis-à-vis countries like China.

In terms of creative goods, as seen in Figure 11, the UK enjoys a comparative advantage vis-à-vis most of the comparators but not with China, Italy and, towards the end of the period, France. Note that the first year of the pandemic coincided with a large drop in UK RCA vis-a-vis all countries shown, albeit to different extents. The largest drops were with respect to Ireland and Australia. Without further investigation, the reason for the spike in 2019 – which is not present for creative services – remains unclear.

Figure 10. Comparative advantage of UK creative services exports to selected trade partners 2005-2022



Source: Authors' calculation using UNCTAD statistics on international trade in services according to the total services (category S) and creative services. Creative services are included based on EBOPS 2010 categories (UN, 2012) listed by Du et al. (2023b) as creative industry categories: SH4 (Licences and distribution of audiovisual products and Licences to reproduce and/or distribute audiovisual and related products), SI2 (Computer services), SJ22 (Advertising, market research and public opinion polling services), SJ311 (Architectural services) and SK1 (Audiovisual and related services). The values of creative services exports in various above categories for China have not been reported in UNCTAD statistics since 2020. Hence, the 2020 values for China are represented using experimental UNCTAD statistics on international trade in creative services (which could lead to possible breaks in the series). The value of creative services exports for Ireland in the year 2013 was missing and is here calculated in combination with OECD statistics on EBOPS 2010 trade in telecommunications services exports.

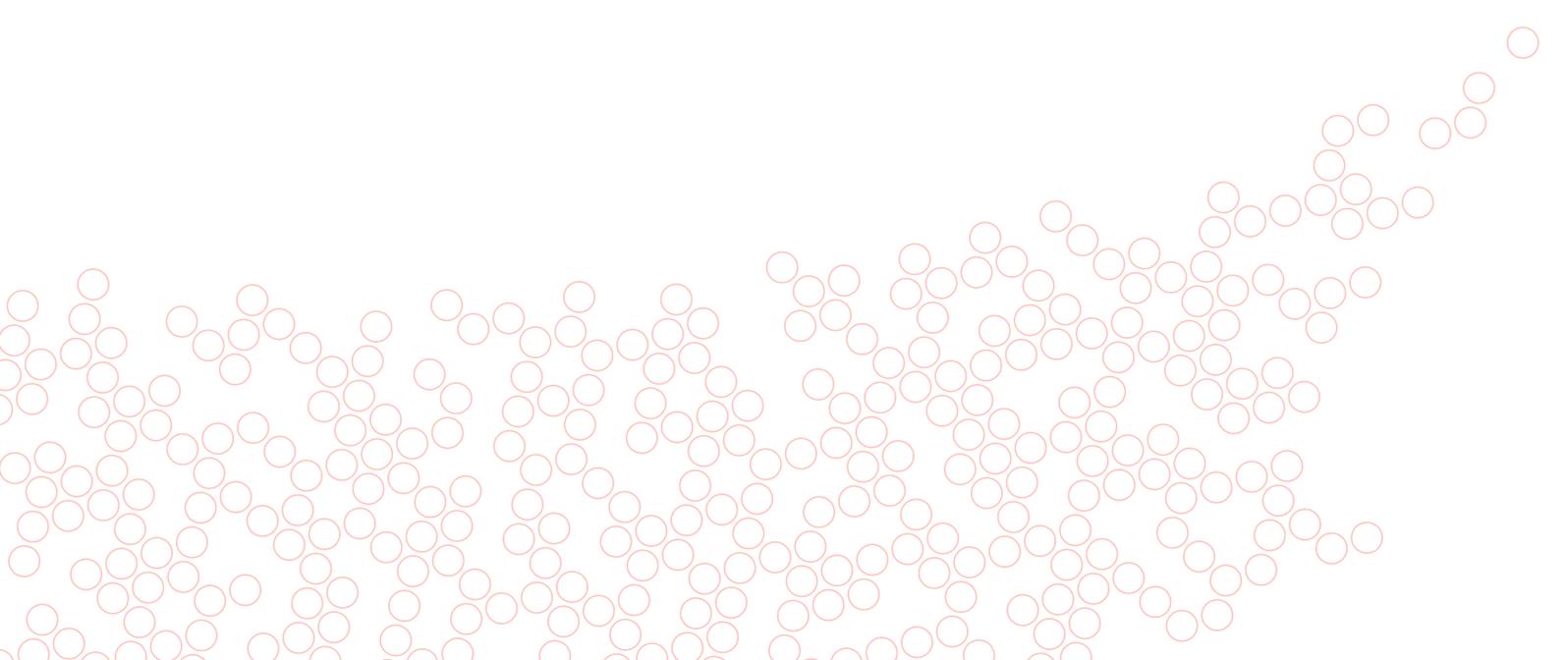
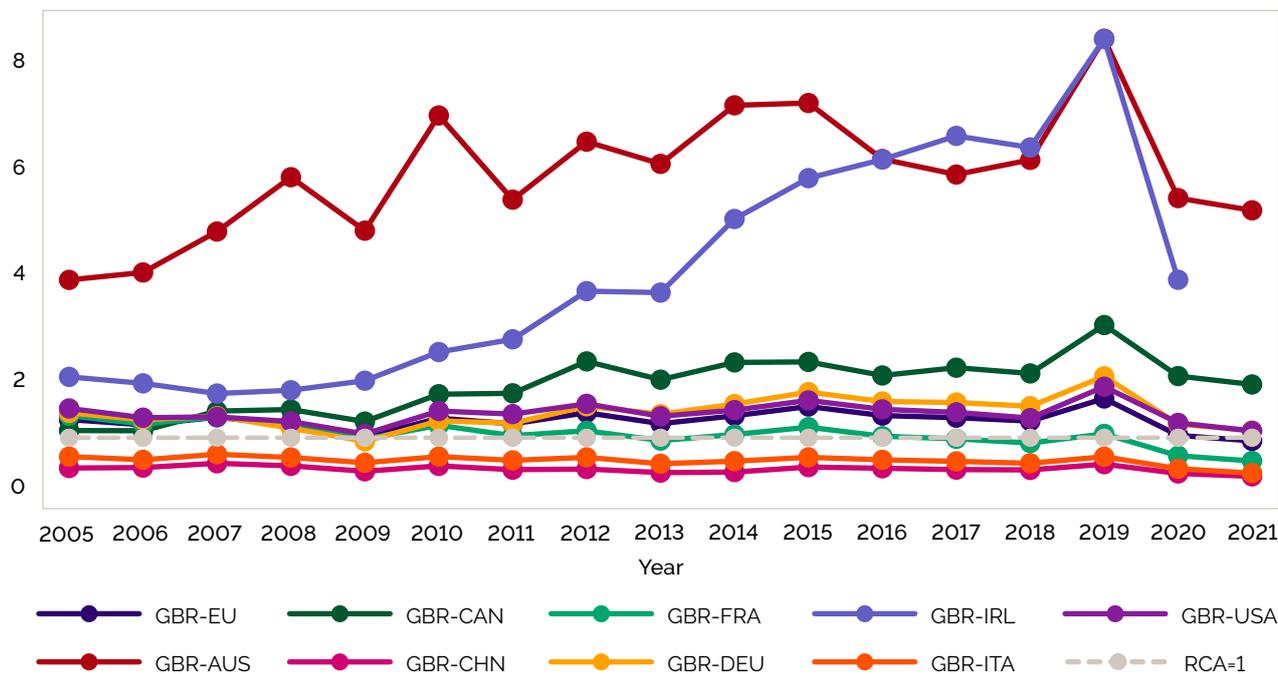


Figure 11. Comparative advantage of UK creative goods exports to selected trade partners 2005-2021



Source: Authors' calculation using UNCTAD statistics on annual merchandise trade and annual creative goods exports. UNCTAD definition for creative goods: 197 goods at the harmonised system six-digit level categorised as art crafts (carpets, products related to celebration, other crafts, paperware, wickerware and yarn); audiovisuals (films, CDs, DVDs and tapes); design (architecture, fashion, glassware, interior, jewellery and toys); new media (recorded media and video games); performing arts (musical instruments and printed music); publishing (books, newspapers and other printed matter); and visual arts (antiques, painting, photography and sculpture) – UNCTAD specifies in *Creative Economy Outlook 2022* that, given the current definition, creative products categorised as design may include goods the production of which is not dominated by design.

In Figure 12, we gauge the extent of variation in comparative advantage by looking separately at the pre-2020 period using the average RCAs during the period 2016-2019 (Panel A) and at the change between the pre-2020 and the 2021 RCAs (Panel B). This should allow us to see variations in RCA patterns before the implementation of the UK-EU TCA agreement and the COVID-19 pandemic and afterwards. Using the available data, we further look at disaggregated services RCAs for the five categories used by Du et al. (2023a).

Panel A confirms the UK's comparative advantage in services against all comparators, except for Ireland, and the comparative advantage in goods against all comparators, except for China, France and Italy. In terms of sub-sectors, the UK is strong across the board, with few exceptions. The EU, as a trade bloc, and Ireland enjoy a comparative advantage over the UK in 'Computer services'. The latter piece of evidence highlights how this sector generates the overall comparative advantage of Ireland in creative services. Canada and the US enjoy an advantage in 'Audiovisual and related services'.

Panel B, however, shows how the strong advantage seen until 2019 has been eroding, especially against the EU and Ireland in particular. The erosion has been driven by the drop in RCA in 'Audiovisual and related services' vis-à-vis the EU bloc, Australia, Germany and Italy), and 'Computer services' versus the EU

bloc, Canada and Ireland. While Ireland retains an overall advantage in services, the UK is gaining advantage in 'Audiovisual and related services'. During the same period, the UK's creative goods lost comparative advantage against all trading partners.²⁹

Figure 12. RCA index of UK creative exports versus selected comparators

A: Pre-2020 (2016-2019 averages)



B: Changes in absolute UK RCA value between pre-2020 and 2021

Category	GBR-WOR	GBR-EU	GBR-AUS	GBR-CAN	GBR-CHN	GBR-FRA	GBR-DEU	GBR-ITA	GBR-USA	GBR-IRL
Licences to reproduce and/or distribute audiovisual and related products			1.9	-182.4			-12.1		0.4	
Computer services	0.0	0.0	0.3	-0.2	-1.4	0.2	0.3	0.4	0.0	0.0
Audiovisual and related services	0.1	-0.2	-0.9	0.0		0.1	-0.5	-27.2	0.1	3.3
Architectural services		2.0				709.9	4.6	819.9	1.4	
Advertising, market research and public opinion polling services	0.8	1.2	18.3	0.8		0.9	1.7	1.0	0.6	
All creative industries services	0.1	0.0	0.7	0.0	-3.4	0.3	0.6	0.4	0.3	0.0
All creative industries goods	-0.4	-0.5	-1.5	-0.5	-0.2	-0.4	-0.6	-0.2	-0.5	-0.7

Source: Authors' calculation based on available exports data on goods and services from UNCTAD. See Appendix A of the online supplementary materials for definition of creative exports. Colour thresholds for Panel A are at UK RCA values of 1 and 10 (values under 1 are indicated in grey). Colour thresholds for Panel B are at -0.1 and 1 unit changes in UK RCA value. Changes in the RCA index may be sensitive to large but temporary shocks in 2021.

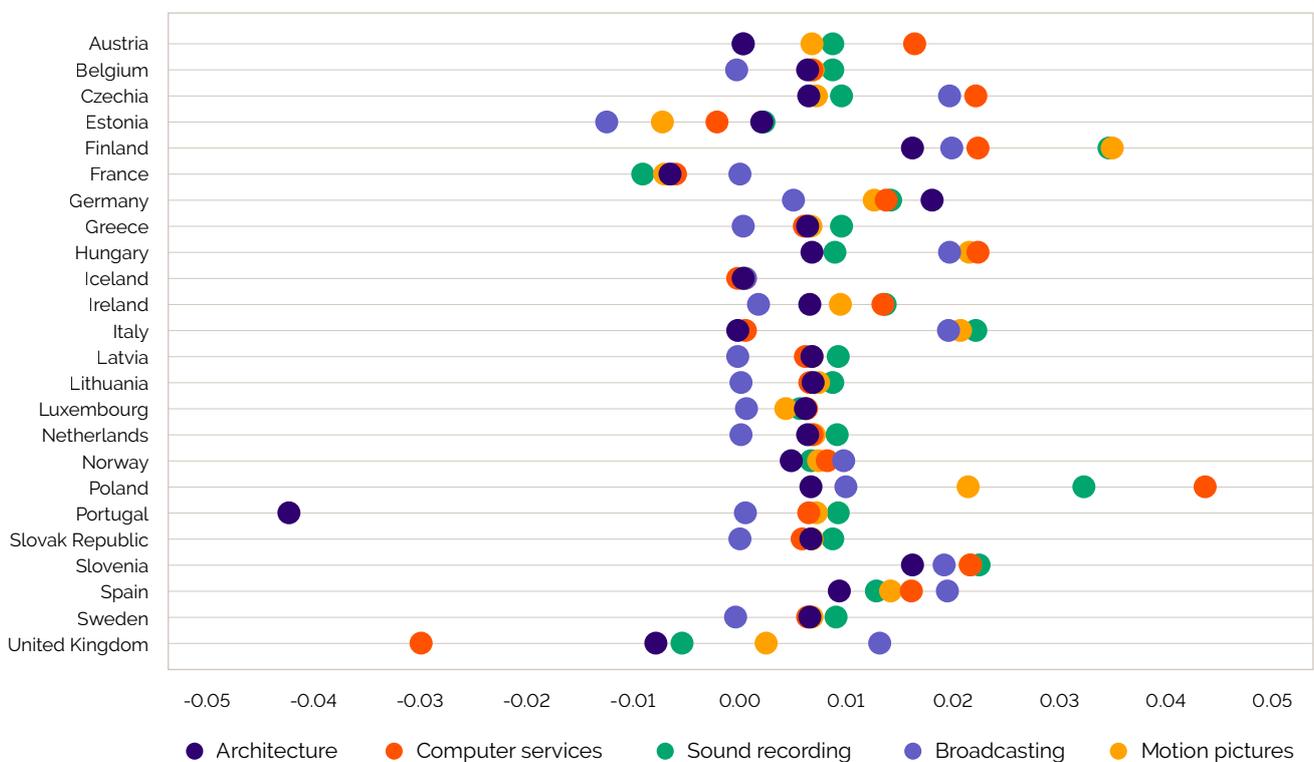
Service trade restrictions

The above analysis highlights the strengths of the UK's creative services exports. The competitiveness of the UK's creative industries, however, should not be taken for granted, especially in light of the increasing service trade restrictions faced by UK firms following the UK's exit from the EU single market for services.

Figure 13 provides the most up-to-date evidence on changes in service trade restrictions in the European Economic Area (EEA) countries between 2018 and 2022 for five sub-sector groupings ('Architecture', 'Broadcasting', 'Computer services', 'Motion pictures' and 'Sound recording') using the

service trade restriction index (STRI) developed by the OECD. This indicator takes values between 0 and 1, with 1 indicating the highest restrictions to trade in services. The figure shows the changes in the STRI. While these changes are not particularly large, they show an overall tendency towards an increase in restrictions over time. These changes, however, differ by country and by sub-sector. While the UK STRI has gone down in 'Computer services', 'Architecture' and 'Sound recording', it has increased in 'Motion pictures' and 'Broadcasting'. Meanwhile, the figure shows how trade barriers across the creative services groups have increased in most countries in the EEA sample.

Figure 13. Change in average service trade restriction index 2018-2019 and average for EEA countries by sector 2021-2022



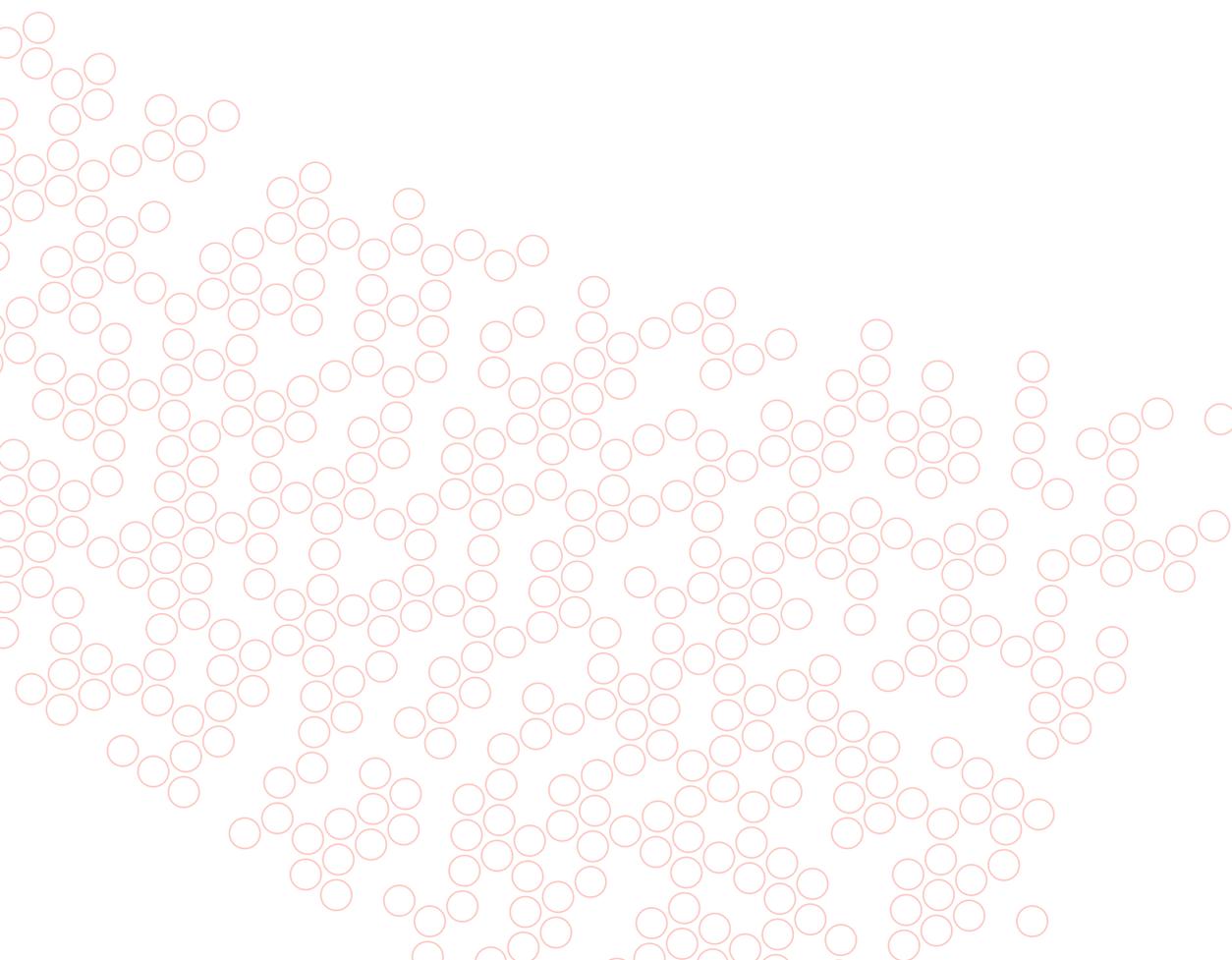
Source: Authors' calculation based on OECD statistics.

