

Cultural and Creative Industries and border effects: an approach for Ukraine under war conditions

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Abstract

This paper analyses border effects on the evolution of Cultural and Creative Industries (CCIs) during 2013–2020 when Russia invaded some areas of Ukraine (2014). As most empirical evidence on CCIs refers to OECD countries, this paper contributes to the literature by focusing on a mid-income European country suffering from a war conflict. Our results are meaningful for understanding the positive contribution of CCIs to economic activity in these circumstances and suggest that i) this effect applies to all industries except CCIs, and that ii) proximity to conflict regions counterbalances previous positive effects. Overall, we conclude that CCIs should play a major role in the recovery of the Ukrainian economy once post-war plans can be implemented.

Keywords: cultural and creative industries, regions, Ukraine, war, economic growth

JEL codes: O30, R10, R39

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Acknowledgements

This research was partially funded by Generalitat de Catalunya (SGR2021-00729). We acknowledge research assistance by M. Lleixà.

1. Introduction

Cultural and Creative Industries (CCIs) are considered to be important drivers of economic growth in developed countries, thanks to their overall contribution to production, employment, and innovation¹; but despite this relevance there is still little empirical evidence on their role in a different institutional context such as, for instance, i) the case of low-medium development economies, or ii) when there is a lack of institutional stability caused by an armed conflict. In this context, during periods of instability such as those experienced in Ukraine, where GDP growth has been inconsistent since the mid-2010s, the role of CCIs remains less well understood. This paper aims to address this gap by focusing on Ukraine, where CCIs play a smaller role compared to Western Europe, yet their economic potential remains largely unexplored.

Recent studies indicate that CCIs enhance employment levels and competitiveness, productivity, and sustainable economic growth (Štreimikienė and Kačerauskas, 2020) of the Ukrainian economy, and that these industries are resilient to economic crisis (Nikolaieva *et al.*, 2021). Although in 2014 Russia started the war against Ukraine, causing significant damage to infrastructures and equipment used by all economic sectors (including CCIs) Ukrainian CCI companies are still a key industry in this country (Farinha, 2017). As a result of this war, substantial interregional changes are observed in the country, which have a direct influence on cultural and creative activities (Slava, 2023) depending on the geographical distance to the areas in conflict.

An additional interest of the Ukrainian case is that international institutions such as OECD (OECD, 2018) and United Nations (UNCTAD, 2010) have highlighted the growing potential of CCIs in regard to regional development, innovation, and resilience in a post-crisis scenario, a framework that fits perfectly with the current situation after the Russian invasion (from 2022) and following several years of conflict in the southern and eastern regions of the country (from 2014). The potential of CCIs as drivers of economic growth has mainly been analysed in peaceful contexts, as CCI products are

¹ Although in this paper we assume the aforementioned positive role of CCIS over economic activity (in line with most of current scholars), it is also true that there have been historical debates about their importance and their economic potential, mainly between the critical perspective (i.e., Frankfurt School) and the market-oriented perspective (i.e., Creative Economy), but these debates were clearly out of the scope of this paper, focused in the Ukrainian case.

considered superior goods that benefit from income growth by capturing growing shares of consumption. This is why we investigate the impact of CCI on economic development of Ukrainian regions under a hybrid war, to know whether i) potential of these industries in terms of boosting economic growth are maintained in such unstable situations, and ii) potential is influenced by geographical proximity to conflict (border) areas.

Attention should be also paid to the importance of CCIs for the country in the post-war period, as they have the potentiality to play a significant role in the recovery of the Ukrainian economy, the environmental sustainability (Kačerauskas et al., 2021), the increasing viability and competitiveness of the country's regions, and the development of job and income-earning opportunities for all the population, irrespective of whether or not they are involved with CCI activities.

The starting point for the theoretical framework used in this paper is the notion of “border effects”, originally used by McCallum (1995) to refer to a phenomenon of international trade consisting of the negative impacts of national borders over trade across them. Concretely, it is assumed that cross-border trade barriers increase trade costs (through transaction costs) and, consequently, reduce trade flows. In terms of CCIs, the border effects may differ from those identified in standard international trade models, as these activities often rely on intangible assets such as cultural values, intellectual property, and social preferences that are not as easily traded across borders as are physical goods. Border effects have been analysed focusing mainly on productivity (Fantechi and Fratesi, 2023), and regional growth (Capello *et al.*, 2018b). In general terms, they are expected to restrict potential economic activities for all industries, although there are some exceptions in which restrictions imposed by borders may stimulate innovative responses that may improve welfare for border areas (Capello *et al.*, 2018c). There are substantial differences between internal and external border effects (Requena and Llano, 2010); border effects are heterogeneous among countries and regions and this situation is related to spatial attenuation (Coughlin and Novy, 2021; Query, 2022).

When dealing with the costs and effects of borders, the literature has focused on three main dimensions (Capello *et al.*, 2018a): i) institutional obstacles (the existence of a

political border), ii) physical barriers (geographical accidents), and iii) sociocultural barriers (language and cultural specificities). War conflicts include a combination of these three dimensions, as there are i) institutional issues (mobility is not permitted across the border), ii) physical issues (there is a shortage of transport infrastructures across the border), and iii) sociocultural issues (even without language or cultural barriers the conflict prevent exchanges).

Unfortunately, there is no universally accepted definition of a border region. Therefore, considering the theory of border effects, we have assumed a direct relationship between geographical distance to conflict zones and production levels. Accordingly, we have divided Ukrainian regions into three groups: i) regions in the war zone (Donetsk and Luhansk regions, Autonomous Republic of Crimea, and the city of Sevastopol), ii) regions that have joint borders with the regions in the war / conflict zone (Dnipropetrovsk, Kharkiv, Zaporizhzhya, and Kherson regions), and iii) all other regions, (although for some parts of the analysis we have joined these two groups).

This paper contributes to providing a better understanding of the potential of CCIs as economic growth drivers under conditions which are different from those analysed in most of the empirical literature (high-income countries with social and political stability). Concretely, the empirical evidence indicates that CCIs play a positive role on economic growth in developed countries with stable conditions, but it is important to assess i) whether they may play a similar role in unstable circumstances, and ii) whether distance to unstable areas matters. Considering the economic and social recovery programs planned for a future post-war scenario in Ukraine, it is essential to conduct a detailed analysis of how CCIs can contribute to the country's economic reconstruction. In this regard, our findings may be extended as well to other institutional frameworks in which policy tools must include not only physical infrastructures, but also social and cultural ones.

The approach of this paper to the analysis of CCIs in Ukraine and their economic role is mainly geographic, as is the case for most of the CCI literature. This strategy is particularly relevant in this specific case, as there is a huge concentration of firms and workforce in the city of Kyiv (which holds 7.1% of the Ukrainian population). In terms of the CCIs considered in this paper, in a context of current debates about the activities

to be included as CCIs, we assume a wide definition of these activities (see section 2.1 for details). Concretely, there is an interesting academic discussion about the classification of CCIs as, while some of them are the core of the industry (e.g., performing arts, theatres, music, etc.), there are others that, in some sense, are considered as frontiers (among others R&D, engineering, and architecture). The geographical and temporal dimension of the paper are interrelated. Specifically, we cover the period between 2013 and 2020 to avoid any bias linked to the Russian invasion (2022) and the pre-war situation (2021). Geographically, we include 25 Ukrainian administrative regions (i.e., 24 *oblasts* and the city of Kyiv). The Autonomous Republic of Crimea and the city of Sevastopol are not included in most of the analysis, as these areas have been under Russian control since 2014, and there is no data for them. As for the Eastern regions partially occupied by Russian separatist forces since 2014 (i.e., Donetsk and Luhansk regions), we include them in the analysis, but data comes only from (fluctuating) Ukrainian controlled areas during the period 2014–2020, which roughly are 70% of their territory. Data for 2013 will be used as a starting point of the study (the pre-war period). We must highlight that the empirical analysis is constrained by data availability as for Ukraine the granularity is not optimal, in view that lowest geographical unit for which data are available are the (big) administrative regions into which the country is divided. This results in a small number of administrative jurisdictions thus restricting the techniques to be used in our spatial and economic analysis.

The novelty of the paper is that it analyses the way in which the war conflict affects the impact of CCIs on the economic outcomes of Ukrainian regions. Our aim is to investigate the influence of CCIs on the economic performance of Ukrainian regions under the war conditions (i.e., a hybrid war). Accordingly, the following research hypotheses will be verified in this paper:

- Hypothesis 1: CCIs have a positive but lower effect (i.e., related to peaceful periods), on the regional economic development during the hybrid war period.
- Hypothesis 2: Proximity to the war zone leads to the decrease of the positive impact of CCIs on the regions' economy.

The structure of the paper is as follows. Section 2 firstly reviews the role of CCIs on regional development, focusing on areas with heterogeneous core-periphery patterns such as those of Ukraine, and finally analyses the spatial distribution of CCIs in Ukraine. Section 3 describes the data sources and methodologies to be used. Section 4 presents and discusses the main results, and Section 5 concludes and provides some policy implications and suggestions for future research.

2. CCIs, Regional development and institutional framework

2.1 Definition of CCIs

When defining the industries to be considered as included as CCIs, there is a wide debate among scholars (see Cruz and Teixeira, 2015, Sánchez-Serra, 2016 and Kačerauskas, 2020, for an extended discussion of this issue with contrasting views), but this is beyond the scope of this paper, so we rely on the Order of the Cabinet of Ministers of Ukraine of April 24, 2019, entitled "On approval of the types of economic activity that belong to creative industries". This order departs from NACE Revision 2 and includes 34 industries as CCIs (see Table A.1 in the Appendices for details). This typology includes activities such as manufacturing; publishing; motion picture, video and television programme production, sound recording and music publishing; programming and broadcasting; computer programming, consultancy and related; information service; activities of head offices and management; architectural; research and experimental development in social sciences and humanities; advertising; other professional, scientific and technical; other education; creative, arts and entertainment activities; and libraries, archives, museums and other cultural activities.

2.2 The role of CCIs

The positive impact of CCIs on the economic activity of developed countries (Higgs and Cunningham, 2008) in terms of economic growth (Lee, 2014), skill upgrading, innovation and firm formation (OECD, 2022; Coll-Martínez and Arauzo-Carod, 2017; Piergovanni et al., 2012) has attracted the attention of policy makers, since cultural and creative activities can be excellent tools for boosting employment and economic activity (Kourtit and Nijkamp, 2019). Several data sources suggest a key role for these

industries, as they represent 7.5% of the EU employment (European Commission, 2016) and 5.3% EU GDP (European Union Intellectual Property Office Observatory, 2019). In contrast to other activities, CCI show a clear agglomerated trend, as they concentrate in and around bigger metropolitan areas (Bednář *et al.*, 2024; Benita, 2019; Ho and Sheng, 2022) where main markets are located and where knowledge externalities (a key input for these industries) are stronger. Nevertheless, CCIs are also capable of playing an important role in non-urban and rural areas (see Maddah and Arauzo-Carod, 2025; Velez-Ospina *et al.*, 2023; Viganò *et al.*, 2023; and Townsend *et al.*, 2017), thanks to several CCI sub-sectors such as heritage, museums, and tourism-related activities that tend to locate in less congested areas but for which there is insufficient empirical evidence on their effects in peripheral regions (Collins and Cunningham, 2017). CCIs are also important for the development of knowledge-based economy in post-socialist countries (Szakálné Kanó *et al.*, 2023).