Summary of the sectoral and sub-sectoral evidence

In this sub-section, we have looked at recent sectoral and sub-sectoral trends in creative services and creative goods exports. We have seen how there is a dichotomy between services exports, which are expanding, and goods exports, which are stagnant. Exports seem to be dominated by a few sub-sectors ('IT, software and computer services', 'Film, TV, video, radio and photography' and 'Advertising and marketing' for creative services, and 'Crafts', 'Music, performing and visual arts' and 'Publishing' for creative goods). Exports have become more concentrated over time. The impact of, and resilience to, Brexit and COVID-19 appears to have differed across sub-sectors. We have looked at where the UK's most important export destinations are and how the geography of trade flows has changed over time. While the EU and the US remain the most important markets for UK creative exports, services exports have exhibited a tendency to increase

towards North America at the expense of the EU. These patterns, however, are not shared by all sub-sectors. We have highlighted the high share of creative exports value generated domestically and investigated how the UK enjoys a comparative advantage in both goods and services against several comparator countries. We have also looked at the evolution of service trade restrictions and seen how these have recently shown a small increase for most countries in the EEA.

The strong overall export performance of the UK's creative industries, especially in services, should not be taken for granted, as it faces increasing competition from other advanced economies and rising powers and the headwinds of increasing service trade restrictions in European countries. In the next section, we move away from the macro-sectoral and sub-sectoral analysis to delve into the micro-level evidence on the export behaviour of creative firms.



3 Firm-level evidence from company financial data

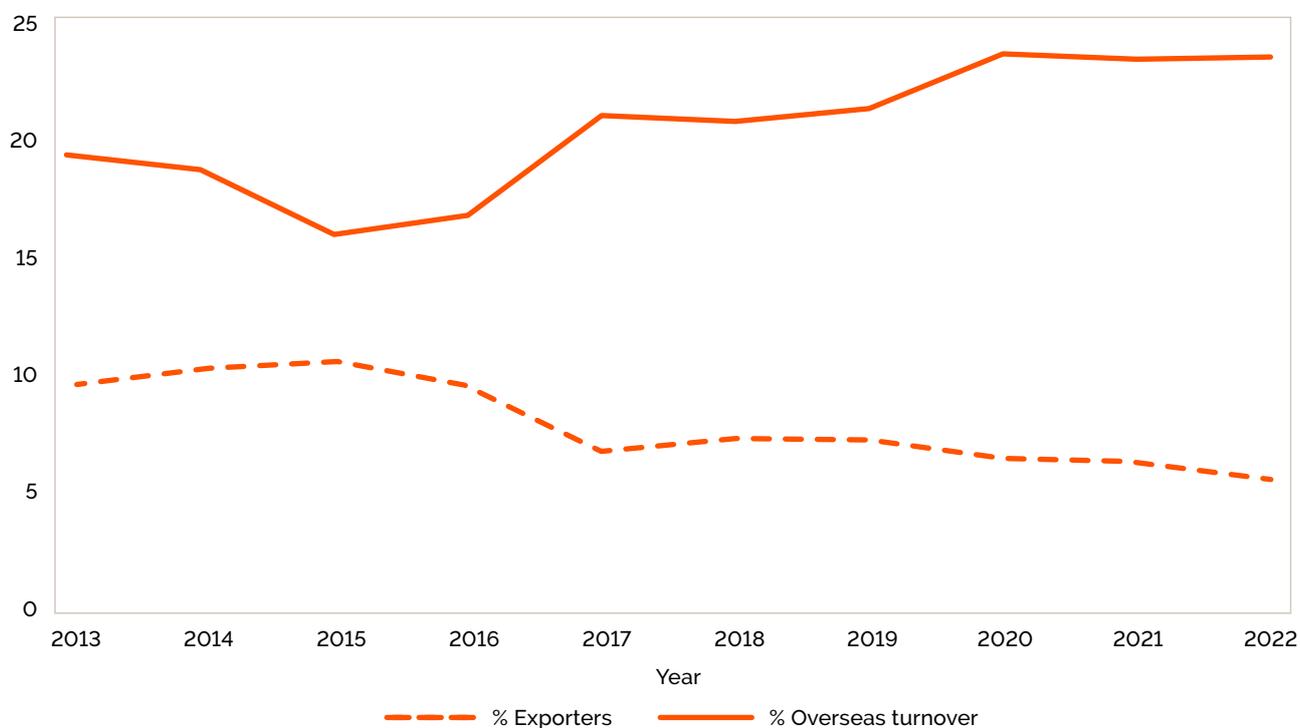
Exporters and export intensity

To gain a further understanding of the UK's creative industries exports and their drivers, we now turn our attention to the firm level. This micro-level analysis is undertaken through the utilisation of the FAME proprietary database, which has been used extensively in previous studies to examine firm-level characteristics but primarily in the manufacturing sector.³⁰ To analyse the exporting behaviour of firms, we use the information on companies' profit and loss accounts. A drawback of this approach is that the resulting sample will have richer data on those firms which have to satisfy more demanding financial reporting requirements and are, typically, larger. This is a clear limitation of this data source, given the relatively high number of small and micro businesses in the creative industries compared with other sectors. However, at the same time, through the profit and loss accounts, FAME allows access to information on firms' characteristics without relying on some of the well-known limitations of other sources of data, like business surveys.³¹ A detailed discussion of the characteristics of the FAME database is available in Appendix B of the online supplementary materials.

We examine in this section the exporting behaviour of firms and explore the role of a range of factors that may be associated with exporting. Specifically, we exploit a range of financial information and, crucially, their turnover,³² and the breakdown between national and overseas turnover. This enables identification of whether a firm is an exporter or not. We identify those firms operating in the creative industries through their self-reported SIC code.³³ Analysis is undertaken for the ten-year period 2013-2022.³⁴

We find that overseas turnover accounts for over 20% of total turnover in the creative industries, although it is identified for only around 7% of creative industries businesses for which the total turnover is known. This suggests that those firms that do export do so on a relatively large scale.³⁵ Figure 14 shows how the proportion of creative industries exporters varies from roughly 10% in 2013 to around 7% in 2022.³⁶ The figure also shows how, despite this decline, the intensity of exports, which is the proportion of overseas turnover in total turnover, has been increasing in the creative industries, to almost 25% in 2023. This indicates that, although fewer firms in the sample are exporting, exports are increasingly accounting for a greater share of total turnover.³⁷

Figure 14. Exporters and export intensity in the creative industries 2013-2022



Source: Authors' calculations from FAME database.

Note: Percentage of exporters defined as those firms who have reported overseas turnover as a percentage of firms for which total turnover is known in a given year. Export intensity (percentage of overseas turnover) is defined as overseas turnover as a percentage of total turnover in a given year.

How the share of exporters changes over time can be seen across the different sub-sectors, as highlighted in Figure 15, Panel A. In general, although these sub-sectors have experienced a fall in the share of exporters, 'Publishing', 'Advertising' and 'Crafts' had relatively sharper declines, from around 20% at the beginning of the period to near 10% by 2022. These declines were more marked after the 2016 Brexit referendum.

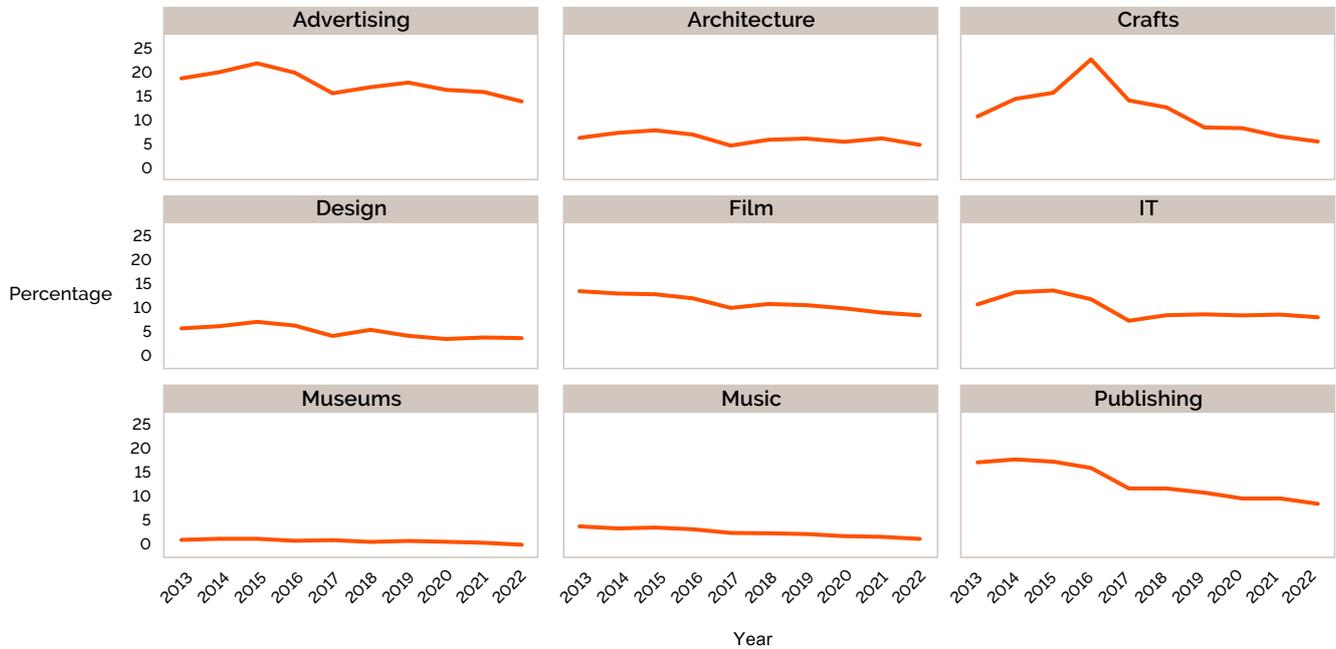
The intensity of exports also shows a varied pattern, as shown in Figure 15, Panel B. Generally, levels of export intensity are higher than shares of exporters, with increases in export intensity

over the period experienced in a number of sub-sectors such as 'Advertising', 'Design', 'IT' and 'Music'. The 'Crafts' sub-sector has seemingly experienced a large drop in export intensity, particularly post-COVID-19, although of course this relates mainly to the larger firms that are disproportionately in the sample, so this may not be an indication of the sector as a whole.

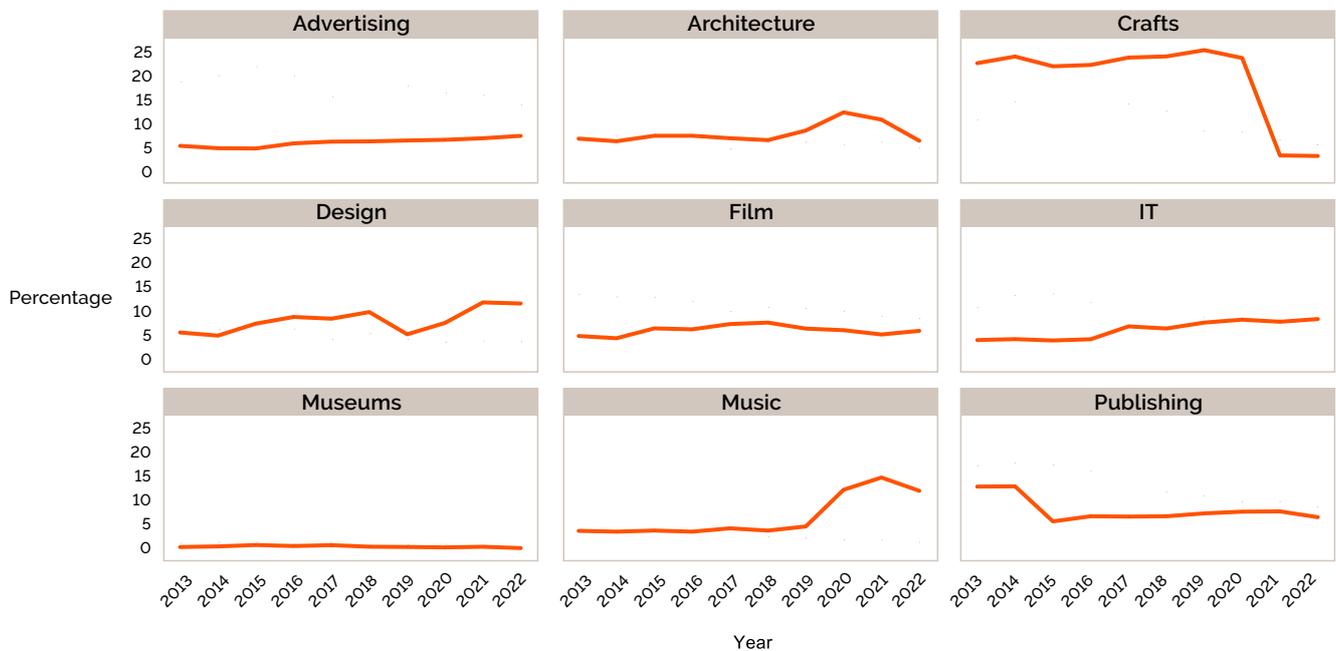
Overall, the FAME analysis shows that there are fewer creative firms exporting, but those which do export seem to export higher volumes on average in proportion to their total turnover.³⁸

Figure 15. Exporters and export intensity by sub-sector 2013-2022

A: Exporters by creative industries sub-sector



B: Export intensity by creative industries sub-sector



Source: Authors' calculations based on the FAME database.

Note: Advertising = 'Advertising and marketing'; Film = 'Film, TV, radio and photography'; IT = 'IT, software and computer services'; Museums = 'Museums, galleries and libraries'; Music = 'Music, performing and visual arts'. See Figure 14 for definitions of percentage of exporters and export intensity.

Regional exploration of exporters and export intensity

FAME also allows some identification of firms' locations in the UK by looking at their reported trading addresses.³⁹ Figure 16 shows the regional and national variation in the number of creative industries exporters in 2013 and 2022 (with the darker shaded regions having the most exporters, and the lighter shaded regions having the fewest exporters).⁴⁰

The figure shows that the greatest number of exporters over the period are generally concentrated in the South East of England (which is only to be expected, given the high concentration of economic activity and creative industries in these regions). However, by the end of the period the number of exporters in other large parts of the country, like the North West of England, had also grown. Conversely, those regions with the fewest exporters mainly reflect the smaller regions in terms of UK output and population.

Of greater interest is the share of creative industries firms that are exporters. This is shown in Figure 17, where a slightly different pattern emerges from that in Figure 16, where, although

the regions with the highest concentrations still include London and the South East, the East Midlands is now among the highest quartile, and Northern Ireland is no longer in the lowest quartile of nations and regions.

The regional breakdown is extended in Figure 18, which looks at the creative industries export intensity of the nations and regions as measured by the percentage of overseas to total turnover. Export intensity is not only centred in London and the South East but is also high in the East, the South West and the West Midlands, as well as in Scotland. More generally, Figure 18 shows that there is a varied pattern of export intensity across the UK nations and regions. This might be expected given the relatively lumpy nature of exporting, whereby firms in some years may experience higher or lower demand for exports relative to other years. Further, as this relates to the firms' primary trading address, it may not capture the full geographic extent of exporting behaviour across firms. However, it likely reflects genuine regional variations in exporting behaviour.

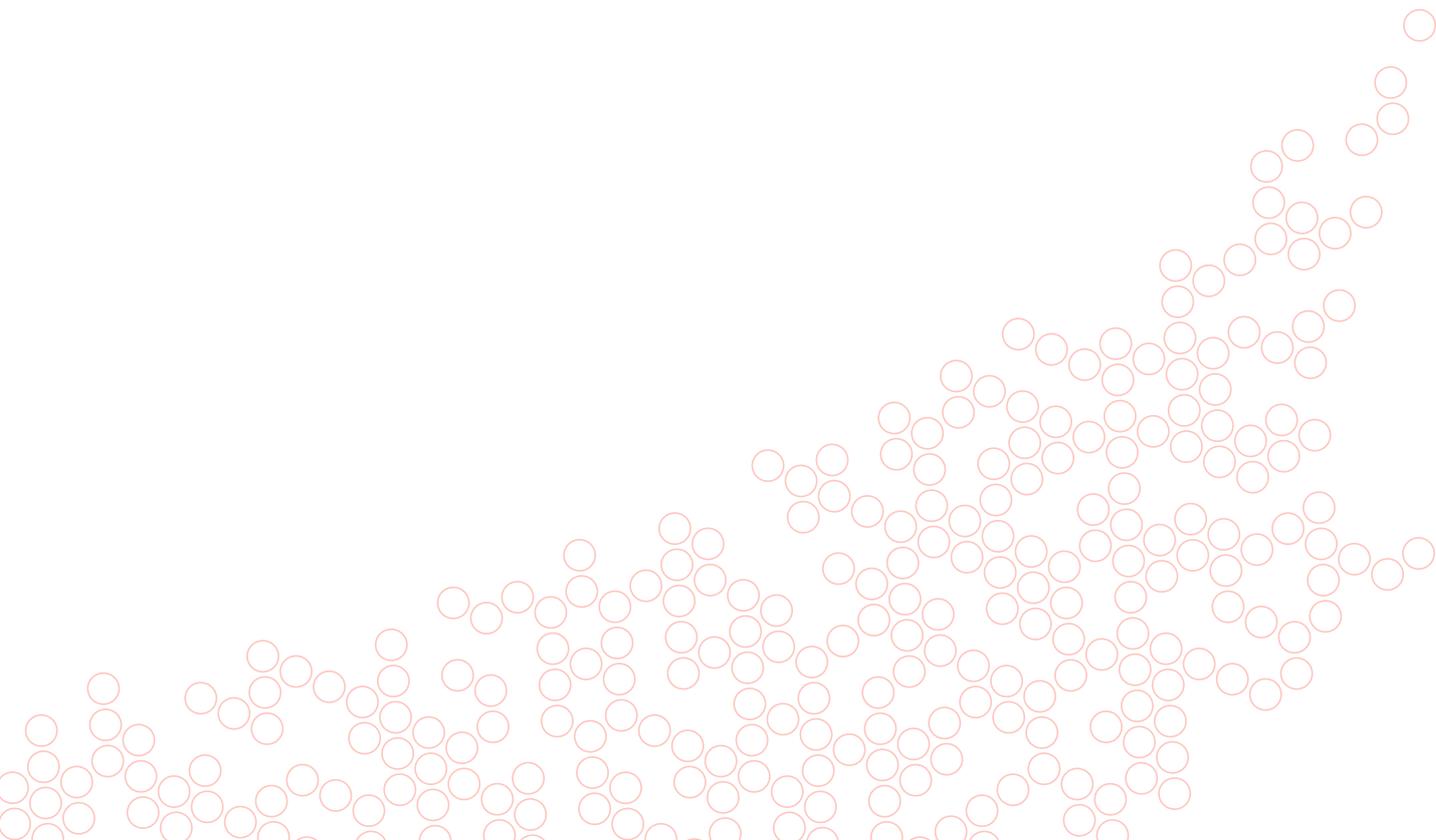
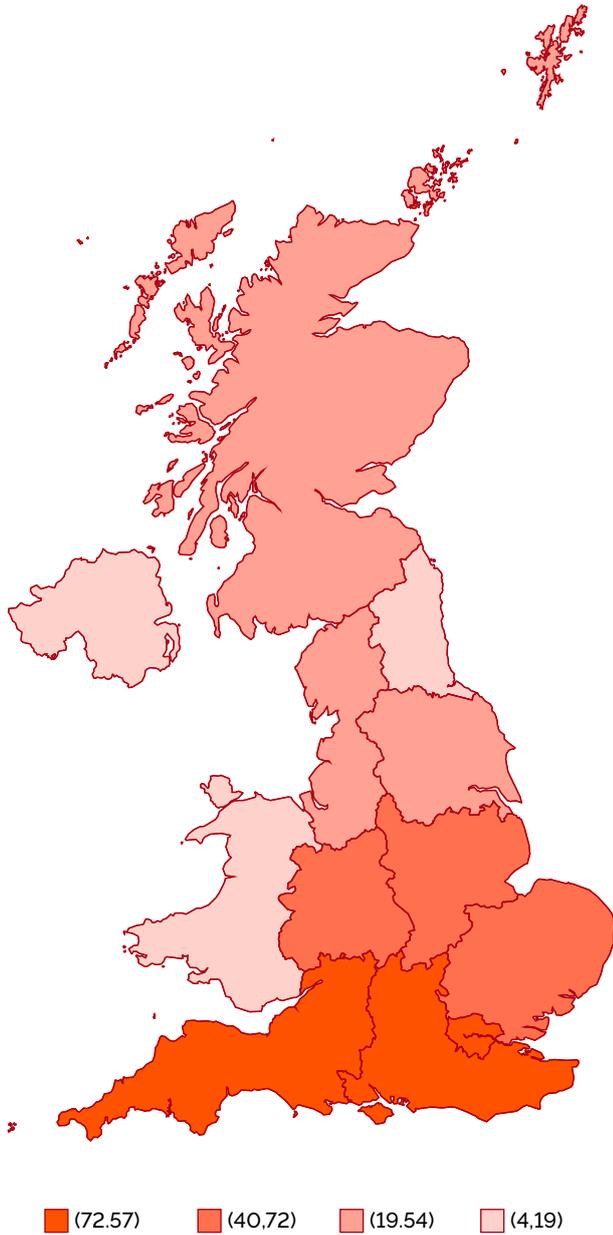
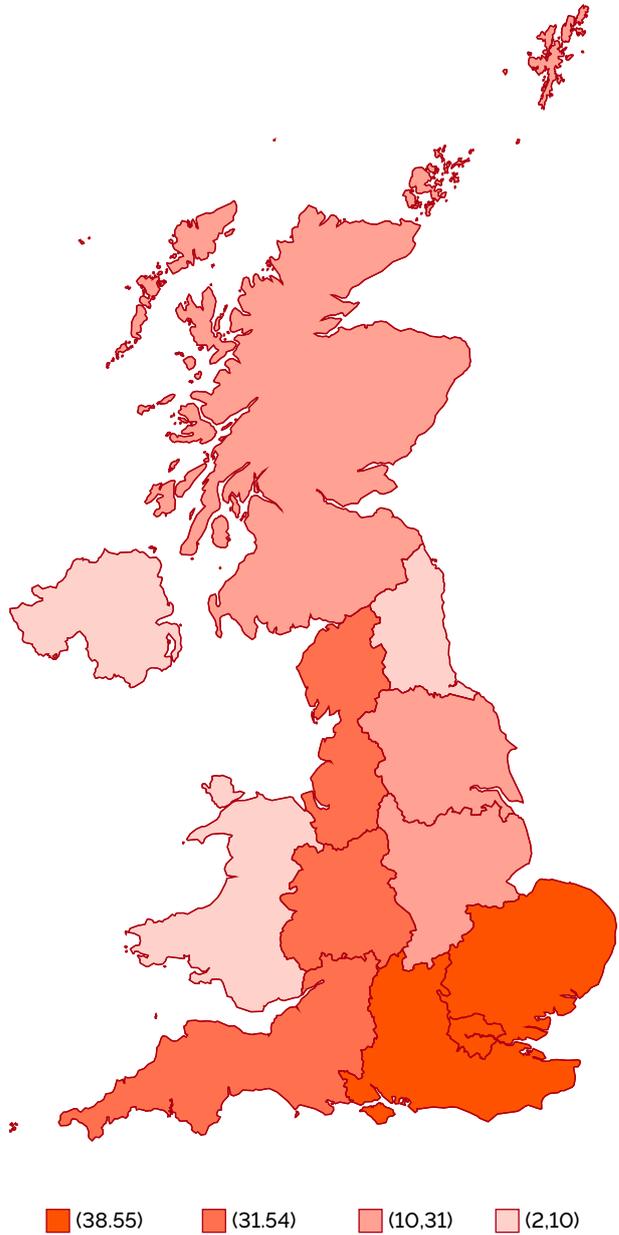