As for the CCIs effects, there is literature considering CCIs activities in a crisis context, in particular COVID-19. On the one hand, CCIs were among sectors which had the most significant pandemic restrictions and economic challenges (Seitz *et al.*, 2024; Flore *et al.*, 2023). On the other hand, CCI firms and workers found new possibilities to survive in this crisis (Gauhe, 2024; Duarte and Gauntlett, 2022). Besides, CCIs have essential non-economic specificities in armed conflicts, including, for instance, the relations between culture and war (Footitt, 2016) and cultural heritage (Campfens *et al.*, 2023; Vecco and Srakar, 2018).

The role of the Ukrainian cultural and creative industries has attracted the attention of many researchers (see, among others, Burakovsky *et al.*, 2019; Farinha, 2017; and Ukrainian Cultural Foundation, 2023) but only few of them, such as Galasyuk *et al.* (2021), Nikolaieva *et al.* (2021), and Slava (2023) follow an empirical approach. Concretely, Galasyuk *et al.* (2021) investigate the current state, issues, and opportunities of the country's creative sectors. Based on the expenditure-output model, their results indicate that if the share of CCI sectors in GDP would be 10%, the values of GDP and exports would grow by 5.32% and 5.87%. Additionally, they consider that the Ukrainian creative economy is quite unbalanced, which may deepen the country's sectoral and regional disparities. Using a similar analysis, Nikolaieva *et al.* (2021) assess the impact of creative industries on Ukraine's economic development

through a computable general equilibrium model, and they show that the increase of gross value added (GVA) in creative industries on 1 hryvnia leads to the growth of the country's GVA on 2.20 hryvnias. Nikolaieva *et al.* (2021) also find that the rise of capital investments into the creative sector leads to the highest economic growth, namely: their growth by 1 hryvnia causes an increase in GDP of 1.9–3.2 hryvnias. Applying correlation and functional regression methods Slava (2023) identifies significant relationships between many chosen indicators (the size of enterprises, gross regional product (GRP), domestic and foreign direct investments, number of employees, etc.) and the creativity performance of Ukrainian regions under the conditions of a Russian invasion. In addition, using the clustering approach, regional groupings are defined, facilitating a better understanding the convergence/divergence of Ukraine's regions during the war period.

2.3 The institutional framework in Ukraine: war and CCIs

The emergence of the current crisis in Ukraine was caused by various factors. Firstly, it was related to the refusal of the former president of Ukraine, Viktor Yanukovich, to sign the EU-Ukraine Association Agreement in 2013 due to Russia's influence. This led to “Euromaidan”, a process of many demonstrations and strikes across all the country (especially on Maidan Nezalezhnosti-Independence Square in Kyiv) that later escalated into an open confrontation. In 2014, after the formation of a pro-European government, the new leadership of Ukraine announced the intention to sign the EU-Ukraine Association Agreement. Shortly after that, the Russian Federation launched a hybrid war trying to establish control over some areas of Ukraine and prevent the signing of this agreement (Zelinska, 2017). Using sham referenda Russia annexed Crimea and created pseudo-republics in occupied parts of the Donetsk and Luhansk oblasts (see Figure 1).

[INSERT FIGURE 1 OVER HERE]

Eight years later, Russia started the full-fledged war against Ukraine in February 2022 and made attempted to seize territories in North, East and South of Ukraine, including the country's capital, Kyiv. Although this is currently an ongoing war for which the

effects on economic activity² have to be continuously updated, as of June 2022 direct damage to Ukraine's social, production, and infrastructure sectors was estimated to be more than US \$97 billion, and preliminary calculations indicate that Ukraine would need more than US \$349 billion for reconstruction and recovery activities (World Bank, Government of Ukraine, European Commission, 2022). This war has also a significant negative economic impact on the country (Tong, 2024; Liadze *et al.*, 2023).

It is well known that war conflicts have a direct and negative impact on economic activity, and specifically on CCIs through i) destruction of physical assets (e.g., infrastructures such as museums, galleries, theatres and auditoriums), ii) disruption of supply chains, iii) change in consumption patterns (e.g., reduced expenditures on cultural products which are replaced by basic consumption such as food, medicines and shelter), and iv) brain drain and talent loss (e.g., workers relocation to army duties and casualties due to the war). The Russian invasion of 2014 had a significant impact on the spatial distribution of CCIs, as the conflict disrupted economic activity and infrastructure³ both in the areas occupied by Russian army, where the invasion pushed down the production and consumption of cultural and creative products, and reduced human capital in CCIs as many skilled artists and professionals fled the area; and for the whole country, as Ukraine experienced a decline in foreign investment and tourism. In this regard, a recent survey conducted by the Ukrainian Cultural Foundation (2022) provides an interesting portrait of the industry: i) 80% of CCIs respondents reside in Ukraine, while 20% of them live abroad; ii) in Ukraine, 47% of CCIs specialists continue working in the sector, and 22% of them have the formal job position (but, in fact, they do not longer work), and 14% are unemployed; iii) 45% of respondents mention that orders and sales decreased or disappeared, and 33% of them note that the firm completely or partially switched to the remote work mode during the full-scale war. As a consequence, demand for cultural and creative products and services dipped considerably. Additionally, the conflict diverted resources and attention away from cultural and creative industries, as the Ukrainian government had to prioritize defence and security concerns.

² In addition to the economic dimension of the war, there is also an ideological framework in terms of the dominant ideologies in both sides of the conflict (Kačerauskas, 2023).

³ See Haddad *et al.* (2023) for an analysis of the economic impact of current war.

3. Data and methods

3.1 Data sources

Most of the data of this paper come from the State Statistics Service of Ukraine. Additionally, data on the FDI was obtained from the National Bank of Ukraine (2015–2020). Unfortunately, because of the Russian annexation, no data have been available for Autonomous Republic of Crimea and the city of Sevastopol since 2014. Thus, this paper is based on the data for 25 Ukrainian administrative regions (i.e., 24 oblasts plus the city of Kyiv), although data for the Donetsk and Luhansk regions exclude their areas partially occupied by Russia.

The research period covers the period 2013–2020. The initial year (2013) was chosen as it was the base year before the start of Russia's hybrid war against Ukraine in 2014. This strategy allows us to analyse border effects on CCI location during the war period (2014–2020) relative to the existing situation before the start of increased hostilities after the Russian invasion of 2022.

The data include information on the number of CCI firms and total number of firms, gross regional product, FDI, population density and exports. Indicators in UAH were recalculated to US dollars (USD), employing data of the National Bank of Ukraine on the UAH/USD annual official exchange rate. To evaluate whether the proximity to the war zone leads to the decrease of the positive impact of CCIs on regional economic development, a dummy variable (BORDER) was included. Border regions were identified as those controlled by the Russian army and those sharing a common border with them.

3.2 Spatial distribution of economic activities and CCIs in Ukraine

Table 1 shows some indicators of Ukrainian regions in 2020⁴. The most populated is the Donetsk region (more than 4 million inhabitants, 9.9% of Ukraine's population), followed by the Dnipropetrovsk region (3.1 million, 7.6%) and the city of Kyiv (2.9

⁴ Through the text we will use the term "region" to refer to Ukrainian administrative units known as "oblasts", which are similar to EU NUTS-II.

million, 7.1%). As for employment and GRP, the shares are quite similar: most of employment locates in the Dnipropetrovsk region (8.5%), Kyiv (city) (8.2%) and Kharkiv region (7.3%), whilst GRP clusters mainly in Kyiv (city) (24.0%), followed by the Dnipropetrovsk (9.4%) and Kharkiv regions (6.1%).

[INSERT TABLE 1 OVER HERE]

A spatial overview of this distribution shows that most populated areas of Ukraine (except for the capital, Kyiv) are located at or close the regions controlled by Russian military forces (see Figure 2). This is especially relevant as CCIs typically locate close to main markets, such as those in these Eastern regions, but this is not entirely the case here in view of the central geographical location of the capital, Kyiv.

[INSERT FIGURE 2 OVER HERE]

Table 2 summarises the spatial distribution of employment, gross value added, value of produced products, and value of sold products of CCIs that, respectively, weight 4.0%, 4.2%, 4.6%, and 3.0% of all economic activities. Unfortunately, disaggregated data is not available for all CCIs and regions. As for the ones with available data, the leading industries among Ukrainian CCIs were computer programming activities, advertising agencies, and computer consultancy activities. Together, the share of these industries in employed persons, gross value added, value of produced products, and value of sold products were 64.6%, 70.8%, 76.3%, and 77.2%, respectively.

[INSERT TABLE 2 OVER HERE]

The spatial distribution of CCIs in Ukraine has some specifics as it does not follow standard patterns in terms of agglomeration in most populated areas. Although for the Ukrainian-controlled regions this positive relationship between population and CCIs does exist (e.g., the city of Kyiv and Kharkiv, Kyiv, and Lviv regions), as urban areas tend to have a larger pool of creative talent and a more diverse population that can support a wider range of cultural and creative products. However, the situation is

different in the areas controlled by Russia since 2014, where the number of CCIs is clearly below what would be expected for the size of these regions.⁵

[INSERT FIGURE 3 OVER HERE]

This size relationship is roughly the same if the spatial distribution of CCIs is analysed using the number of firms (see Figure 3) or by location quotients also calculated using the number of firms (see Figure 4).

[INSERT FIGURE 4 OVER HERE]

Concretely, the location quotient takes the following form, as it compares the number of CCI firms relative to the total number of firms both at regional and national level:

$$LQ_r = \frac{CCIs_r / Firms_r}{CCIs / Firms}$$

where $CCIs_r$ refers to CCI firms in region r , $Firms_r$ refers to the total number of firms in region r , $CCIs$ refers to the total number of CCI firms in Ukraine, and $Firms$ refers to the total number of firms in Ukraine. Accordingly, regional values over 1 indicate a relative specialization in CCIs (according to the weight of the CCI industries in Ukraine), a situation that exists (2020) in most populated regions outside the areas controlled by Russia, such as the city of Kyiv (1,84), and the Lviv (1,53), Kharkiv (1,51) and Kyiv regions (1,01). The opposite can be found in either small regions such as the Kirovohrad (0,33) and Chernivtsi regions (0,50), or those close to Russia controlled areas such as the Donetsk (0,56) and Luhansk regions (0,54).