Figure 16. Number of exporters in the creative industries by region

A: 2013



B: 2022

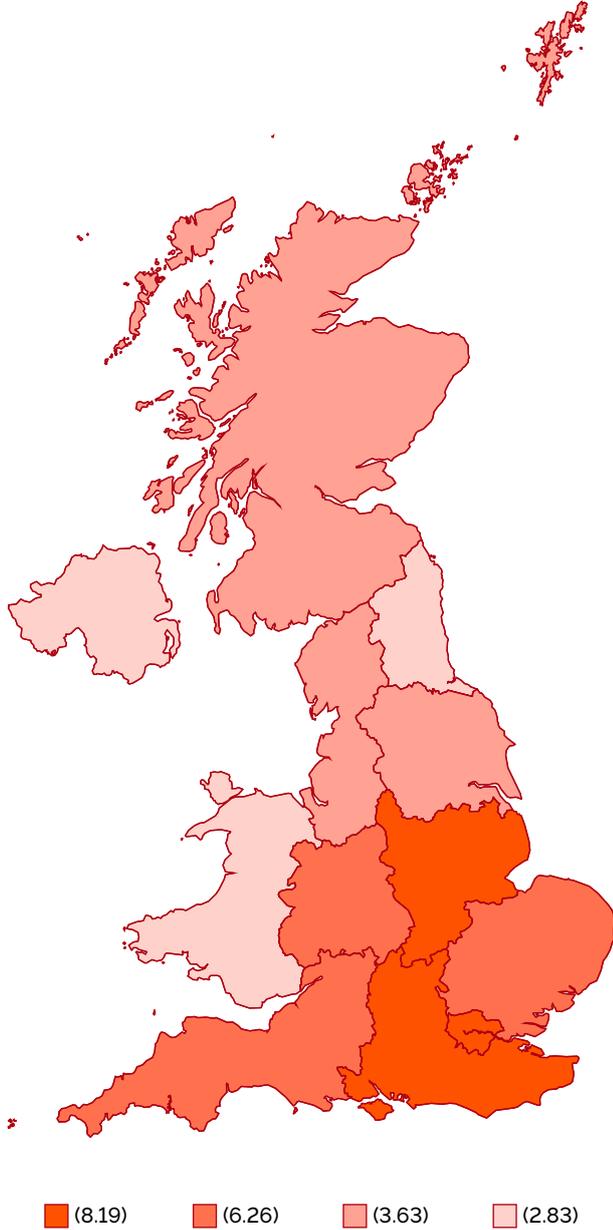


Source: Authors' work based on FAME data.

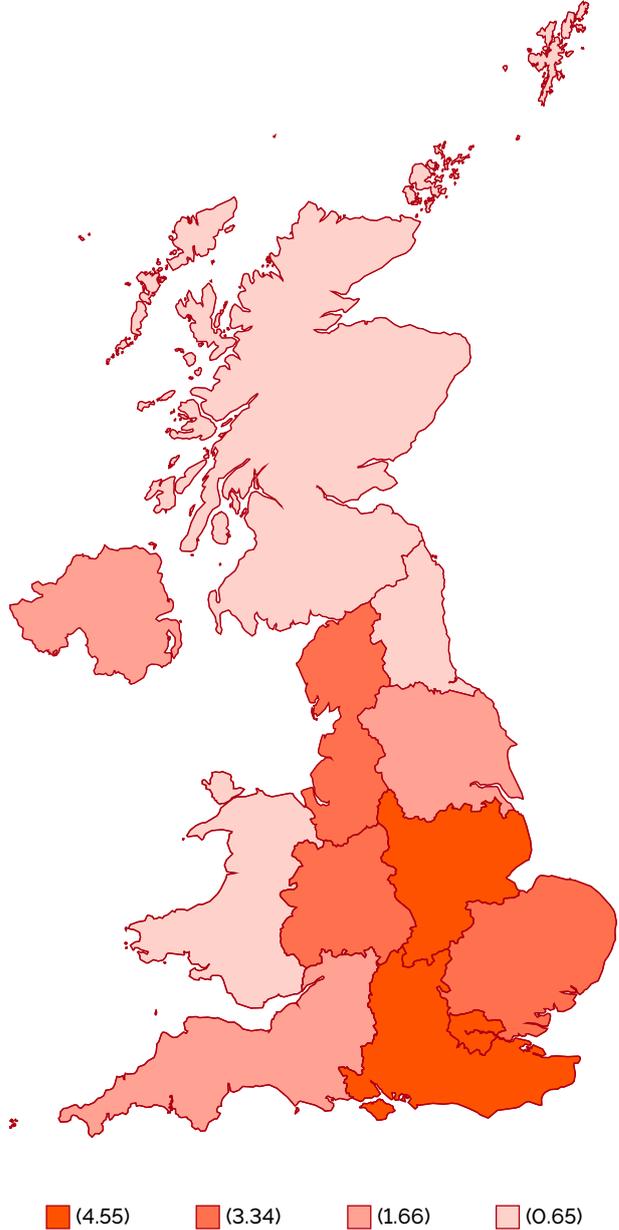
Note: Number of exporters in a region defined as those firms which have reported overseas turnover in a given year.

Figure 17. Percentage of exporters in the creative industries by region

A: 2013



B: 2022

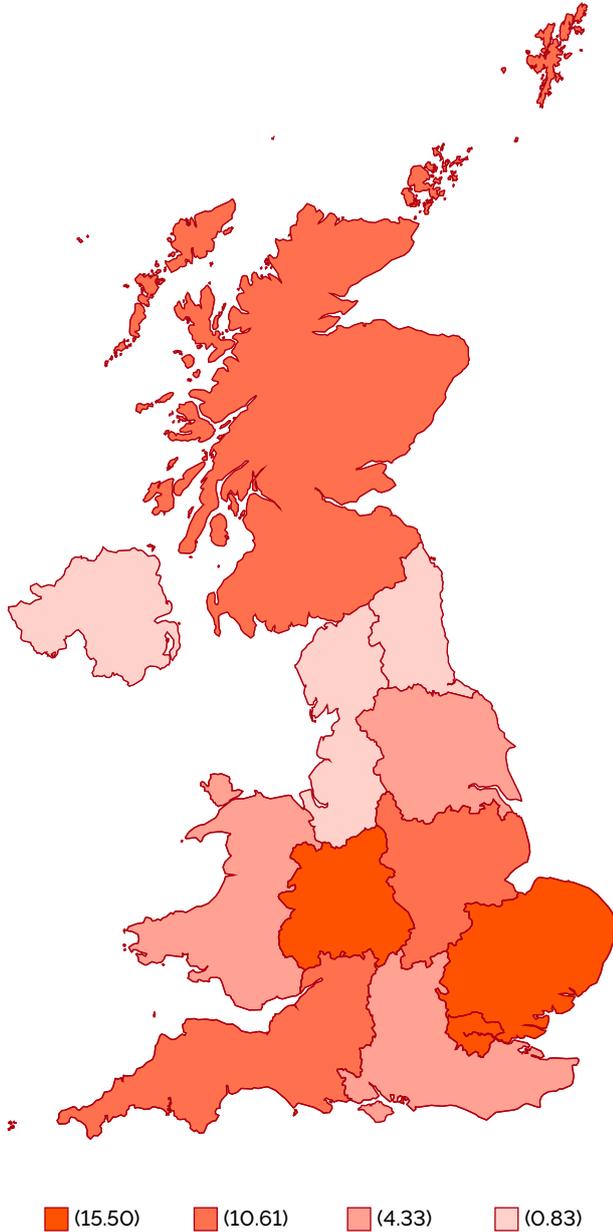


Source: Authors' elaboration based on FAME data.

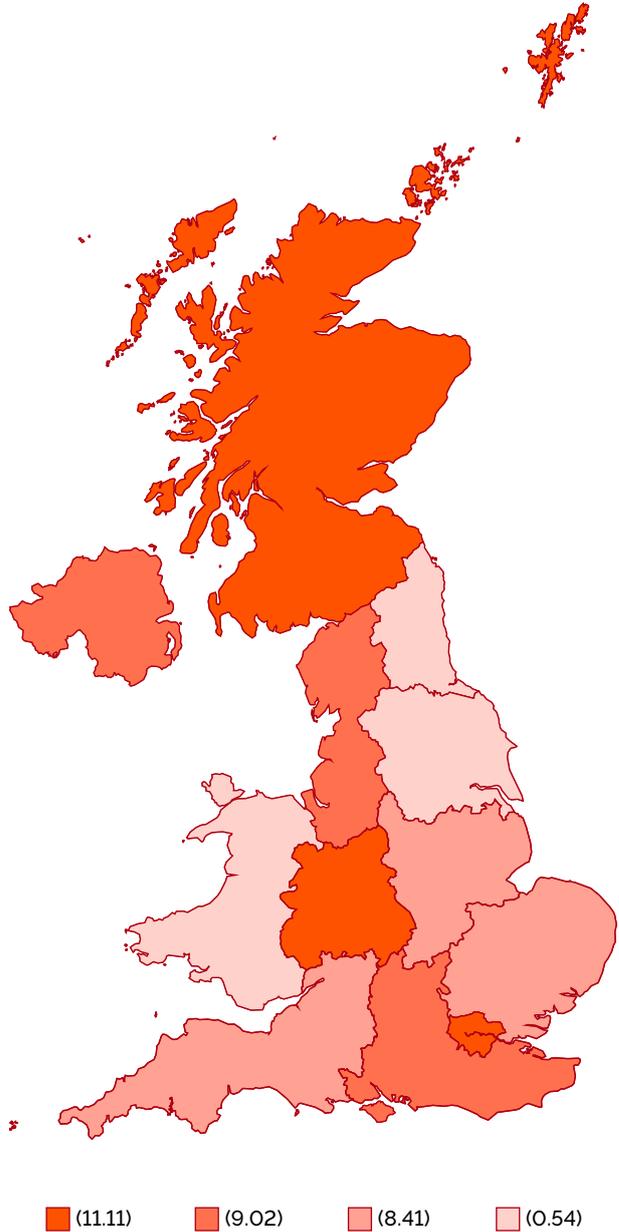
Note: Percentage of exporters in a region defined as those firms who have reported overseas turnover as a percentage of firms for which total turnover is known in a given year.

Figure 18. Export intensity in the creative industries by region

A: 2013



B: 2022



Source: Authors' elaboration based on FAME data.

Note: Export intensity in a region calculated as overseas turnover as a percentage of total turnover in a given year.

Econometric analysis of firms' exporting behaviour

We use multivariate regression analysis to examine the possible factors that may determine the exporting behaviour of creative firms in the sample.

Not all firms are exporters (i.e. report overseas turnover), and not all exporters export with the same intensity. Therefore, in modelling exporting behaviour, it is important to start by taking into account the factors determining the choice of firms to export or not in the first place. In other words, the 'selection' process for becoming an exporter. Accounting for the determinants of being an exporter gives important information by itself but is also critical to correcting for any bias that may arise from non-random self-selection of firms' exporting behaviour. A more detailed explanation of the econometric specification is discussed in Appendix B of the online supplementary materials.⁴¹

The exporting behaviour of firms that are exporting is measured in two different ways. First, by their overseas turnover and, second, by their share of overseas turnover in overall turnover (i.e. their export intensity). A range of variables is extracted from the FAME database to analyse the determinants of the firms' exporting behaviour, including their size as well as other firm characteristics like age, foreign ownership, liquidity, labour productivity and their involvement in R&D.

Figure 19 plots the coefficients of the regression analysis using a coefficient plot to illustrate the factors that determine a firm's size of overseas turnover (Figure 19, Panel A) and share of overseas turnover to total turnover (Figure 19, Panel B). The full results are provided in Appendix B of the online supplementary materials. This includes further discussion of the determinants of whether a firm is an exporter, in what is referred to as the 'selection into exporting' equation.

As a brief summary, the following factors are statistically significant in determining whether or not a firm becomes an exporter: the size of the firm (as measured by the log number of employees and number of companies in the firm's corporate group structure); the age of the firm (which has a positive relationship with export status, although it diminishes for older firms) and labour productivity (measured by the firm's turnover divided by number of employees), whereby intuitively the more productive firms are more likely to become exporters.⁴² There is a negative and significant relationship between the liquidity ratio and overseas turnover. Higher liquidity ratios may indicate a firm's ability to pay its short-term debt without having to raise external funds. This could suggest, surprisingly, that access to finance does not adversely impact the levels of exports. However, we would expect larger firms to be able to accumulate higher levels of longer-term debt, hence, this coefficient may reflect the fact that the sample may be skewed towards larger firms. Finally, if a firm has recorded intangible assets (as identified in the profit and loss accounts), this is also significantly associated with being an exporter. Intangible assets can take various forms, from brand name to software, but they also include intellectual property, licences and permits which may be the result of innovation activities.

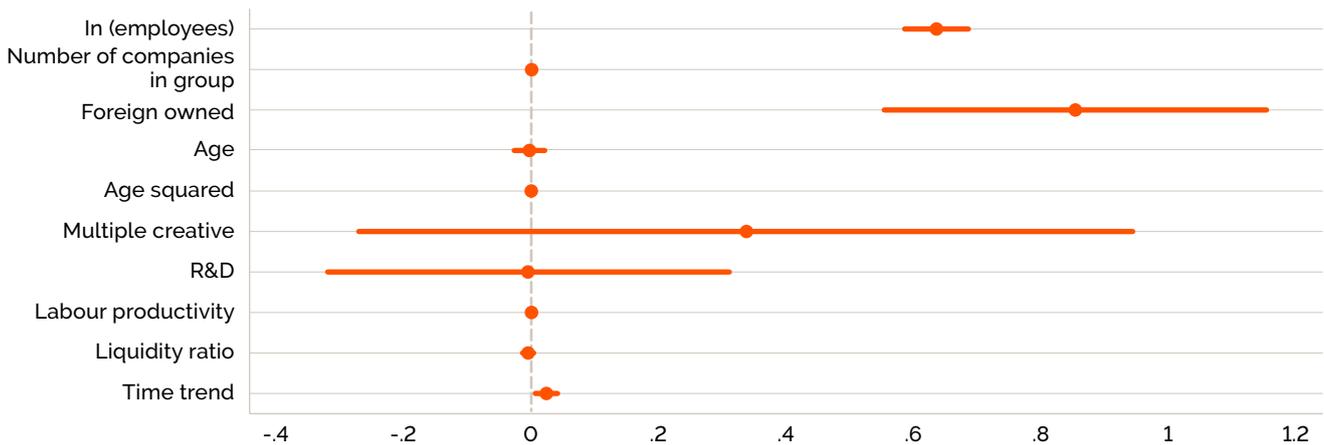
Figure 19, Panel A plots the results for the determinants of export behaviour of firms in terms of the size of overseas turnover as measured by a firm's (log) overseas turnover. It highlights a number of significant explanatory factors impacting positively on exports.⁴³ These include firm size, as measured by the (log) number of employees, the overall size of the corporate group and whether or not a firm is foreign owned. A higher level of labour productivity is also associated with significantly higher levels of exports. Switching focus to the analysis of export behaviour in terms of the firms'

share of overseas turnover in Figure 19, Panel B, a different picture emerges to that of Figure 19, Panel A in the case of a higher liquidity ratio being significantly associated with higher shares of overseas turnover. Of course, exporters may conceivably also have higher liquidity because of higher demand from exporting more, so the causality may run in the opposite direction. Further, firm size, as measured by employees, shows that although larger firms have higher levels of overseas turnover (Figure 19, Panel A), their overall share of this turnover relative to

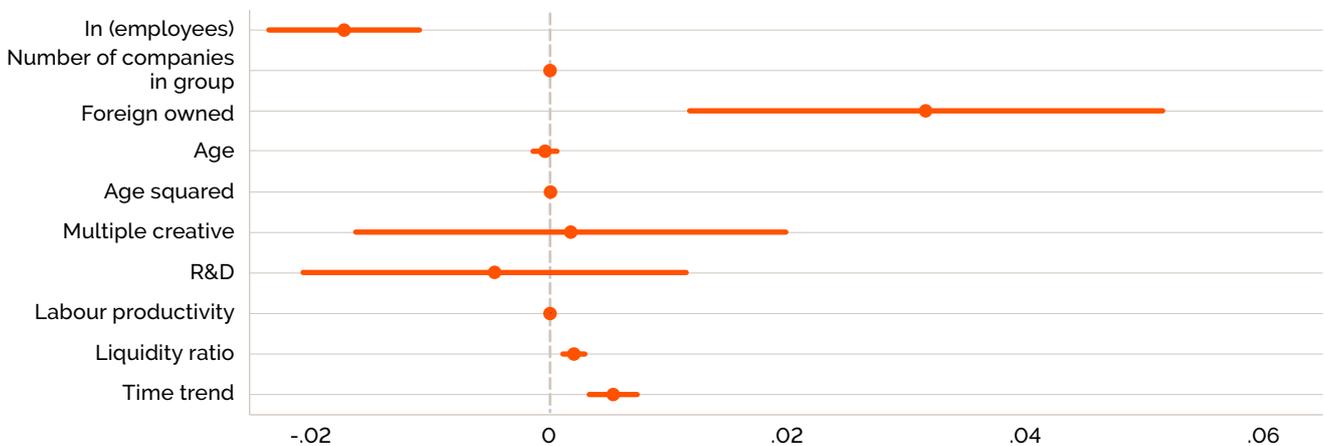
their total turnover falls as their size increases (Figure 19, Panel B). This may of course reflect the larger scale of these firms and their larger presence in both domestic and overseas markets. Finally, the positive and significant time trend in the models for both measures of exporting behaviour highlights the increase in both the size of export turnover and a firm's share of overseas turnover over the period, consistent with the findings of the descriptive results reported in earlier sections.