Alternatively, if we analyse the spatial distribution of CCI firms as their percentage of the total number of firms (see Figure 5 for data in 2013, and Figure 6 for data in 2020) the situation is similar except for the city of Kyiv, where there is a clear agglomeration of CCI firms in the capital despite the economic importance of Kyiv region.

⁵ Unfortunately, data from Crimea and Sevastopol is not available since 2014.

[INSERT FIGURE 5 OVER HERE]

[INSERT FIGURE 6 OVER HERE]

Since one of the aims of this paper is to analyse the impact of the 2013–2020 period of war conflict on CCIs, we have quantified the change in the spatial distribution of CCIs during that period, both in terms of absolute numbers (Figure 7) and of location quotients (Figure 8). Surprisingly, the results differ. The change in absolute numbers is very positive elsewhere (overall, CCI firms increased from 97,062 in 2013 to 230,743 in 2020), but the growth is especially important for the Kyiv region (258,5% increase), while the number of firms decreased in the areas partially under Russian control (-41,7% in the Luhansk and -24,7% in the Donetsk regions).

[INSERT FIGURE 7 OVER HERE]

[INSERT FIGURE 8 OVER HERE]

Nevertheless, when using changes in location quotient as indicators of CCI performance, the situation is much worse elsewhere, noticeably in Russian-controlled areas, where location quotients clearly decrease (from 0,68 to 0,56 in the Donetsk region, and from 0,57 to 0,54 in the Luhansk region), while they increase especially around Kyiv and in the corridor between Kyiv and Lviv regions.

[INSERT FIGURE 9 OVER HERE]

This situation may be explained in terms of changing demand (Ukrainian Cultural Foundation, 2022) and, more explicitly, in terms of changes in spatial location of demand, as since the conflict increased uncertainty in the Eastern Donetsk and Luhansk regions (and adjacent areas) between 2013 and 2020 there have been important migration flows from this part of the country to the city of Kyiv and the Kyiv region (see Figure 9). All Ukrainian regions have decreased their population except the city of Kyiv and the Kyiv and Zakarpattya regions (State Statistics Service of Ukraine, 2021, 2014).

[INSERT FIGURE 10 OVER HERE]

The previous patterns are even more clearly observed if Ukrainian regions are distributed into three groups, namely *i*) regions totally- (the Autonomous Republic of Crimea and the city of Sevastopol) or partially (the Donetsk and Luhansk regions) controlled by Russia, *ii*) regions that share borders with previous areas (Kherson, Kharkiv, Dnipropetrovsk and Zaporizhzhya regions) and *iii*) the rest of the country. Concretely, the LQs for these groups are different and evolve in a different way,⁶ as the closer a region was to a conflict area, the worse was the evolution of its LQ. In this sense, whilst for regions controlled by Russia LQ went down by 12,9%, the reduction in neighbour regions was “only” 4,09%, and in the rest of the country, 2,84%.

[INSERT FIGURE 11 OVER HERE]

If we analyse the change in LQs during the 2013–2020 period (see Figure 11 for selected CCI industries), it is possible to observe both the sectoral and territorial transformations seen in many countries (i.e., suburbanization from the city of Kyiv to Kyiv region), together with undefined patterns for Ukrainian regions that seem not to be affected by their geographical distance to conflict areas.

3.3 Methods

In particular, we want to estimate whether regional specialisation on CCIs (LQ) and geographical proximity (BORDER) to conflict areas matter in terms of economic performance. As the number of observations is small, we must use a short number of covariates to estimate the model accurately. Similarly, to prevent potential bias caused by outliers we have used robust standard errors, which are less sensitive to outliers.

$$\Delta Y_r = \alpha + \beta_1 * LQ_r + \beta_2 * BORDER_r + \beta_3 * DENS_r + \varepsilon_r$$

where r indicates the region, ΔY_r is the dependent variable (we have selected three proxies, namely production, exports and growth in the number of firms over the period 2013–2020), LQ_r measures a location quotient for CCIs, $BORDER_r$ is a dummy variable that identifies those regions that are either in, or border with conflict areas, $DENS_r$ is the population density, and ε_r is the error term. In this specification, we will

⁶ We omit regions controlled by Russia as data is only available for 2013.

focus on two key variables, LQ and BORDER. As for LQ, we assume that specialisation in CCIs is a key driver for economic growth and that this phenomenon can be measured in several very different ways. This is why we use three proxies such as production, exports and firm growth. As for BORDER, this variable proxies border effects by assuming that conflict areas generate uncertainty and human and material capital destruction, so the effects on growth are expected to be negative. Finally, DENS proxies urbanization, which is a necessary condition for some activities requiring interactions between firms and customers, such as CCIs. Additionally, we want to test if CCI growth is affected in a similar way than for the rest of the economy. This is why we add a fourth specification in which the dependent variable is the growth rate of CCI firms over the period 2013–2020.

4. Results

Overall, our data shows that the shares of CCIs in conflict areas are clearly below what is standard in regions without political / military instability, as observed for Southern and Eastern regions of Ukraine. In this sense, the lower shares of CCIs in regions close to Russian-occupied territories could be explained by internal migration processes towards Western regions as, during the beginning of the hybrid war and Russia's occupation of Crimea and parts of Donetsk and Luhansk regions, a significant proportion of firms, especially CCIs, relocated from these regions to the city of Kyiv, where they could find more favourable business conditions and stronger markets. Additionally, other firms relocated to cities with a good business infrastructure and far away from the war zone, including those in Western Ukraine (e.g., Lviv). Besides, internal migration of the Ukrainian population reinforced this process as demand also moved West.

If we assume that CCIs produce superior (i.e., non-essential) goods, it is logical that such institutional instability reduces demand for these products, as individuals prefer to focus their budgets on essential items such as food, energy or shelter. This implies that potential role of CCI drivers of economic growth (Sacco, 2020) is shaped by additional institutional requirements from these industries (e.g., peaceful conditions, lack of uncertainty, etc.). Then, if these conditions are not fulfilled, it is very difficult for

CCIs to bolster other economic activities. This is why, in view of these stronger requirements by CCIs, additional public interventions are required in order to ensure the implementation of these cultural and creative activities in, or near, conflict areas.

[INSERT TABLE 3 OVER HERE]

According to econometric results shown in Table 3, it seems that there are some indirect mechanisms operating for CCIs. When analysing the role of CCIs over several proxies of economic activity for all industries (i.e., production, exports and number of firms), its effect is positive and significant, implying that higher shares of CCIs boost economic activity. Nevertheless, when having the number of CCI firms as the dependent variable, then the location quotient of CCIs, even positive, is no longer significant. Overall, these results suggest that i) CCIs specialization boosts economic activity through some intangible mechanisms that affect the whole economy (e.g., human capital requirements and productivity effects), and that ii) the previous positive effects do not include CCI firms, as existing conflicts may switch demand to consumption of other essential goods and services, rather than those produced by cultural and creative firms. In addition to these effects, there is clear evidence of border effects in terms of a negative effect on economic activities, no matter what the industry or the proxy used.

The results of this paper are similar to the findings of Slava (2023), who identified a positive relationship between the creativity sector and the output (i.e., number of firms) of Ukrainian regions in the war period. In a different paper for Czech regions, Slach *et al.* (2013) also found a positive effect of CCIs on economic development, but with population density having a positive effect, while in this paper the effect is negative.

Hence, the results of the paper confirm Hypothesis 1 regarding the positive effect of CCIs on the regional economic development during the hybrid war period, although that impact is lower than expected in view of the unstable conditions. The findings also support Hypothesis 2 that proximity to the war zone (i.e., border effects) leads to a decline in the positive impact of CCIs on a region's economy. These results highlight the need for stability to provide the conditions required to deploy the full positive effect of CCIs on regional economies.

5. Conclusions

Our results indicate that CCIs had a positive impact on the economic development of Ukrainian regions during the war years studied (2014–2020), and that this impact decreased with geographical distance to the affected areas, which indicates the existence of border effects. These findings are relevant as they demonstrate that although CCIs matter for regional development they require institutional stability to be fully effective in expanding economic activity. This is particularly important considering that, as far as we know, no theoretical or empirical literature specifically addresses this topic. Therefore, generating knowledge about the potential of these industries in such challenging circumstances is essential.

Because of Russia's invasion, Ukraine's main economic industries have been significantly damaged, so in the post-war period, the primary task will be to restore the normal activity of markets at both national and regional levels. In this regard, we consider that CCIs could become one of the driving forces which will be able to effectively contribute to the restoration of the economic potential of Ukraine, in view of the positive effects that these activities have on economic growth (Maddah and Arauzo-Carod, 2025). That is why it is necessary to design support mechanisms for CCIs within the framework of long-term programs at the country and regional levels, especially in less developed regions (McCann and Ortega-Argilés, 2019). Favourable conditions should be created for CCIs firms to settle down, not only in large cities, but also in less populated areas (Escalona-Orcao *et al.*, 2016). This point is especially important for the reconstruction of war-ravaged areas, the reduction of regional disparities, and the creation of jobs.

There are also opportunities to boost the country's and its regions' competitiveness through the expansion and diversification of CCIs, as demonstrated in numerous other contexts (Evans, 2005). In this case, further integration of Ukrainian CCIs with firms from the EU and other countries will be needed to have the required accessibility to modern technologies, financial resources, and prospective markets. Also, to support the development of Ukrainian CCI firms, it will be essential to use new funding models,

including the creative voucher scheme (Baláž *et al.*, 2024) and crowdfunding (Cicchello *et al.*, 2023; Handke and Dalla Chiesa, 2022) to fully exploit potentialities of CCIs. Finally, it is important to stress that CCIs can play a crucial role in post-war societies by offering additional valuable contributions. For instance, art education can support out-of-school youth affected by armed conflict in reintegrating into their local communities, fostering a positive mindset and communication skills (Labor, 2018). The restoration of artistic practices in war-affected areas requires careful consideration of context, power imbalances, and human resilience (Howell, 2024). Furthermore, clear policies, standards, and protective measures must be developed to ensure that artists and cultural professionals are safeguarded and provided with adequate conditions to continue their work, even under the most challenging circumstances (UNESCO, 2023).

Even though its contributions, this paper suffers from some limitations, such as the lack of data on CCIs at a geographical (and administrative) level smaller than regions, which reduces the number of observations, and the data constraints for some areas under Russian jurisdiction. In future research, attention might be given to the analysis of development strategies of CCIs (and its diversification), and the impact of human capital on the sector's performance in Ukraine, but this research plan will depend on availability of geographically disaggregated data on CCIs.

Conflict of Interests: The authors declare no conflict of interest.