Figure 19. Determinants of firms' export behaviour

A: Overseas turnover



B: Overseas turnover as a share of total turnover



Note: Coefficient plots for determinants of firms (Panel A) overseas turnover and (Panel B) share of overseas turnover to total turnover. Each point plots the coefficient value for each determinant together with the 90% confidence interval. Values whose confidence intervals do not cross the vertical zero axis indicate significance at the 10% significance level. Full results are available in Appendix B of the online supplementary materials.

Overall, as elsewhere in the report, the findings of the multivariate regression analysis are only as good as the data we have. A deeper analysis of the determinants of firms' exporting behaviour in the creative industries needs more

disaggregated data and data sources with more comprehensive coverage of the smaller businesses that are disproportionately important in the creative industries.



4 The UK's digital trade in creative industries

The growing importance of digital trade

In the last few decades, international trade has been impacted massively by advances in information technologies and the internationalisation of supply chains. Digital technologies are increasingly adopted by businesses and households when ordering goods and services, including across borders, and greater digital connectivity is reducing both domestic and international trade costs (the so-called 'double dividend'). López-Gonzalez et al. (2023) estimate that by 2018, the impact of digital connectivity on international trade costs for firms was three times higher than it was in 1995. Many services that used to require proximity between producers and consumers can now be traded at a distance.

This increased tradeability of services extends also to creative services. The COVID-19 pandemic has led to a 'new normal' in global trade, one that is more digital than before due to what increasingly seem to be persistent changes in consumer behaviour (Pew Research Center, 2021). Digital trade represented around 25% of total world trade in 2020 (OECD, 2023a), and it continues to grow rapidly.

Despite this increase, efforts to measure digital trade are still in their infancy.⁴⁴ While there is no single definition of international digital trade, there has been a growing consensus, and international organisations such as the International Monetary Fund (IMF), OECD,

United Nations and WTO have joined forces to conceptualise and define digital trade in a way that is internationally comparable. According to the 2019 edition of the *Handbook on Measuring Digital Trade* produced by the OECD, IMF and WTO, digital trade is all international trade that is digitally ordered and/or digitally delivered. The OECD (2011) defines digitally ordered trade as 'the international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders'.⁴⁵ This form of trade covers transactions in both goods and services and is what is commonly called 'international e-commerce'. The 2023 edition of the *Handbook on Measuring Digital Trade* builds on and updates the measurement framework established in the first edition, and it offers the definition of digitally delivered trade as 'all international trade transactions that are delivered remotely over computer networks' and takes the view that only services can be digitally delivered, so all digitally delivered trade falls under services trade.⁴⁶ According to WTO estimates, exports of digitally delivered services alone have recorded an almost fourfold increase in value since 2005, rising 8.1% on average per year over the period 2005-2022, outpacing goods (5.6%) and other services exports (4.2%) to account for 54% of total global services exports, showing the increasing importance of digital trade services.

In conclusion, digital trade is bound to grow over time, develop and assume new forms, and facilitate and transform globalisation (Lund and Manyika, 2016). A comprehensive measurement of digital trade needs to include digitally ordered trade, as well as digitally delivered trade. ICT usage surveys (for both businesses and households) are well placed to measure sales and purchases broken down by goods, digitally delivered services and other services, including free digital services. However, surveys

may not be representative, nor may they cover all digital transactions, so continuous efforts and resources need to be deployed at the international level so that, hopefully in a not-too-distant future, consistent statistics of digital trade may become more available.

For a more detailed discussion of the challenges of measuring digital trade and what sources of data exist, the interested reader is referred to Appendix C of the online supplementary materials.

An experimental digital trade dataset

The need to improve measurement of digital trade is self-evidently important in the creative industries. Due to the challenges discussed above, however, there is currently no official data available on trade in creative digital goods and services. For this reason, we present some preliminary analysis based on experimental bilateral trade data for a set of digital products produced by Stojkoski et al. (2024).⁴⁷ In this section, trade values are presented using the same currency in which data is reported in their data set (i.e. US\$). While the authors make great efforts to overcome the myriad measurement challenges, it is important to highlight several caveats and qualifications.

First, the data is partial in that it covers only digitally delivered services; that is, it does not include digitally ordered goods or services that are not digitally delivered. Nor does the data set include all digitally delivered services as, for example, it does not include some advertising (market research services) and architectural services. Second, the data set is based on a limited sample of 8,530 firms and 9,446 digital products, which is biased towards very large companies. Third, only the digital product consumption that cannot be accounted for by local consumption is counted as trade. Fourth,

since it is not possible to track transactions between parent companies and their subsidiaries, estimates can follow one of two assignment rules: either based on the location of each subsidiary (which is the one we report on) or based on the location of the headquarters. Both approaches have shortcomings.⁴⁸ An implication is that tax havens where global companies have incentives to set up subsidiaries may distort the figures. Last, but not least, is a technical limitation arising from the way the data is constructed. Since the variables we typically include in gravity models such as distance between trading partners are already used as inputs to produce the estimates, it is not possible to use the data to estimate standard gravity models to understand the drivers of trade.

For the reasons mentioned above, it is advised that readers take the digital trade estimates presented as a (possibly very) lower bound. To gauge reliability, Stojkoski et al. (2024) compare their experimental data with UNCTAD's international trade in digitally deliverable services, which uses a broader definition for digital trade incorporating digital products (UNCTAD, 2022) and EBOPS data.⁴⁹ They find a high correlation between their estimated export volumes and UNCTAD's volumes, suggesting

that the two data sets perhaps provide similar information about the relative distribution of digital export volumes. As expected, UNCTAD's trade data shows much larger volumes (US\$3.26 trillion trade in 2021 compared with Stojkoski et al.'s (2024) estimates of average trade of US\$956 billion). However, the authors perform extensive modelling of missing trade in their data and claim that this is negligible for 2021 compared with their total digital products trade estimates. They also claim that their model, even with several limitations, captures a significant portion of digital products trade activity.

Notwithstanding the above caveats, Stojkoski et al. (2024) show that between 2016 and 2021, trade in digital products grew faster (at an annualised growth rate of 24%) than trade in the broader set of digitally delivered services (at 8%) as calculated by UNCTAD/WTO, faster than trade in services (at 4%) and faster than trade in physical products (at 6%).⁵⁰ They find that this growth divergence accelerated in 2020 during the COVID-19 pandemic, when physical product trade shrunk by 7% per year on average, services trade dropped by 17% and digitally

delivered services trade grew by 1%, while trade in digital products grew at an annual rate of 26%, representing around 3.64% of world trade in goods and services for 2021. As discussed in Stojkoski et al. (2024), these digital products have non-digital characteristics. For example, buying a video game involves transferring ownership of a (digital) asset with a negligible marginal cost to the producer. Digital services, such as cloud computing, on the other hand do not involve the transfer of a digital asset but rather give users temporary access to a digital service or infrastructure, such as a dedicated virtual machine or server, which implies some marginal cost for the provider. Trade in digital products comprises a wide spectrum, from pure digital goods such as standalone video game downloads, to combinations of digital goods and services, such as video streaming platforms, like Netflix, which provide temporary access to a digital good (movie, TV show, etc.) via a service subscription model. Online platforms have an increasingly prominent role in matching supply with demand and in facilitating economic transactions.⁵¹

The UK's performance in digital products trade

As an experimental data set, the first difficulty encountered in using Stojkoski et al.'s (2024) data is to decide what to consider as creative among the 31 digital sectors they record. There is no official classification of creative digital products provided by the UK's statistical authorities.

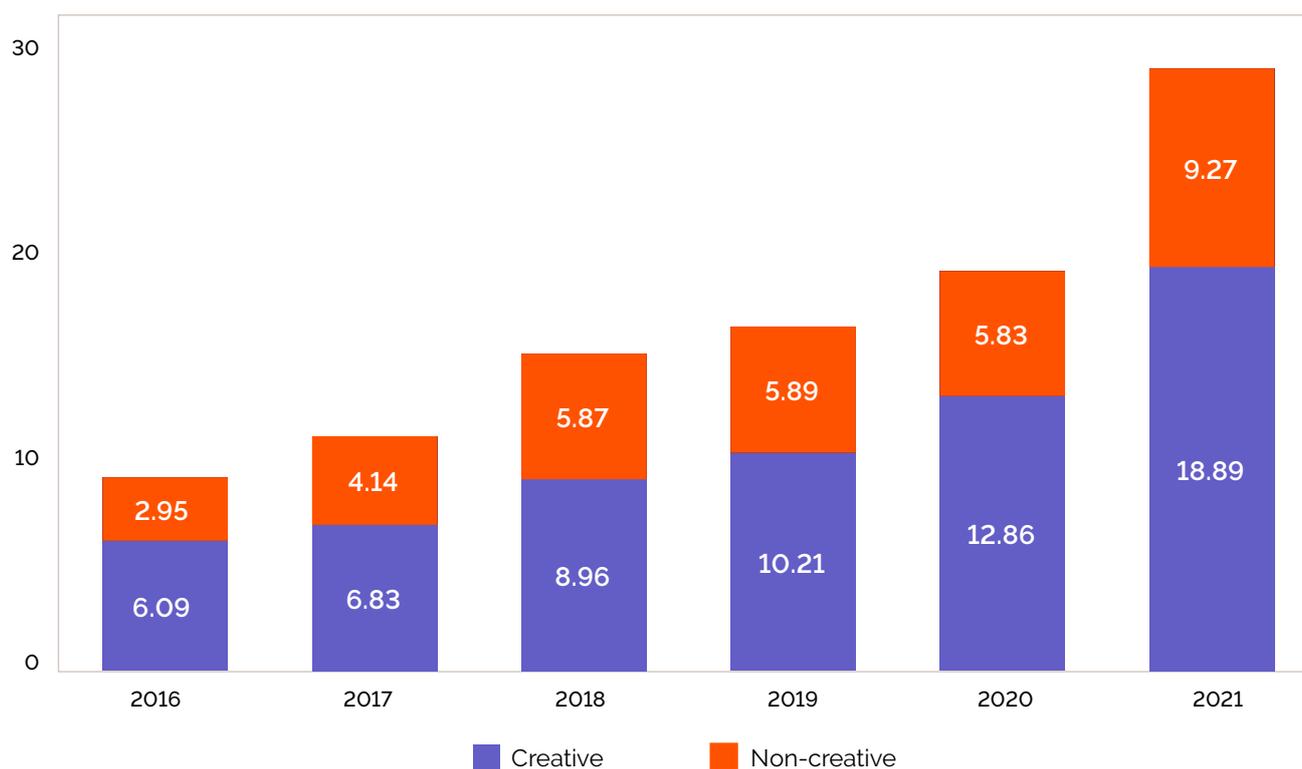
Table C3 (in Appendix C of the online supplementary materials) follows a pragmatic (but subjective) approach of matching digital products by hand to the creative industries according to the existing DCMS classification, which would, for example, see ebooks considered as part of the publishing industry, digital advertising part of advertising and so

on. It should be noted that 'IT, software and computer services' is a contested sub-sector within the creative industries, and it is also the single biggest component of digital exports in Stojkoski et al. (2024), so their inclusion has major implications for the analysis that follows. Unlike in the DCMS classification, we separate 'Video games' from 'IT, software and computer services' since it is identified separately in Stojkoski et al.'s (2024) data set. It is also the biggest creative sector in digital exports for the UK according to Stojkoski et al.'s (2024) data and, hence, it is worth showcasing separately its performance and evolution over time.

Focusing on the UK, Figure 20 shows the evolution of total exports for digital products over the period 2016–2021 and the breakdown between creative and non-creative digital trade (according to the classification we adopt in Table C3 of Appendix C in the online supplementary materials). It clearly shows that, according to these estimates, the UK's total exports of digital products more than tripled between 2016 (US\$9.05 billion) and 2021 (US\$28.16 billion), growing by 211% in six years, and confirming the tendency of digital trade to expand over time at rates of growth that are nowhere near the historical growth for non-digital trade.

Creative digital products represent the lion's share of digital trade, accounting for 67.29% of total digital trade in 2016 and 67.08% in 2021, after peaking at 68.80% in 2020 during the COVID-19 pandemic, implying that over time the creative component of digital trade exported by the UK is quite stable at two-thirds of digital trade. Figure 20 also shows an acceleration after 2020 in both creative and non-creative digital trade as the COVID-19 pandemic favoured the emergence of ICTs and their embedding in services, allowing more services to be increasingly delivered online.

Figure 20. Creative and non-creative digital trade exports (in US\$ billion) for the UK 2016-2021



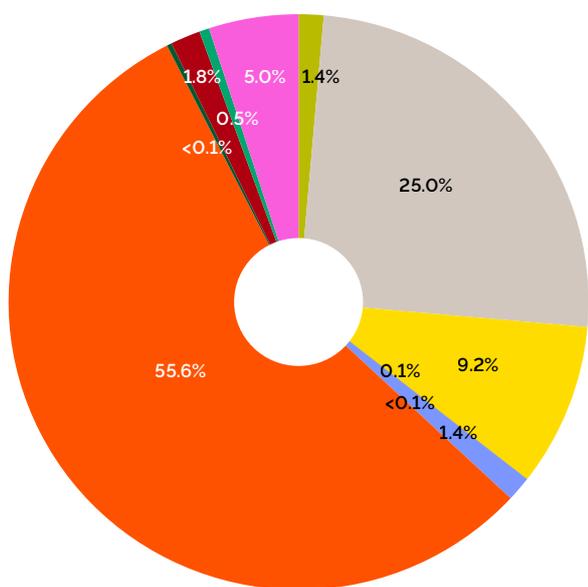
Source: Authors' calculations based on Stojkoski et al.'s (2024) data set.

In 2021, the UK's digital creative trade,⁵² as measured by the digitally delivered sectors captured by Stojkoski et al. (2024), is explained mostly by trade in video games (46.4%), cloud

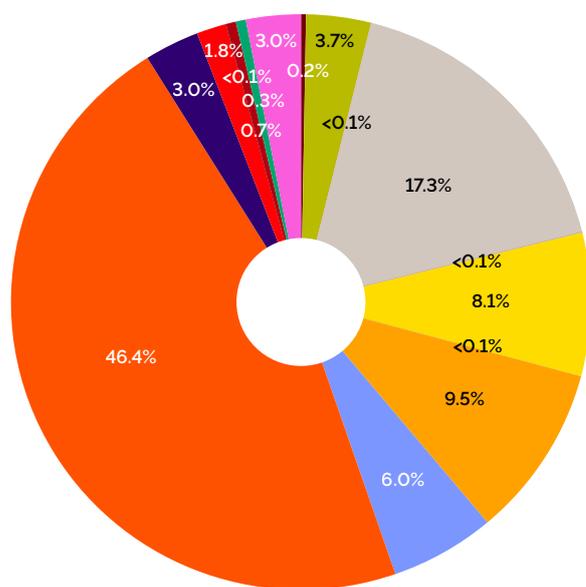
computing (17.3%) and data licensing (9.5%). Together, they account for 69% of the UK's estimated creative digital trade. In the online supplementary material, Table C1 reports the export values for all creative digital products.

Figure 21. UK creative digital products exports (by share) 2016 versus 2021

A: 2016



B: 2021



- Administrative software
- Business intelligence software
- Creative software
- Cybersecurity
- Digital advertising
- Office software
- Other enterprise software
- Web-hosting
- Apps
- Cloud computing
- Customer relationship management
- Data licensing
- Games
- Operating system
- Supply chain management software
- eBooks

Source: Authors' calculations based on Stojkoski et al's (2024) data set. Export values used to produce these charts are available in Table C1 in Appendix C of the online supplementary materials.