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Tables

Table 1: Some indicators of Ukrainian regions (2020)

	Resident population		Labour force aged 15-70		Gross regional product	
	1000s people	share, %	1000s people	share, %	mln. USD	share, %
Ukraine	41,418.8	100.0	17,589.5	100.0	156,617.9	100.0
Cherkasy	1,174.6	2.8	557.6	3.2	4,036.8	2.6
Chernihiv	968.2	2.3	466.7	2.7	3,118.5	2.0
Chernivtsi	893.5	2.2	413.3	2.3	1,671.3	1.1
Dnipropetrovsk	3,138.7	7.6	1,496.8	8.5	14,791.1	9.4
Donetsk	4,087.4	9.9	838.8	4.8	7,653.1	4.9
Ivano-Frankivsk	1,358.4	3.3	599.3	3.4	3,353.4	2.1
Kharkiv	2,618.2	6.3	1,288.1	7.3	9,563.4	6.1
Kherson	1,015.3	2.5	490.1	2.8	2,539.8	1.6
Khmelnyskiy	1,240.6	3.0	560.6	3.2	3,575.3	2.3
Kirovohrad	913.7	2.2	414.7	2.4	2,789.9	1.8
Kyiv (city)	2,920.9	7.1	1,450.2	8.2	37,640.5	24.0
Kyiv region	1,782.8	4.3	811.6	4.6	8,992.2	5.7
Luhansk	2,116.7	5.1	339.4	1.9	1,602.7	1.0
Lviv	2,479.4	6.0	1,123.8	6.4	8,763.9	5.6
Mykolayiv	1,107.7	2.7	537.1	3.1	3,585.2	2.3
Odesa	2,357.0	5.7	1,067.1	6.1	8,170.0	5.2
Poltava	1,363.7	3.3	643.2	3.7	6,989.7	4.5
Rivne	1,147.4	2.8	513.8	2.9	2,667.2	1.7
Sumy	1,051.3	2.5	507.7	2.9	2,983.7	1.9
Ternopil	1,027.3	2.5	450.4	2.6	2,324.4	1.5
Vinnytsya	1,522.0	3.7	710.7	4.0	5,040.0	3.2
Volyn	1,024.7	2.5	416.0	2.4	2,871.3	1.8
Zakarpattia	1,247.3	3.0	551.4	3.1	2,300.7	1.5
Zaporizhzhia	1,665.7	4.0	791.7	4.5	6,204.6	4.0
Zhytomyr	1,196.3	2.9	549.4	3.1	3,389.2	2.2

Source: own elaboration with data from State Statistics Service of Ukraine.

Table 2: Some indicators of Ukraine's CCIs (2020)

	Employed persons	Gross value added, mln. USD	Value of produced products, mln. USD	Value of sold products, mln. USD
CCIs – total	360,355	4,911.2	12,425.7	12,385.0
Manufacture of jewellery and related articles	5,029	13.8	28.0	28.9
Manufacture of imitation jewellery and related articles	188	not available	not available	1.6
Manufacture of music instruments	69	0.3	0.9	0.9
Book publishing	3,684	33.9	93.5	96.4
Publishing of newspapers	5,430	22.1	52.9	53.9
Publishing of journals and periodicals	3,689	21.6	50.3	53.6
Other publishing activities	3,371	23.1	68.9	70.4
Publishing of computer games	1,183	16.6	45.8	46.0
Other software publishing	5,520	62.4	175.7	179.2
Motion picture, video and television programme production activities	12,394	203.9	415.5	369.2
Motion picture, video and television programme post-production activities	770	5.0	14.7	14.6
Motion picture, video and television programme distribution activities	599	27.3	57.4	53.7
Motion picture projection activities	3,581	27.9	48.4	51.7
Sound recording and music publishing activities	397	5.4	12.2	12.0
Radio broadcasting	1,458	9.9	17.2	15.7
Television programming and broadcasting activities	14,536	362.9	503.1	432.0
Computer programming activities	163,184	2,458.1	6,559.6	6,559.4
Computer consultancy activities	40,275	468.9	1,422.1	1,437.9
News agency activities	1,346	9.7	23.1	22.0
Public relations and communication activities	1,764	18.1	38.6	38.6
Architectural activities	18,843	139.6	333.9	330.3
Research and experimental development on social sciences and humanities	1,220	8.8	18.8	18.7
Advertising agencies	29,411	549.4	1,496.5	1,564.3
Media representation	4,693	176.6	507.0	507.1
Specialised design activities	9,544	72.9	180.3	180.4
Photographic activities	5,291	18.8	47.6	47.9
Translation and interpretation activities	4,953	30.2	79.4	79.4
Cultural education	2,109	7.5	14.9	14.9
Performing arts	9,773	70.7	36.1	31.5
Support activities to performing arts	1,099	13.3	21.8	18.3
Artistic creation	2,650	17.5	40.4	40.5
Operation of arts facilities	1,469	7.6	7.9	3.9
Library and archives activities	476	5.1	9.7	8.2
Museums activities	357	2.3	3.5	1.9

Source: own elaboration with data from State Statistics Service of Ukraine.

Table 3: Effects of CCIs on economic performance (2013–2020)

	Production	Exports	Firms	CCI firms
LQ	0.220* (0.108)	0.450** (0.173)	0.414** (0.147)	0.555 (0.352)
BORDER	-0.368** (0.144)	-0.749*** (0.160)	-0.418* (0.205)	-0.998** (0.456)
DEN	-1.49e-04** (6.62e-05)	-3.53e-04*** (1.18e-04)	-1.46e-04 (9.44e-05)	-4.13e-04* (2.32e-04)
Const.	-0.167** (0.078)	-0.099 (0.124)	-0.001 (0.101)	1.354*** (0.252)
Obs.	25	25	25	25
R-squared	0.523	0.514	0.469	0.344

Source: own elaboration; *** p<0.01, ** p<0.05, * p<0.1.