Figure 21 shows the relative growth over time of the different types of creative digital product exports by comparing their shares of the overall creative digital product exports in 2016 and

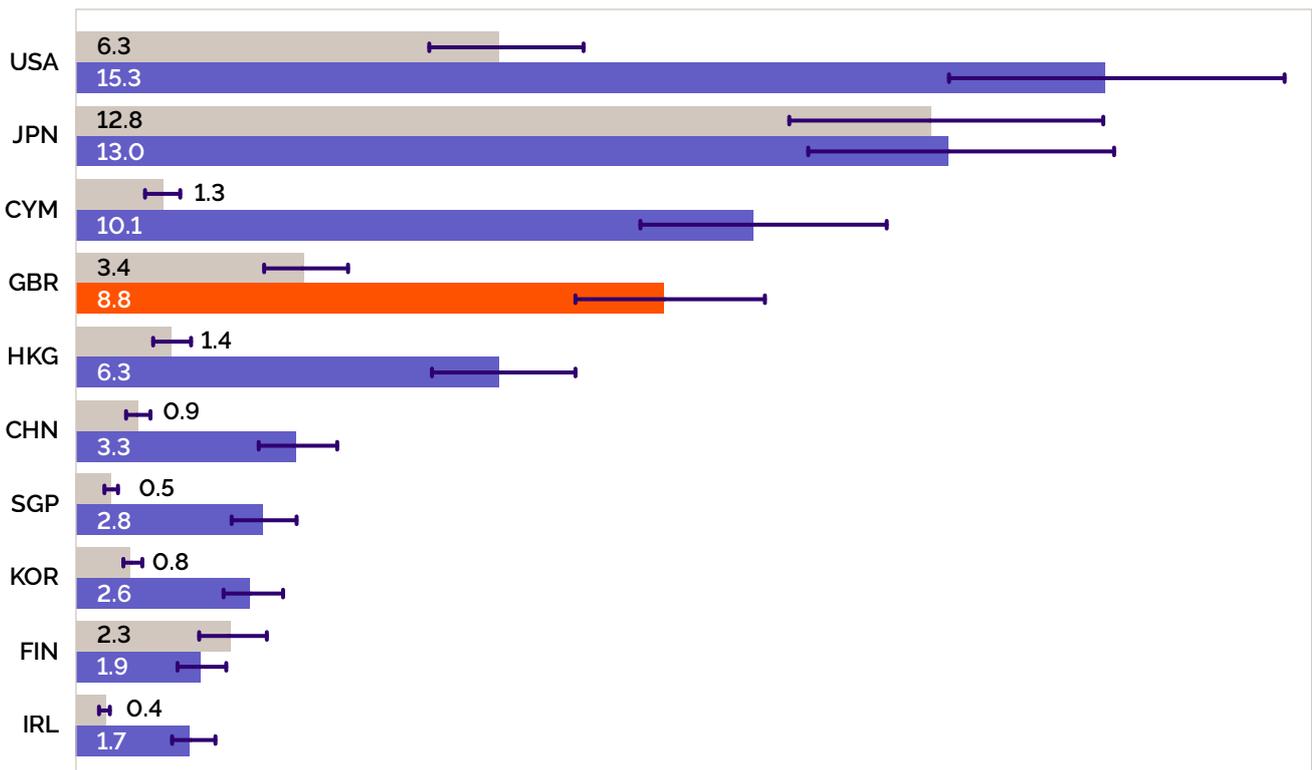
2021. Notably, 'Video games', 'Data licensing' and 'Digital advertising' experienced faster growth, while 'Cloud computing' and 'ebooks' grew more slowly in relative terms.

UK position on global export markets for Video Games 2016-2021

According to the Stojkoski et al. (2024) data, the UK is in fourth⁵³ position globally as an exporter of digital video games, with a value of US\$8.8 billion in 2021, up 258.8% on 2016 when it exported US\$3.4 billion. The US is the world leader in this area, with US\$15.3 billion exports, followed by Japan with US\$13.0 billion and the Cayman Islands (a tax haven) with US\$10.1 billion in exports. This reflects the strength of the

industry for the UK. Hong Kong (US\$6.3 billion), China (US\$3.3 billion), Singapore (US\$2.8 billion) and South Korea (US\$2.6 billion) are, in order, the next biggest exporters of video games, and they all grew their exports spectacularly. In Appendix C of the online supplementary materials, we provide a breakdown of video games industry exports into three constituent sub-sectors (see the Glossary for a description).

Figure 22. Digital trade exports of video games, top ten exporters (in US\$ billion) in 2016 and 2021

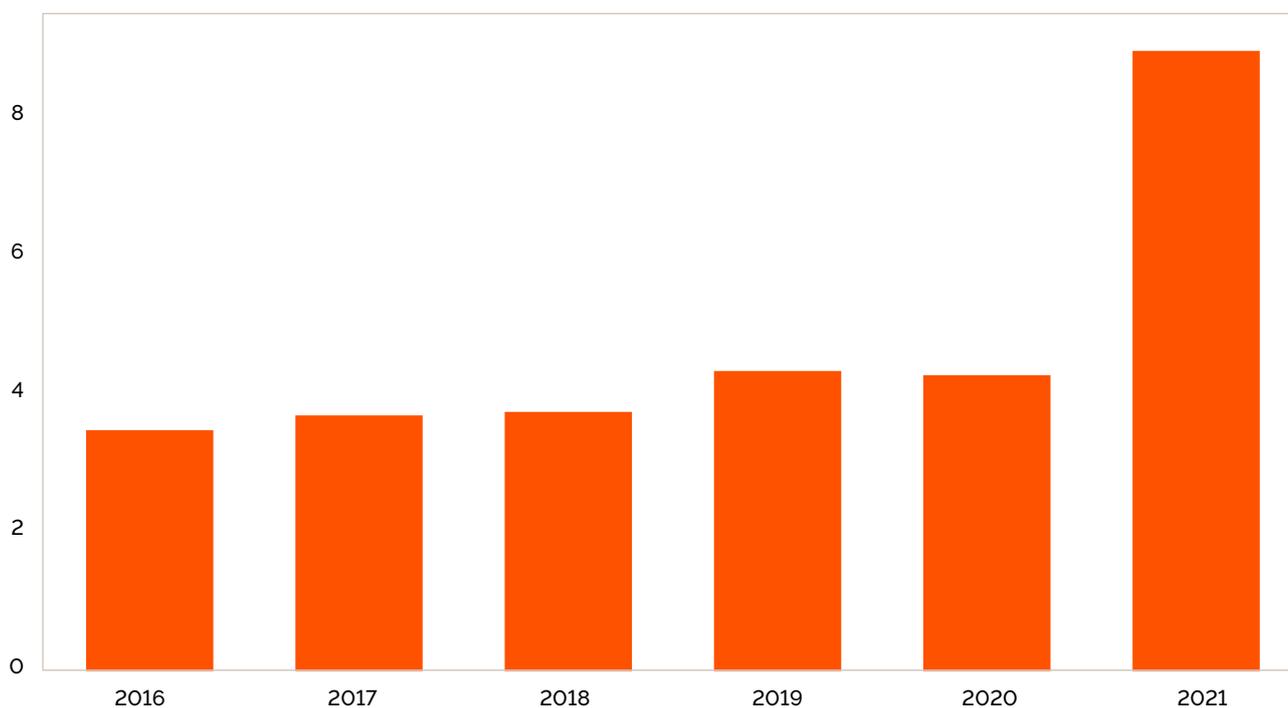


Authors' calculations based on Stojkoski et al.'s (2024) data set.

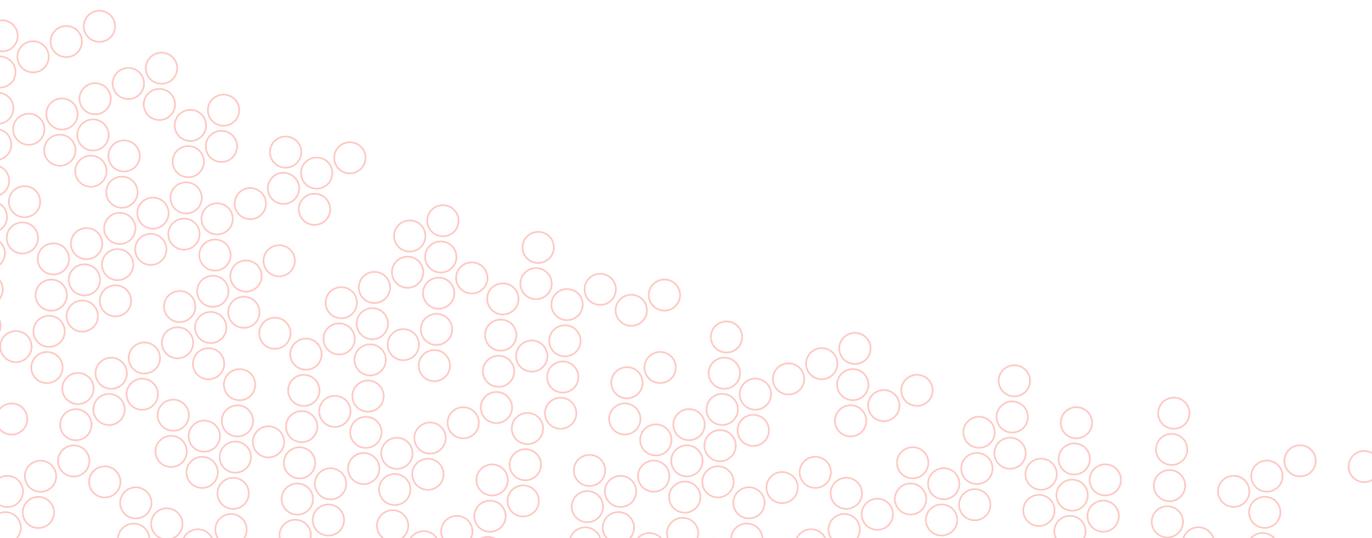
Figure 23 shows UK video games exports for each year from 2016 to 2021. It reveals that exports of video games had been hovering below US\$4 billion until 2018 and rose to above US\$4 billion in 2019 and 2020. The sector's exports have grown

over time and reached US\$8.77 billion in 2021, meaning that from 2016 to 2021 the UK's video games exports grew overall by about 2.5 times, according to these estimates.

Figure 23. Digital video games exports for the UK (in US\$ billion) 2016-2021



Source: Authors' calculations based on Stojkoski et al.'s (2024) data set.

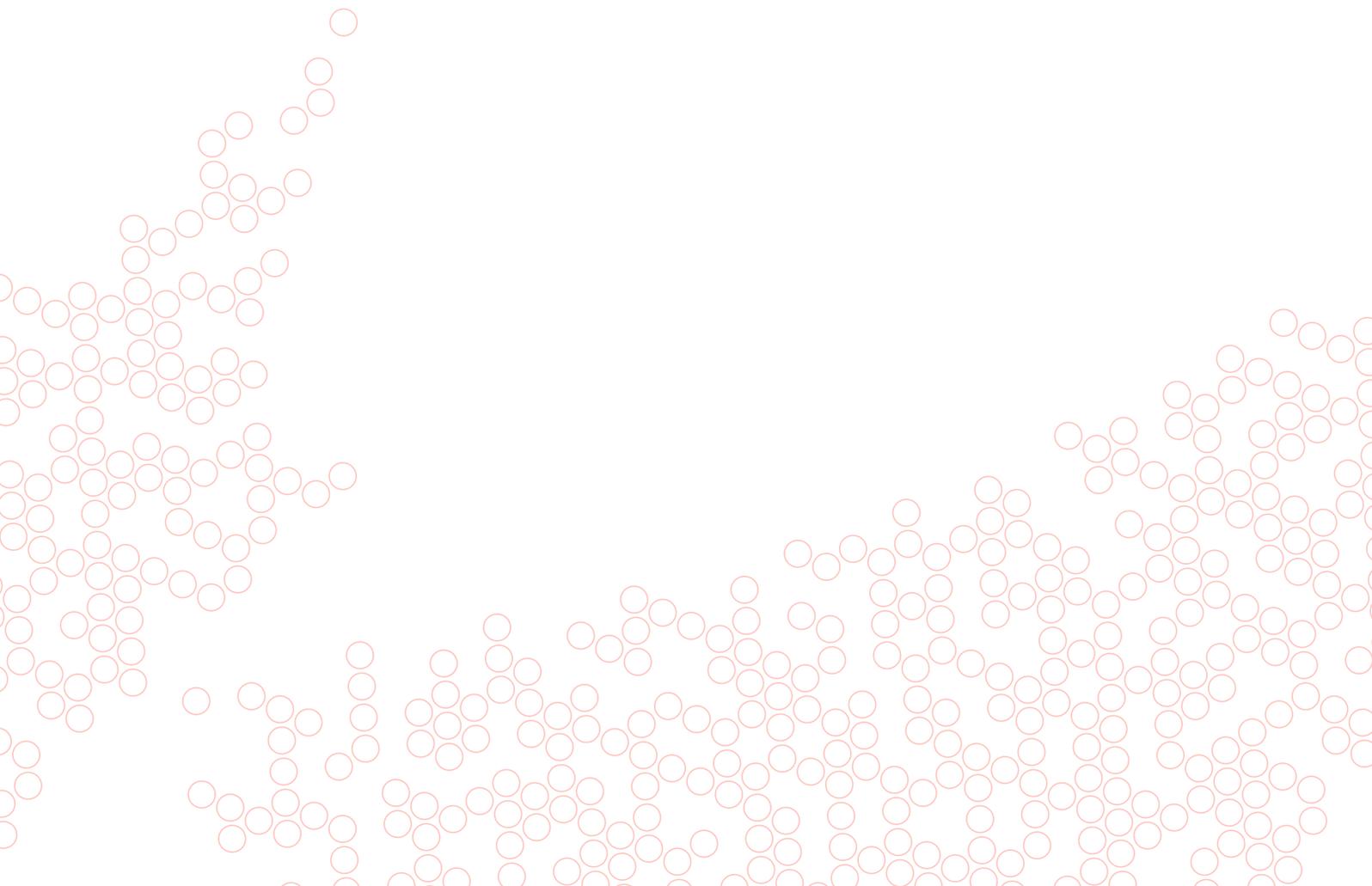


Conclusions on digital trade

This section has offered some new insights on digital creative trade using an experimental data set. Addressing the digital gaps in official trade statistics is a priority for national statistical agencies, as both digitally ordered goods and services and digitally delivered services will only experience further growth in the future.

Another priority for UK trade policy, as suggested by Bhalotia et al. (2023), is to include digital agreements in new service trade agreements pursuing growth in digital trade, preventing the emergence of future digital barriers, as well as covering data adequacy to facilitate the transfer of data, provisions on electronic authentication and digital identity approaches. The UK should continue to innovate and modernise trade deals by agreeing enhanced digital provisions within existing agreements, as was done for the UK–Japan Economic Partnership Agreement and the Singapore Digital Economy Agreement.

Creative digital trade represents the lion's share of the digitally delivered services that are captured in the data set, but this finding depends critically on whether the various sub-sectors within 'IT, software and computer services' are considered to be creative. If only some of these should in fact be included, the numbers presented here will overestimate the value of creative digital exports. At the same time, the experimental data set we use has data gaps in important creative sub-sectors which we know from industry sources are major exporters for the UK (like digital music streaming and downloads, video on demand or ebooks). Whatever the net effect on the estimates for overall creative digital exports, it seems clear that the improvement in statistical methods for measuring digital trade in the future will help to make the export contributions of key UK creative industries more visible.



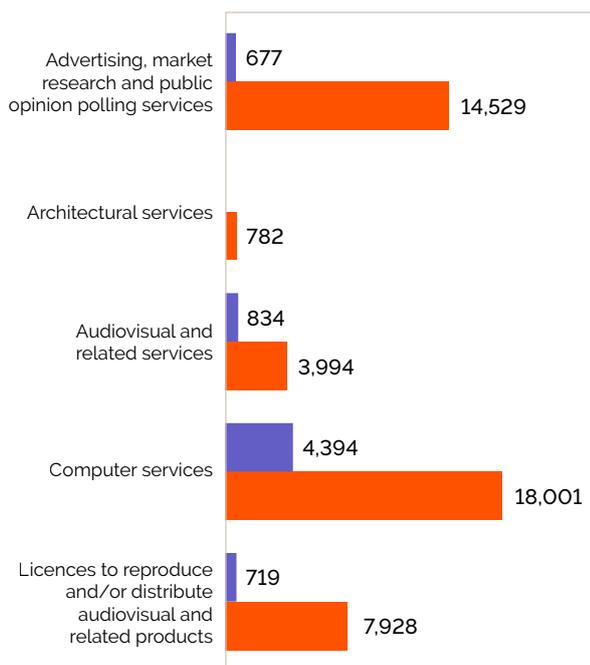
5 Lessons from South Korea's content industries

South Korea's creative industries have become an international success story.⁵⁴ Based on the definitions of creative services in Du et al. (2023b) and creative goods by UNCTAD that we adopt in Section 2.6, South Korea exported US\$7.4 billion of creative services and US\$13.9 billion of creative goods in 2020, with the latter amounting to 2.7% of the world's total.⁵⁵ The creative industries definitions underlying these estimates differ from those used by DCMS and reflect

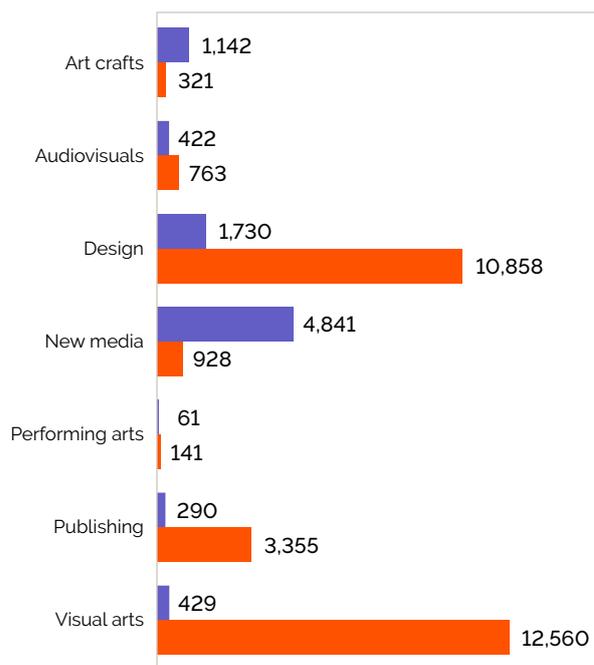
the ongoing challenge of lack of harmonisation across countries in creative industries statistics (see Maioli et al., 2021). Figure 24 shows that South Korea's creative industries include two areas – 'Arts and crafts' (carpets, products related to celebration, other crafts, paperware, wickerware and yarn) and 'New media' (recorded media and video games) – that exported more than the UK's equivalent industries in 2019, just before the COVID-19 pandemic.

Figure 24. Value of creative exports by sub-sector in 2019 (in US\$ million)

A: Services



B: Goods



■ South Korea ■ UK

Source: Authors' calculations based on UNCTAD statistics on exports of creative goods and services.

South Korea's content industries rode the 'K-Wave' (Korean Wave or Hallyu) into the global entertainment spotlight. The film *Parasite* made history in 2020 by becoming the first foreign-language film to win best picture at the Oscars, and *Squid Game* became Netflix's most-watched TV series in 2021. In music, PSY's *Gangnam Style* broke YouTube total

views record in 2012. In character design, Pinkfong popularised the *Baby Shark* tunes among children. In games, *PlayerUnknown's Battlegrounds* (PUBG) became a mobile game hit worldwide. More recently, in 2023, King Charles presented honorary Member of the Order of the British Empire (MBE) to members of a South Korean K-pop music group, BLACKPINK.

South Korea's creative industries' definition and trends

In South Korea, the content industries are also referred to, interchangeably, as the cultural industries, creative industries or media and entertainment industries.⁵⁶ Unlike the one adopted by DCMS, this definition does not distinguish between 'creative' and 'cultural' activities. In another difference from the UK approach, South Korea has a specialist agency that coordinates the promotion of content industries. This state-funded agency – the Korea Creative Content Agency (KOCCA) – was formed by integrating three agencies for games, broadcasting and cultural contents, and it coordinates with the Korea Film Council and Korea Trade-Investment Promotion Agency

(KOTRA) under the Ministry for Culture, Sport and Tourism (MCST).

While the Korean Wave is often attributed to music, films and K-drama, the growth of South Korea's content industries exports has really been spearheaded by the video games sub-sector. As shown in Figure 25, video games exports reached US\$8.6 billion in 2021 and contributed over two-thirds of South Korea's total content exports, growing around 15.5% per year on average since 2012. According to Stojkoski et al.'s (2024) digital trade data set analysed in Section 4, US\$2.6 billion of South Korea's video games exports in 2021 were digital.

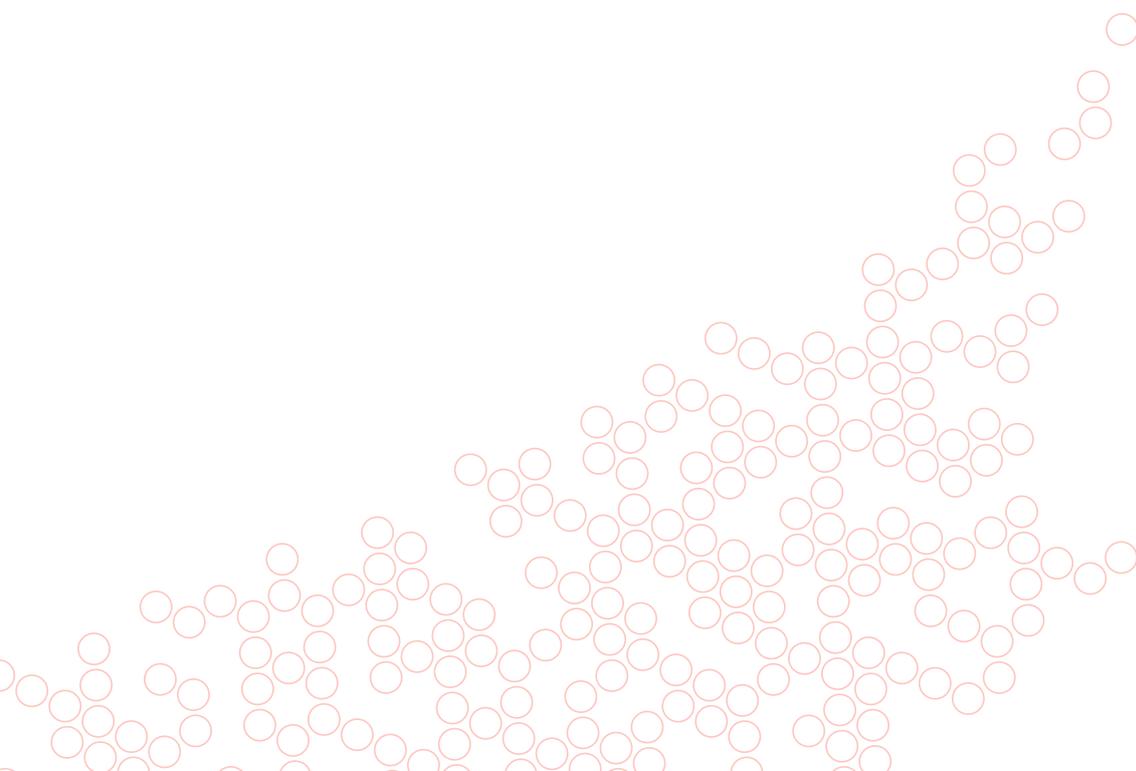
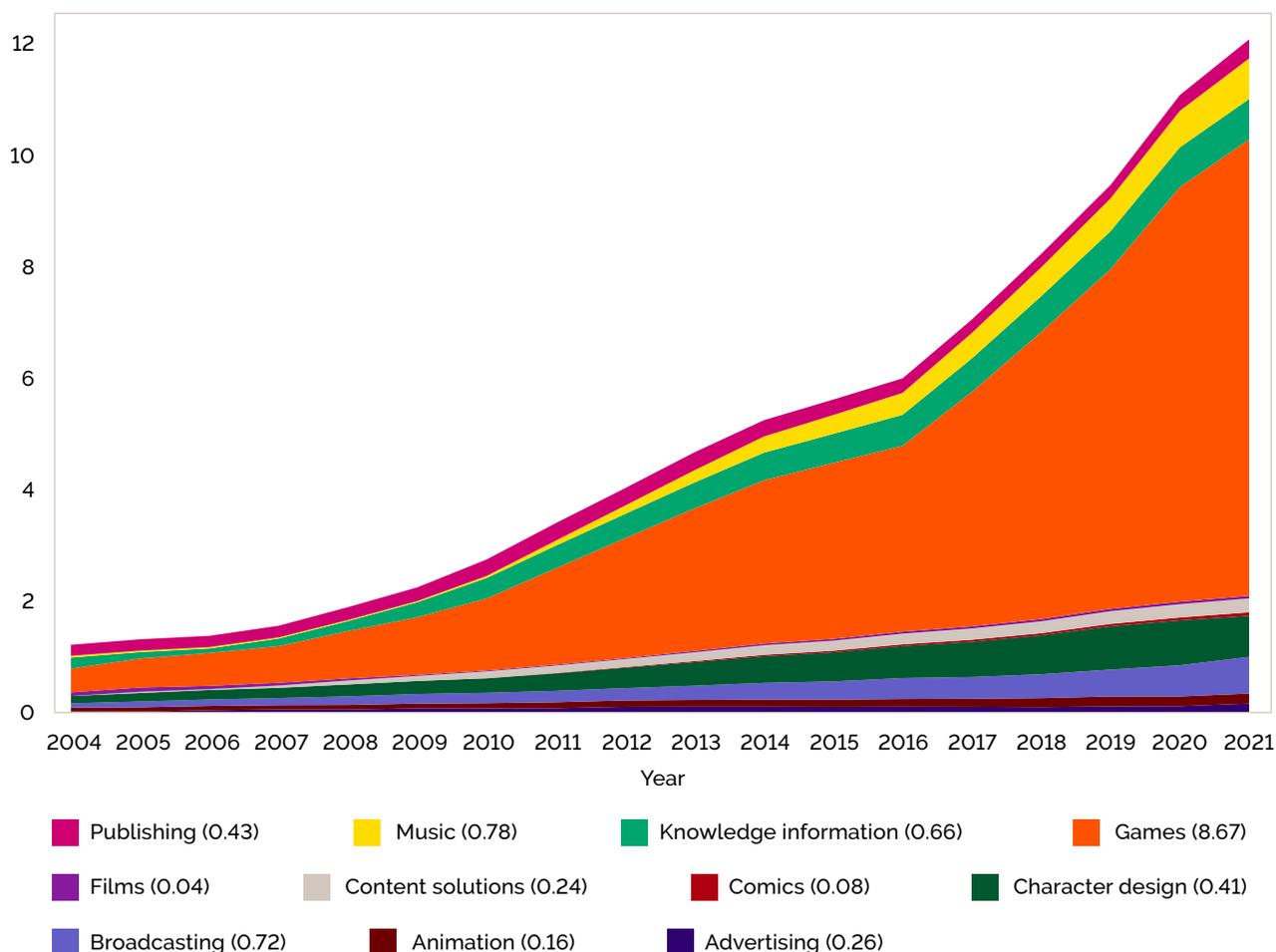


Figure 25. South Korea's content industries exports value (in US\$ billion) by sub-sector 2004-2021

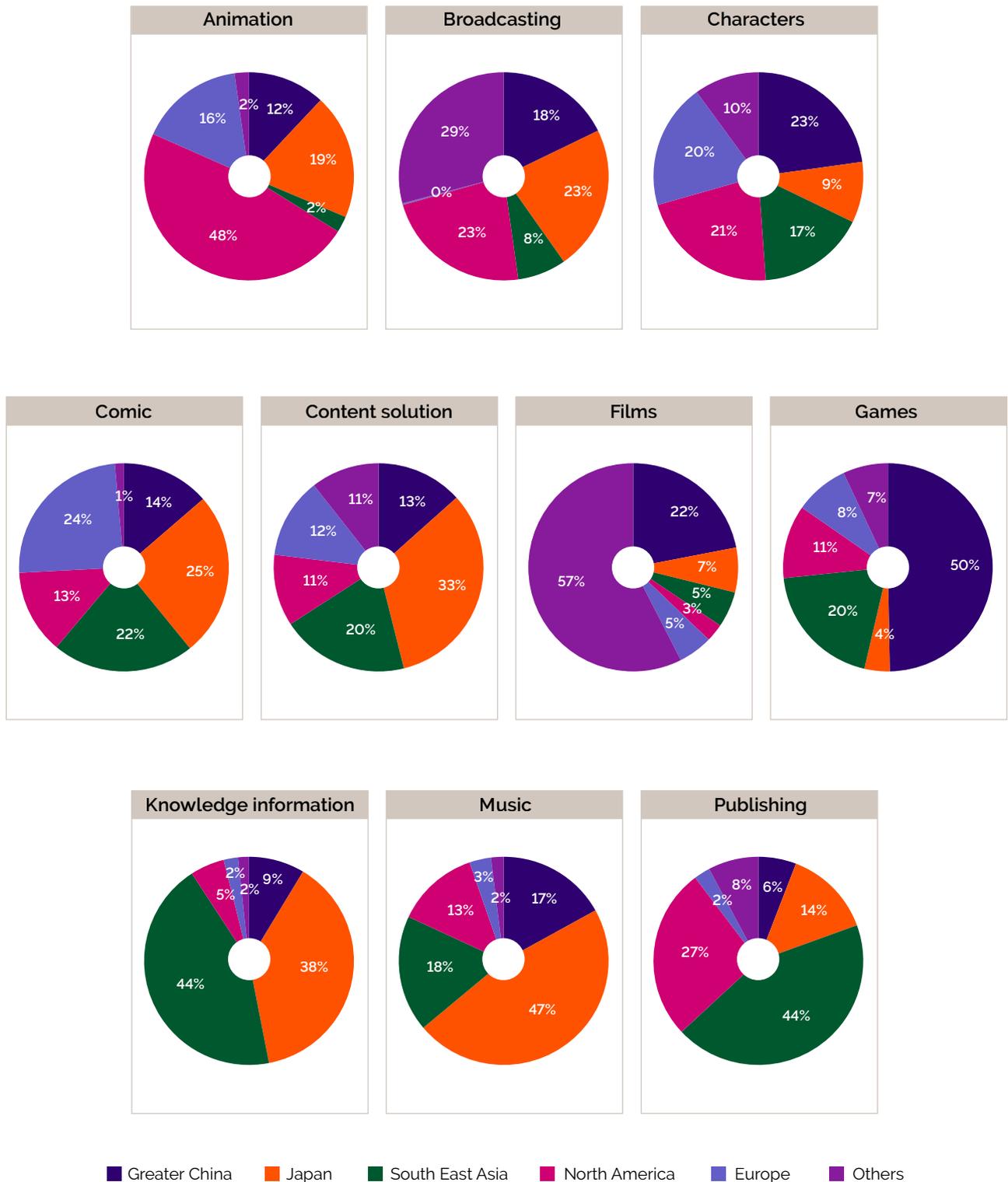


Source: Chart created using data from South Korea MCST (2022).

The export markets for South Korea's content industries show a diverse mix across the sub-sectors. As shown in Figure 26, according to official data, the main contributor to exports among South Korea's sub-sectors is video games, largely destined for China (50%), South East Asia (20%) and North America (11%). A large portion of music exports go to Japan (47%), while nearly half of animation exports are bound for North America. Broadcasting content is exported to all the world's regions, except Europe. Meanwhile, 91% of exports for what the MCST calls 'knowledge information'⁵⁷ is shared by Asia:

South East Asia (44%), Japan (38%) and Greater China (9%). Publishing content is mostly exported to South East Asia (44%) and North America (27%). The main export destinations for content solutions⁵⁸ and character design⁵⁹ are distributed broadly evenly across Japan, Greater China, North America, South East Asia, European and the rest of the world. Although Asia continues to be an important export market, the sub-sectoral variation in destination mix suggests significant differentiation in South Korea's export strategies across sub-sectors.

Figure 26. Shares of South Korea's content industries exports destinations by sub-sector 2021



Source: Authors' calculations based on data from South Korea MCST (2022).

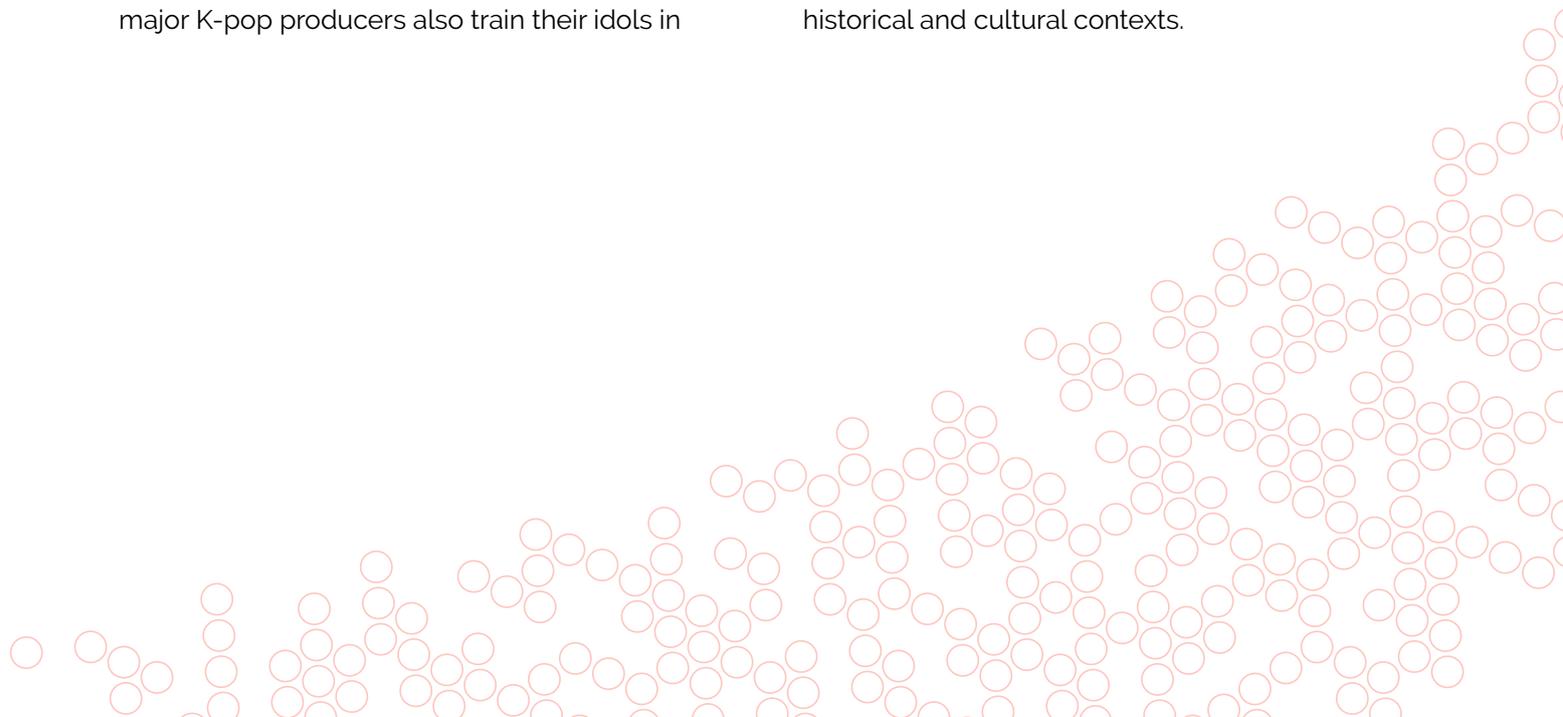
Internationalisation of K-pop music entertainment

South Korea's K-pop entertainment uniquely blends music, dance, fashion and personality of 'idols'. Music shows, TV personality shows, combined broadcasts with other artists, game shows and, more recently, intense social media presence through various platforms, such as TikTok and Instagram, build fandom and encourage fans to follow their idols' lifestyles, fashion, food and personal lives outside of live concerts.

In its production, K-pop applies 'glocalisation' – a global-local-global value chain – that appeals to international markets. While highly regimented (Fuhr, 2015; Kang, 2017; Lee and Pyun, 2023), the K-pop 'idol system' is open to a global mix of producers, composers and distributors (Oh and Park, 2013; Oh and Jang, 2022). Music industry expert, Shain Shapiro, describes K-pop as the result of 'an intentional, top-down and bottom-up strategy that aligned a number of collective interests – fostering investment, promoting tourism, educational advancement and soft power' (quoted in Layton, 2022). While K-pop's 'idol system' does not guarantee a Billboard Hot 100 spot, creativity outsourcing – such as including more songs written by non-Korean global songwriters – is correlated with higher chances of partnering with global labels and improving rankings on the charts (Hwang et al., 2023). To appeal to international audiences, major K-pop producers also train their idols in

foreign languages – aside from vocal, dance and acting – or include songs that are fully produced in a foreign language (e.g. in Japanese or Mandarin).

As part of the K-pop value chain, South Korean producers are known to incorporate talents who are either of foreign nationality, have lived overseas for extended periods of time or were born in a foreign country. In Spotify's Top 20 K-pop groups of 2022, for example, 15 idol groups have at least one member with a foreign nationality or international experience. Using data that we compiled for this report from various sources on 1,044 shows of major tours in 2015-2023 across 35 countries (including South Korea) for 17 of those groups, regression analysis reveals that a group with an international member is 1.7 times more likely to perform at an international venue during a major tour than a group without one.⁶⁰ More specifically, having an additional Japanese member in the group means the group is 1.5 times more likely to perform a show in Japan as part of a major tour than another group. As K-pop fans treasure localised segments during K-pop concerts, shared languages or experiences help groups to connect with their fans. These results provide quantitative evidence of how the K-pop music industry adapts (Kim and Kang, 2023) to reach markets with different historical and cultural contexts.



South Korea's policy and approach

Building upon the success of Korea's industrial strategy, South Korea's government adopted a similar interventionist policy approach for the creative content industries (Hong, 2014; Layton, 2022). For example, as early as 1995, the Motion Picture Promotion Law included tax breaks for film studios to attract capital from large corporations (Shin, 2005). From 2015 to 2019, US\$345.8 million was allocated to help the animation and character studios penetrate deeper into international markets through performance-based subsidies and a state-funded facility (*The Korea Times*, 2015). As the South Korean experience had been that export promotion agencies in other sectors had been successful in promoting exports (Kang, 2011), the government there has applied this approach to content specifically. The Korea Culture and Information Service operates Korean cultural centres in 27 countries – including in the UK, South East Asia and the Middle East – to actively promote Korean culture through events such as the London Korean Film Festival (KCCUK, 2019).

Coupling art with technology has been a thread throughout successive South Korean governments and is part of a long-term strategy (British Council, 2023). The successes of its industrial giants, such as LG and Samsung, have motivated the government to actively encourage cross-sectoral coordination and knowledge sharing (Jin, 2006). South Korea's mobile games developers grew alongside the advancement of smartphone capabilities from South Korea's own mobile phone firms. Furthermore, as of 2022, R&D tax and investment credits in South Korea remain available for social sciences and humanities R&D, unlike in the UK (Bakhshi, 2022; OECD, 2023c, 2023d).

South Korea's infrastructure policy supports the growth of a domestic digital ecosystem. Strong investment in developing world-class, high-speed ICT infrastructure significantly expanded South Korean internet users, fostered creative talent and built a market ready for digital content distribution (Choi, 2011; Kwon and Kim, 2013). In December 2022, South Korea led the OECD in the share of total fixed broadband connections using fibre optics, at 88.04% compared with 11.12% in the UK and an OECD average of 37.70% (OECD, 2023b). By December 2023, South Korea's mobile and fixed broadband speed were ranked 7th and 26th globally, compared with the UK's 49th and 50th, respectively, according to Speedtest Global Index (Ookla, 2024).

At the same time, the South Korean government remains committed to protecting society – especially young people – from the perceived harmful effects related to content industries. Video games remain heavily regulated by the government, as reflected in the recent Game Industry Act amendment bill in March 2023 which prevents game designs that entice players to 'gamble' on game rewards (Eun et al., 2023). Despite a backlash from South Korean entertainment organisations, an amendment to the Popular Culture and Arts Industry Development Act (also called the Lee Seunggi Act) was also approved in 2023 to address issues in the K-pop industry, especially regarding the rights of minor-aged K-pop artists and their contracts with entertainment companies (Yonhap News Agency, 2023).

6 Conclusions

Summary

This report has presented evidence on the evolution of the UK's exports in creative industries through both macro (Section 2) and micro (Section 3) lenses. It has also provided case studies on UK exports of creative digital products and on South Korea's policies to support its creative content industries.

Macro evidence

We draw five key insights from the macroeconomic evidence presented in Section 2.

First, the UK's creative services exports kept growing over the 2010–2021 period, seemingly resilient in the face of the COVID-19 pandemic and the UK's exit from the EU. Consistent with the evidence presented by Du et al. (2023a, 2023b), however, the data shows a slowdown in growth from 2016, the year of the Brexit referendum. We also found that creative services exports are concentrated in a few sub-sectors, with the most important being 'IT, software and computer services', 'Film, TV, video, radio and photography' and 'Advertising and marketing', which have driven the growth in creative services exports over time.

The UK's creative goods exports, in contrast, were more stagnant and showed even larger drops than total UK goods exports in 2016 and 2020, with no signs of recovery in 2021. The exports of goods are mostly concentrated in 'Crafts', 'Music, performing and visual arts' and 'Publishing', followed by 'Museum, galleries and libraries'. These sub-sectors were all negatively impacted by COVID-19 and, except for 'Publishing', seemingly also by the formal exit of the UK

from the EU. The 'Film, TV, video, radio and photography' sub-sector, a smaller contributor to creative goods exports, also seems to have been resilient to the UK's exit from the EU but less so to the pandemic.

Second, notwithstanding the particular strength of IT-related services, these findings together present a striking dichotomy in the performance of trade in goods versus trade in services for the UK's creative industries. We might reasonably expect this to continue for several reasons such as the ongoing servitisation⁶¹ of the UK economy and the digitalisation of international trade thanks to the emergence of new ICTs and new digital business models. Indeed, using the RCA indicators for creative services, we found evidence that in recent years the UK's comparative advantage had improved against countries like Germany, France, Italy and Canada, although it deteriorated against Australia and, notably, China.

Third, between 2010 and 2021, the creative intensity of UK services exports (the share of creative services exports out of total services exports) almost doubled, while that of goods exports (moderately) declined. These broad trends were not obviously affected by the UK's formal departure from the EU and the COVID-19 pandemic.

Fourth, Europe and North America remain the main market destinations for the UK's creative goods and services exports. However, over the period studied, for services exports, the importance of European markets declined and that of North America increased. For some sub-sectors like 'Architecture', 'Crafts' and 'Publishing',

however, these patterns differ and other destination markets like Asia and Australia also play an important role.

Fifth, the UK enjoys a comparative advantage vis-à-vis many comparator countries in both creative goods (except for China, France and Italy) and creative services (except for Ireland). This position cannot be taken for granted, and it is challenged by the fast rise of countries such as China and the loss in comparative advantage against competitors such as the EU in audiovisual and related services.

Micro evidence

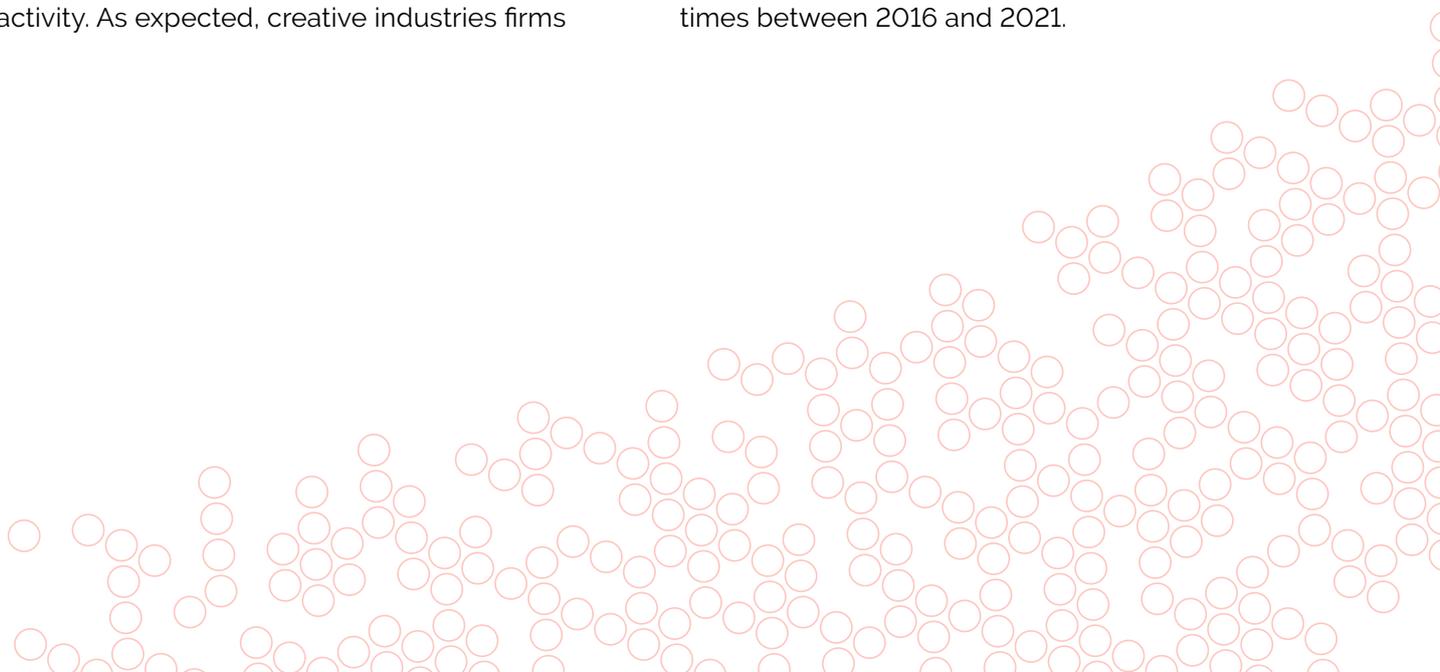
The analysis of firm-level data in Section 3 reveals that, various firm-specific factors have an impact on creative industries firms' abilities to export, as well as on their levels and intensity of exporting. These factors included not only firm size but also whether they have intangible assets and enjoy higher levels of productivity.

Furthermore, while the effects of both the UK leaving the EU and the COVID-19 pandemic are still being felt across the creative industries, the falling number of exporting firms may reflect a longer-running pattern which merits further investigation. The export intensity of firms in the creative industries that do still export is increasing, however, including relative to the rest of the UK economy. This is important because these firms tend to be larger and therefore account for a large share of economic activity. As expected, creative industries firms

which export tend to be disproportionately found in London and the South East of England, although a more varied picture emerges across the nations and regions when looking at the percentage of creative industries firms that are exporters and the intensity of exporting (% of overall turnover accounted for by exports) within a region. For example, the East, the South West and the West Midlands, as well as Scotland, all show high intensity of exporting.

Measuring digital trade

Section 4 discusses the challenges of measuring digital trade and presents some tentative evidence based on experimental and partial export estimates. Despite the many limitations of the data set, it usefully illustrates at least in some sub-sectors the trends that are emerging in this increasingly important area of international trade. We look at some of the trends for digitally delivered creative services and focus in particular on the video games industry, where the coverage of the data seems better than in other sectors like music and film. According to this data, the UK appeared to be the fourth top exporter of video games in the world in 2021, with the USA and Japan as top exporters, exporting 74% and 48%, respectively, more than the UK. The video games sector shows moderate growth until 2020, followed by a doubling of exports in 2021, meaning that the UK's digital exports of video games grew by 2.5 times between 2016 and 2021.



Policy considerations

A number of policy messages emerge from our work. The data analysis confirms the strength of the UK's creative services and validates the need to develop a strategy for them, especially considering the increasing restrictions to services trade arising in Europe as a result of the UK's exit from the EU. This is but one example of the broader need to negotiate supportive trade deals for the UK's creative industries, as set out in the Sector Vision.

While creative industries services exports have on the whole seemingly been resilient to the UK departure from the EU and the COVID-19 pandemic, we have observed reallocations across sub-sectors and geographies which signal the continuing impact that longer-term trends such as ongoing digitalisation could have on the internal and external competitiveness of individual creative sub-sectors. We have also observed a strengthening of creative services exports to North America at the expense of the EU as a market destination. At a minimum this reinforces the need to prioritise the creative industries in the future UK-EU TCA renegotiations. More ambitiously, the UK Trade and Business Commission advocates a 'common' approach to the digital economy between the UK and the EU. Perhaps surprisingly, we do not, at least as yet, observe further market penetration in Asia, a region where some sub-sectors export considerably and where we know creative businesses would like to export more (Di Novo et al., 2021). The policy opportunity here is to develop bespoke market penetration strategies for the creative industries while pursuing supportive trade policies.

UK creative industries trade is strongly concentrated in a few sub-sectors. For services, 'IT, software and computer services' – a contested creative sub-sector – is one of the fastest growing exporters. However, this is a fast-changing, competitive landscape that will be strongly affected by new technologies and AI, which

among other things will require the creative industries' workforce to develop the right skills. This could present a challenge for a sector which already reports higher skills shortages and gaps in advanced technical skills than other sectors.

The geographically concentrated nature of digital trade exports found across countries – the UK is no exception – raises the question of whether the exporters of digital products will also concentrate in fewer locations within countries, exacerbating existing national and regional inequalities. This will need to be monitored and counteracted with active support for the development of creative clusters across the whole of the UK.

The UK's broad-based comparative advantage in the creative industries cannot be taken for granted, and it is already eroding in the face of emerging powers such as China and strong competition from other developed countries (notably the EU bloc, Ireland and Germany).

The Sector Vision highlights the challenges that creative businesses face in exporting and the skills that are required for firms to investigate and enter new markets. Our micro-econometric analysis highlights the importance of firm-specific factors such as the firm's size, age, labour productivity and existence of intangible assets, and it suggests that programmes such as the Create Growth Programme may be of particular importance to creative industries exports.

The emphasis of the Create Growth Programme on regions outside of London is also fortuitous for exporting, as highlighted by the varied regional importance of creative industries exporters across the UK's nations and regions. Furthermore, the apparent importance of labour productivity for exporting reinforces the focus on creating and sustaining a highly skilled productive workforce, again as recognised in the Sector Vision. The FAME analysis we undertake is restrictive in that it captures predominately the larger firms in the creative industries; nonetheless, these firms

will account for a large share of exports. Insofar as they are also more productive, these firms could also have an important role in generating knowledge spillovers to their local creative economies and thus having a wider impact on the economy, another aim of the Sector Vision.

Our case study of South Korea's content industries perhaps offers some lessons from a country that is widely perceived as a success story in international trade. Government initiatives there to grow the content sector and tech sector have developed arm in arm, which may hold lessons for other countries like the UK. For example, overseas offices (and personnel) could be explored as a way to complement initiatives like DBT's Export Academy and MEGS in navigating gateways into more challenging market regions with greater cultural distance from the UK, such as in Asia Pacific, India and the Gulf. South Korea's success in creative industries exports also demonstrates how high product adaptation to international markets may be critical to penetrate

markets in creative industries sub-sectors such as video games and music, and perhaps policy has a supporting role to play here too.

Finally, digital trade is becoming more prominent in international trade in goods and services. Further data efforts at national and international levels are required to fully understand its evolution, especially with respect to product-level information. This is especially important in the creative industries, where the increase in digitalisation is profoundly changing business models, including in reaching international markets. Experimental data is consistent with the rapid growth of the UK's exports in digital creative goods and services such as video games. UK trade policymakers should increasingly negotiate digital agreements within existing and new trade agreements to future-proof international market access against technological change, which inevitably will make digital trade grow in importance.

Future research

We plan in the future to extend our research in several directions. The FAME analysis points to a complex pattern of determinants for firms' exporting behaviour in the creative industries. It also suggests that further probing into these drivers is required, particularly at a lower disaggregation level of industrial classification (SIC code) than has been possible here, and involving a larger sample of small firms. The relationship between R&D, productivity and exporting in the creative industries also merits deeper exploration, not least as it raises the possibility that exporting firms might impart knowledge spillovers to other firms in the local economies in which they are based. Creative PEC's planned new longitudinal survey of UK creative businesses will collect new rich firm-level data, which will allow us to further

explore exporting behaviour and its determinants, including further investigation of the roles of innovation and technology adoption and access to skills and finance. We will also be able to ask firms specific questions about the growth barriers and opportunities they encounter and reach firmer, evidence-based conclusions on the ways firms can be supported to export and thrive.

Creative PEC also plans to undertake more microeconomic analysis of the ONS data sets at the product and firm level and include this in future reports. This will allow us to dig deeper on export drivers such as digital transformation, the role of intellectual property, the access to international talent, the role of geographical factors, etc.

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Data statement

All the data used for this report is freely available from the original sources listed in the Data Reference List. Motivated requests to access the data sets used in the report can be made to the authors.

An exception applies to proprietary data from Bureau van Dijk obtained under a licence agreement: FAME and ORBIS. The authors are

not at liberty to share this data but are happy to consider requests for collaboration by interested researchers and organisations.

Figures in this report are produced by employing a variety of creative tools. Figures created in Datawrapper are attributed accordingly under each figure. The Sankey diagrams in Figure 8 are created using SankeyMATIC.

Glossary

Cloud computing: Cloud computing is the on-demand availability of computer system resources, especially data storage (cloud storage) and computing power, without direct active management by the user.

Cybersecurity: Cybersecurity services provide confidentiality, integrity, availability and privacy of digital systems. These are measures for preventing and responding to cybercrimes and protecting computer systems, networks, programs and data.

Data licensing: Data licensing is the service of providing organised collection of data that can be stored and accessed electronically.

Digital advertising: Digital advertising is the use of the internet to deliver marketing messages via various formats to internet users. This includes advertisements displayed on search engines and social media, as well as video and banner advertising on specific websites.

Digital music streaming and downloads: Music streaming and download services offer unlimited access to content libraries for either monthly subscription fees or by purchasing them through one-time transactions that subsequently allow permanent accessibility for the user.

File-hosting service: File-hosting services allow users to upload files that can be accessed over the internet after providing an authentication key.

Ebooks: An ebook is the digital or electronic version of a book and can be read on various devices such as specific e-readers as well as on tablets, smartphones and computers.

Video games: Video games include 'gaming networks' (defined as paid subscription platforms providing access to premium online video game content such as Xbox Live Gold, PlayStation Plus or Nintendo Switch Online), mobile games (video games designed to run on a mobile device such as a phone, tablet or watch) and PC and console games (either video games that are sold online and which can be downloaded or that can be played online).

Mobile application: A mobile application or app is a computer program or software application designed to run on a mobile device such as a phone, tablet or watch.

Online accommodation: Online accommodation is a specific online marketplace acting as an intermediary for third-party vendors of short- and long-term homestays and experiences.

Online dating: Online dating are digital services that offer a platform on which its members can flirt, chat or fall in love.

Online education: Online education is the transfer of knowledge or skills through online platforms. This includes the areas of online university education, online learning platforms and professional certificates.

Online food ordering: Online food ordering is the process of ordering food, for delivery or pickup, from a website or other application.

Online gambling: Online gambling is any kind of gambling conducted on the internet. This includes virtual poker, casinos and sports betting.

Online marketplace not elsewhere specified: An online marketplace not elsewhere specified is a website acting as an intermediary for third-party vendors to offer their products and services to customers that is not included in online accommodation, online food ordering and online ride-hailing.

Online ride-hailing: Online ride-hailing services are online marketplaces that connect passengers and local drivers using their personal vehicles.

Operating system: An operating system is system software that manages computer hardware and software resources and provides common services for computer programs.

Payment service: A payment service is a system that enables digital financial transactions between merchants and customers through various channels such as credit cards or bank accounts.

Software

- **Administrative Software:** This is software used to perform administrative tasks within businesses or organizations. It comprises software for the administration of IT infrastructure as well as standalone human resources and payroll management software.

- **Business Intelligence Software:** Business Intelligence Software is used for analysing, visualizing, and presenting data and information in business context for rational business decisions. These tools help to access data, implement queries, create reports, and perform predictive analytics.

- **Collaboration Software:** Collaboration Software contains software that is designed to support collaboration within an organization such as conferencing and email applications as well as file synchronization and sharing applications.

- **Creative Software:** Creative Software includes single purpose visualization, sound- and video recording, and editing software.

- **Enterprise Resource Planning Software:** Enterprise Resource Planning Software is software that helps companies to manage, integrate and optimize important business activities related to their resources. These are oriented towards the company itself and its internal business processes.

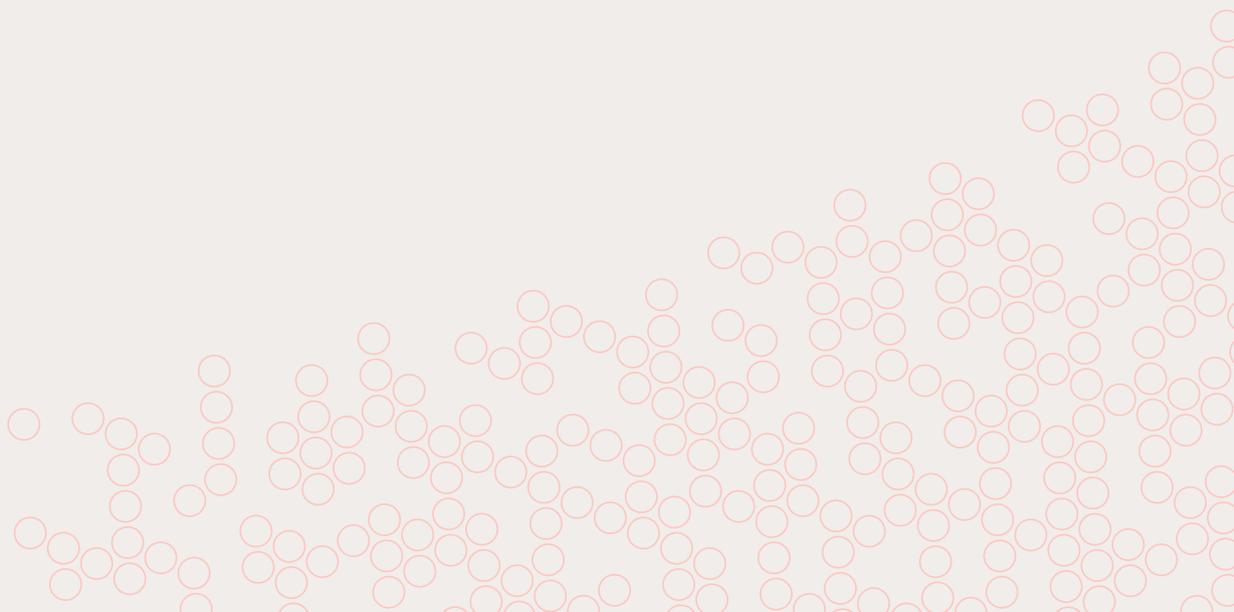
- **Office Software:** Office Software is a collection of productivity software including at least a word-processor, spreadsheet, and a presentation program.

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- **Other Enterprise Software:** Other Enterprise Software aggregates revenues for enterprise software that is not specifically mentioned in the other software sectors. This includes, for example, content applications, management software, performance management software etc.

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- **Supply Chain Management Software:** Supply Chain Management Software is software that supports supply- and demand side processes within a company to offer a product or service on the market.

Video on Demand: Video-on-Demand services can be 1) subscription-based – offering unlimited access to their content libraries for a monthly subscription fee; and 2) transaction based – offering time-limited access to video content that requires a usage-based one-time payment.

Web Hosting: A web hosting service offers the facilities required for clients to create and maintain a site and makes it accessible on the World Wide Web.



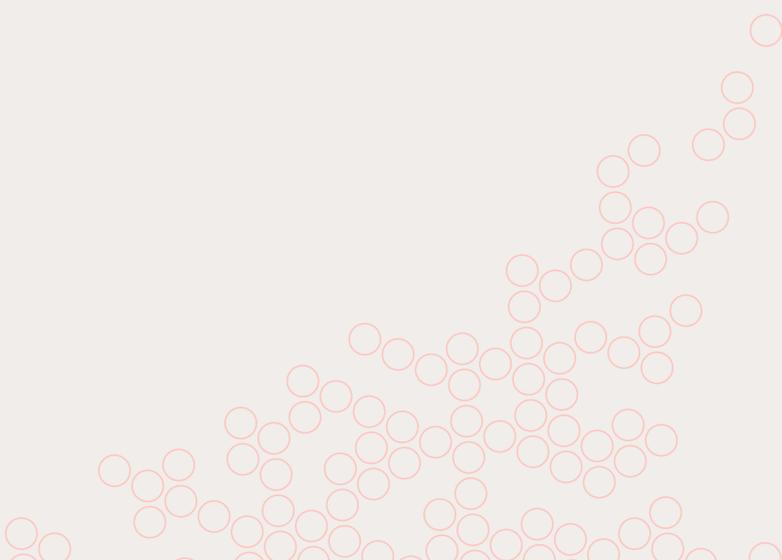
List of acronyms

General acronyms

AI	Artificial intelligence	LDCs	Least developed countries
CI s	Creative industries	MEGS	Music Export Growth Scheme
DBT	Department for Business and Trade	NAFTA	North American Free Trade Agreement
DCMS	Department for Digital, Culture, Media and Sport	PACT	Producer Alliance for Television and Cinema
DIP	Digital intermediation platform	RCA	Revealed comparative advantage
EBOPS	Extended balance of payments services classification	R&D	Research and development
FAME	Financial Analysis Made Easy	STRI	Services trade restrictiveness index
FDI	Foreign direct investment	UN	United Nations
GATS	General Agreement on Trade in Services	UNCTAD	United Nations Conference on Trade and Development
GATT	General Agreement on Tariffs and Trade	USD	United States dollar
ICTs	Information and communications technologies	USMCA	United States–Mexico–Canada Agreement
IMF	International Monetary Fund	WB	World Bank
ITS/IT IS	International trade in services		

Country acronyms

CHN	China	IRL	Ireland
CYM	Cayman Islands	JPN	Japan
FIN	Finland	KOR	Republic of Korea or South Korea
GBR	United Kingdom (UK)	SGP	Singapore
HKG	Hong Kong	USA	United States of America or United States (US)



Endnotes

1. While goods trade is usually cross-border, either physically or digitally, services can be exported in four main ways, according to the General Agreement on Trade in Services (GATS), which are cross-border, consumption abroad, provision via a commercial presence abroad and provision of services by an individual (see Fazio, 2021, for further discussion).
2. Currency values hereinafter are presented in the currencies in which they are reported in the referenced material. All values are in current prices unless otherwise stated.
3. There is no harmonised definition of creative goods and services at the international level. This means that each international organisation uses a different approach to reconstructing trade statistics (see Maioli et al., 2021). The list of creative services in the UNCTAD statistics are, in order of export share sizes: software services, research and development, advertising, market research, architecture, audiovisual licences and services, information services and cultural, recreational and heritage services. Art crafts, audiovisuals, design, new media, performing arts (musical instruments and printed music), publishing, visual arts (antiques, painting, photography and sculpture) are included among the creative goods exports.
4. This has already been picked up by the UK government (see the 2021 UK Government export strategy policy paper *Made in UK, sold to the World*, available at <https://www.gov.uk/government/publications/export-strategy-made-in-the-uk-sold-to-the-world/made-in-the-uk-sold-to-the-world-web-version>).
5. Annex 2 of UNCTAD (2022) contains summaries of responses and examples of policies adopted in each of the 33 respondents to the UNCTAD 2021 survey (Andorra, Azerbaijan, Bahrain, Belgium, Benin, Cambodia, Canada, Central African Republic, Chile, Colombia, Ecuador, Georgia, Germany, Guatemala, Honduras, Latvia, Mauritius, Mexico, Mongolia, Morocco, Myanmar, Nicaragua, Oman, Panama, Paraguay, Peru, Poland, Portugal, Russian Federation, Slovenia, Trinidad and Tobago, Türkiye and United Arab Emirates).
6. According to the latest DCMS statistics, the creative industries contribute £126 billion in terms of GVA to the economy, have grown by 12% in real terms since 2019 (six times the growth rate of the economy overall) and employ close to 2.4 million workers.
7. As stated before, throughout the report, all values are in current prices unless otherwise stated.
8. These numbers update those presented by Jones and Fazio (2022) and are based on authors' calculations from the latest information Bureau Van Dijk Orbis Database.
9. Authors' work based on employment data from DCMS, available at <https://www.gov.uk/government/statistics/economic-estimates-employment-in-dcms-sectors-and-digital-sector-july-2022-to-june-2023>, accessed on 17 January 2024.
10. In December 2022, the Creative Industries Trade and Investment Board, under the auspices of the Creative Industry Council, set out an export strategy to increase exports by £78 billion by 2030.
11. The interested reader can refer to the Sector Vision at <https://www.gov.uk/government/publications/creative-industries-sector-vision/creative-industries-sector-vision-a-joint-plan-to-drive-growth-build-talent-and-develop-skills#exports> and the Sector Deal at <https://www.gov.uk/government/publications/creative-industries-sector-deal>.
12. The Sector Vision acknowledges the success of this specific intervention, which is estimated to have increased music exports by 320%.
13. More specifically, embedding exporting advice into the Innovate UK (IUK) Create Growth Programme, encouraging exporter accelerators (such as that set by the Producer Alliance for Television and Cinema), increasing awareness of tailored support and resources and supporting FDI through the Export Development Guarantee.
14. For example, in *A Trading Nation*, the Scottish government makes the commitment to work with the Scottish Creative Industries Advisory Group to growth creative exports. (<https://www.gov.scot/publications/scotland-a-trading-nation/>); in Wales, Creative Wales has started leading trade missions relating to the creative industries, see <https://www.gov.wales/success-story-welsh-publishing>.

15. This work started with reviewing the academic literature and data sources. Fazio (2021) noted how creative goods and services share features that deserve special attention when it comes to international trade and provides the theoretical and empirical context for research in the area. Maioli et al. (2021) reviewed the main data sources and highlighted the data needs of UK creative industries.
16. Please note that for methodological reasons, DCMS advises against summing creative goods and services trade.
17. It should be noted that in 2021, there could be a potential a break in the time series of creative goods exports due to a change in the way statistics of UK's goods exports to EU are calculated after the 1th of January 2021 (DCMS, 2023).
18. When it comes to services exports, the statistics will rely on the International Trade in Services (ITIS) Survey of businesses and, in the case of goods exports, the statistics will use information from HMRC to include goods that cross the border.
19. The proportions of 'Advertising and marketing', 'Publishing' and 'Music, performing and visual arts' hover around their 12-year average of 13.0%, 7.5% and 3.2%, respectively, however, the share of 'Film, TV, video, radio and photography' is decreasing – albeit still large at 23.7%.
20. Figure 4 updates the evidence presented by Di Novo et al. (2020) from the *World Input Output Data*, the last available data for which stopped in 2016. We use here the most recently available OECD data on TiVa.
21. An alternative approach to gauge the relevance of UK creative exports would be to look at the relevance of their imports over the total imports of partner countries. This analysis would be particularly interesting for those countries with which the UK would like to sign or extend current trade agreements. This would again require the use of international statistics and departure from the DCMS definition. While interesting, such an analysis is beyond the scope of this report.
22. Di Novo et al. (2021) found that more than 34% of creative businesses in the UK aspired to export to the Americas, especially North America. However, creative businesses also wanted to export more to Europe and other regions of the world such as Asia (e.g. China).
23. A new free trade agreement between the three countries was renegotiated in July 2020 and now takes the name US–Mexico–Canada (USMCA). We refer here to NAFTA, which may be more familiar to the reader.
24. In its early formulations, the model postulates that, similar to Newton's law of universal gravitation, trade flows are positively related to size (of markets at origin and destination) and inversely related to distance (between origin and destination). Since its early applications, the model has become the most common approach to assessing the determinants of international bilateral trade flows and, over time, the empirical literature has 'augmented' the model with many other additional variables to capture all possible economic, geographical, political, historical, regulatory and cultural factors driving trade flows.
25. See <https://unctadstat.unctad.org/EN/RcaRadar.html> for a general discussion of RCAs and to explore them across countries.
26. Please note that the RCA indicators have been calculated using total exports as the denominator. An alternative could be to consider as denominator total services exports, when considering creative services, and total goods exports, when considering creative goods. The results under this alternative would be affected by the relevance that goods and services have in the exports accounts of a country.
27. Creative services are included based on extended balance of payments services classification (EBOPS) 2010 categories listed by Du et al. (2023b) and include SH4 (Licences and distribution of audiovisual products and Licences to reproduce and/or distribute audiovisual and related products), SI2 (Computer services), SJ22 (Advertising, market research and public opinion polling services), SJ311 (Architectural services), and SK1 (Audiovisual and related services). UNCTAD's definition of *creative goods* includes 197 goods at the harmonised system six-digit level categorised as art crafts (carpets, products related to celebration, other crafts, paperware, wickerware and yarn); audiovisuals (films, CDs, DVDs and tapes); design (architecture, fashion, glassware, interior, jewellery and toys); new media (recorded media and video games); performing arts (musical instruments and printed music); publishing (books, newspapers and other printed matter); and visual arts (antiques, painting, photography and sculpture) – UNCTAD specifies in *Creative Economy Outlook 2022* that, given the current definition, creative products categorised as design may include goods the production of which is not dominated by design.

28. Since 2005, Ireland's creative industries have contributed at least 38% of the country's total services exports.
29. A severe hit was taken by 'Painting and jewellery' – two major contributors to UK's creative goods exports that on average accounted for 24.0% and 22.5%, respectively, in the five years before 2020.
30. See, for example, Greenaway et al. (2007) and Görg and Spaliara (2018) for the use of FAME in the analysis of export markets in the manufacturing sector. For other firm-related FAME analysis, see, for example, Lavoratori and Castellani (2021), looking at productivity in the manufacturing sector, and Pažitka and Wójcik (2019), examining firm growth in the financial sector.
31. Specifically, the existence of overseas turnover in the FAME data set is used to identify whether a firm is an exporter. This is obtained from the firm's profit and loss accounts filed with Companies House and fed into the FAME database. There are, however, exemptions regarding whether a firm is required to file their profit and loss accounts, relating to whether a firm is classified as a micro entity or a small firm (Companies House, 2023), so medium and large firms are more likely to be present in the sample of exporting firms.
32. FAME is distributed by Bureau van Dijk. Information on access to FAME can be found at <https://www.bvdinfo.com/en-gb/our-products/data/national/fame>.
33. FAME provides a firm's 'primary' SIC code and, in some cases, can also include a range of additional SIC codes or 'secondary' codes. These can be up to four other reported SIC codes in the creative industries, although mainly this is limited to one creative industry as a secondary activity, and the vast majority of firms in the creative industries (89%) report only a primary SIC code. Firms self-report their industrial classification to Companies House so that the primary or secondary code reported in FAME is assigned using further information collected from companies' websites as well as online professional directories. We focus here on those firms with a primary SIC code in the creative industries.
34. Firms are selected that have unconsolidated accounts to avoid double counting of firms (see Greenaway et al., 2007).
35. For example, firms for which turnover is known made up over 60% of total assets and over half of all employees in the creative industries according to FAME in 2022 (see online supplementary materials).
36. This reflects the fall in the total number of exporting firms across the UK economy (that contribute to the total value of goods exports) from around 150,000 in 2016 to 126,000 in 2022 (HMRC 2020; 2023).
37. A similar pattern emerges if both consolidated and unconsolidated firms are included in the sample. For the full set of firms, the percentage of exporters in the creative industries is also similar to the percentage in other industries with a general downward trend post-Brexit. However, for the creative industries, the intensity of exports is greater than for other industries.
38. Indeed, the level of exporting volume for the exporters can be further highlighted by the percentage of overseas turnover to total turnover, but only for those firms which export. For example, overseas turnover for companies accounts for 45% of their total turnover, highlighting the importance of exporting not only to the industry but also to the total revenue flows of the individual firms.
39. FAME records a firm's registered office address, which is the formal correspondence address of the company, but can also include the primary trading address, which is where it conducts its main business activity or trading. In addition, a firm can also have multiple trading addresses, although the location of all these non-primary trading addresses is not known; only the number of these addresses is known.
40. The twelve regions are: London, South East, East, South West, West Midlands, East Midlands, Yorkshire and the Humber, North West, North East, Scotland, Wales and Northern Ireland. For information on international territorial levels, see: <https://www.ons.gov.uk/methodology/geography/ukgeographies/eurostat>.
41. The model is estimated in Stata using the 'xtheckman' command, which fits a random-effects linear regression model with endogenous sample selection via maximum likelihood estimation while taking into account within-panel correlation and the panel structure of the data.
42. There is a large literature examining firm heterogeneity on exporting in relation to, for example, firm size and age, with mixed findings for both of these factors (see, for example, Hernández (2020); Love et al. (2016)). For the UK creative industries, Tether and Yu (2022) find a limited impact for firm size and no effect for firm age on exporting, although that study has a smaller sample of firms and uses dummy variables to capture size and age. However, conditional on these factors, they find a positive effect for productivity, as is found here.

43. Coefficient plots illustrates the coefficient value for each determinant together with the 90% confidence interval. Values whose confidence intervals do not cross the vertical zero axis indicate significance at the 10% significance level. Full results are available in Table B2 in Appendix B of the online supplementary materials.
44. This does not mean that digital trade is completely elusive. According to the OECD (2023b), existing trade statistics do not significantly underestimate digital trade; rather, the challenge is to make digital trade visible. A digitally ordered good is captured in trade statistics under the relevant customs code, but the statistics will not show whether that good has been digitally ordered or not.
45. Ordering methods include electronic data interchange systems, own website, third-party website or app, and online platforms, aka digital intermediation platforms, which charge a fee.
46. WTO members hold different views as to whether digitisable goods are goods or services once digitised and digitally delivered (WTO, 2023). Here, the term 'digitisable goods' refers to goods before digitisation (e.g. a printed book), while 'digitised products' applies after digitisation (e.g. an ebook), as the word 'product' can refer to both goods and services (WTO, 2023).
47. This experimental data set is constructed by combining machine learning and optimal transport techniques with data on corporate revenues and digital products consumption. Appendix C of the online supplementary materials gives further details on the methodology used by the authors. The data set provides yearly estimates (in US\$) of trade in digital products for 189 countries and 29 sectors for all years between 2016 and 2021. The data set is publicly available at <https://figshare.com/s/4a1615e574e38dd57c4d>. We used the version uploaded in January 2024.
48. The assignment of all international trade transactions done by subsidiaries to the parent company would reduce the amount of effective international trade taking place, and we do not follow this method. We instead follow the assignment of trade to the subsidiaries (which is the normal practice for accounting international trade in physical goods). To align the digital trade accounting to the normal practice adopted for the rest of international trade, and to highlight the policy implications of this, the data presented in the next section following the assignment to the subsidiaries. We leave the reporting of some alternative exports volumes based on the assignment to the headquarters to the online supplementary materials, Appendix C (see Figure C5).
49. Further discussion of how the UNCTAD data differs from the data set developed by Stojkoski et al. (2024) can be found in their paper.
50. The physical trade data for comparison was taken from the Observatory of Economic Complexity (<https://oec.world/>). The difference in growth rates between Stojkoski et al.'s (2024) digital products and the UNCTAD/WTO digitally delivered services could be due to the former being based on the top performing firms, which are known to experience larger growth rates.
51. Stojkoski et al. (2024) also highlight how digital product exports are highly spatially concentrated in a few advanced economies, like the US, Ireland and Luxembourg. This finding is corroborated by the WTO (2023), which shows how least developed countries (LDCs) continue to lag behind in the production of digitally delivered services; a lag exacerbated by the COVID-19 pandemic. For example, in 2022, Africa contributed less than 1% of digitally delivered services exports globally (when Africa contributed 2.7% of global trade). High-income economies were responsible for over 82% of global exports of digitally delivered services (with the EU holding the largest share at 37%, the US 16% and the UK 9%), while 17% of digitally delivered services exports originated from middle-income economies, with China and India accounting for 6% and 5%, respectively.
52. Throughout this chapter, digital trade refers to digitally delivered services only and does not include digitally ordered trade.
53. As noted previously, it is possible to follow the alternative methodology of attributing all digital trade to the parent companies rather than their subsidiaries. Under that alternative method, the UK would be 11th in the list of global exporters of video games (see Appendix C in the online supplementary materials), instead of fourth, reflecting the foreign ownership of several UK-based video games companies. Although the change in ranking matters less for international trade (which is correctly accounted for using the methodology based on the subsidiaries), it highlights other policy considerations linked to profit repatriation and possible exploitation of intellectual property. Previous work highlights the possible impacts of the video games industry acquisitions in the UK (GIC, 2023).
54. See <https://www.oecd.org/country/korea/thematic-focus/cultural-and-creative-sectors-1573f603/>

55. Creative service exports in the recently published experimental UNCTAD statistics amount to US\$12.4 billion, as it employs a slightly different definition of creative services by including research and development, information services, as well as cultural, recreational and heritage services. Based on this, South Korea contributes 0.6% of the world's total of US\$1,824.7 billion of creative services exports, placing it third in Asia, after China and Japan, and 15th globally.
56. The cultural content industry is defined as the industry that provides services related to the planning, development, manufacturing, production, distribution and consumption of cultural commodities. Cultural commodities are tangible or intangible goods and services, or combinations of such goods and services, that create economic added value and cultural factors including artistic value, creativity, amusement, leisure and popularity. South Korea's content industry mainly consists of publishing, music, games, broadcasting, films, cartoons, animation, characters, advertising, knowledge information and content solutions (KOTRA, 2020). However, despite South Korea's significant exports in yarn (categorised in UNCTAD's creative goods under art crafts), art crafts are often not reported explicitly as part of the content industry but remain within the MCST's purview. In KOCCA reports, the content industry is largely divided into 11 sub-sectors: publishing, music, games, broadcasting, films, cartoons, animation, characters, advertising, knowledge information and content solutions. Notably, art crafts are not represented under creative content.
57. Knowledge information includes research, data and consulting services.
58. Content solutions include the creation of tailored content ideas for influencers on social media platforms.
59. Character design includes the creation of children shows' characters such as Tayo, Larva and Pinkfong.
60. Using logistic regression, incidence of a show by a group in a country during a group's major concert tour as the binary dependent variable is regressed on the number of international members in the group and dummy variables controlling for group generation and post-pandemic trend. Details are provided in Appendix D of the online supplementary materials.
61. Servitisation is a business model that creates value for manufacturers by adding services to goods (connecting a physical product to added value services using data, AI, the cloud and the development of Internet of Things) or fully transforming a product-based transaction model into a service-based subscription model.

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