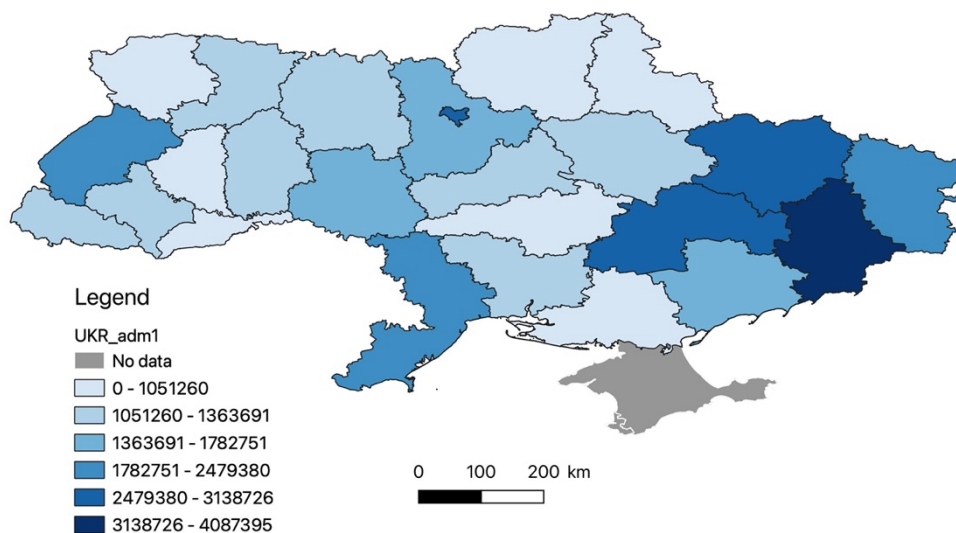
Figures

Figure 1: Regions controlled by Ukraine / Russia (2020)



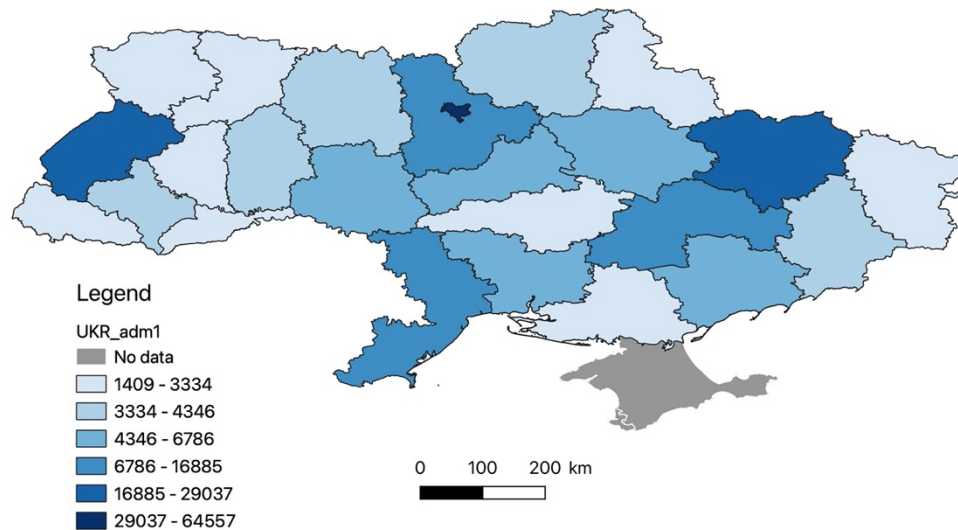
Source: own elaboration with data from State Statistics Service of Ukraine; data from Donetsk and Luhansk regions does not include areas controlled by Russia.

Figure 2: Spatial distribution of population (2020)



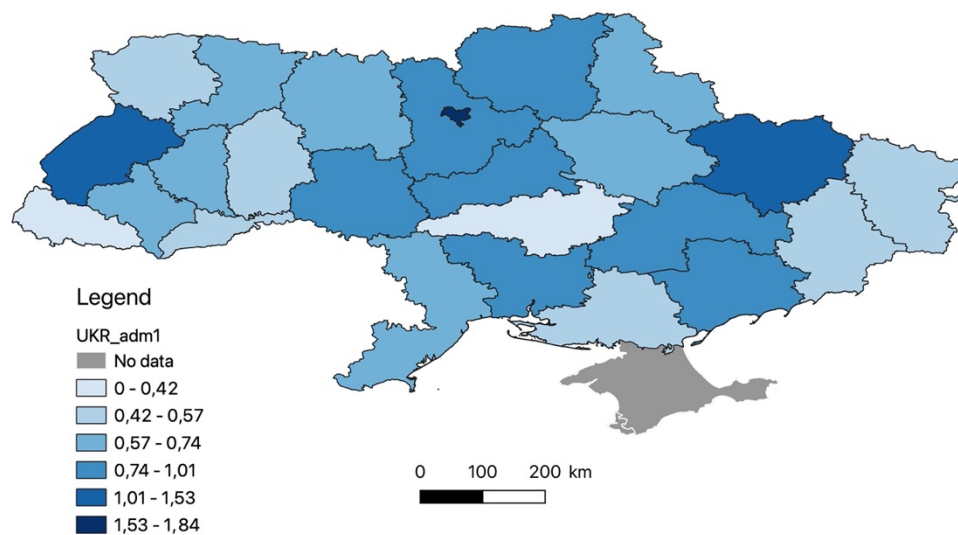
Source: own elaboration with data from State Statistics Service of Ukraine; data from Donetsk and Luhansk regions does not include areas controlled by Russia.

Figure 3: Spatial distribution of CCI firms (2020)



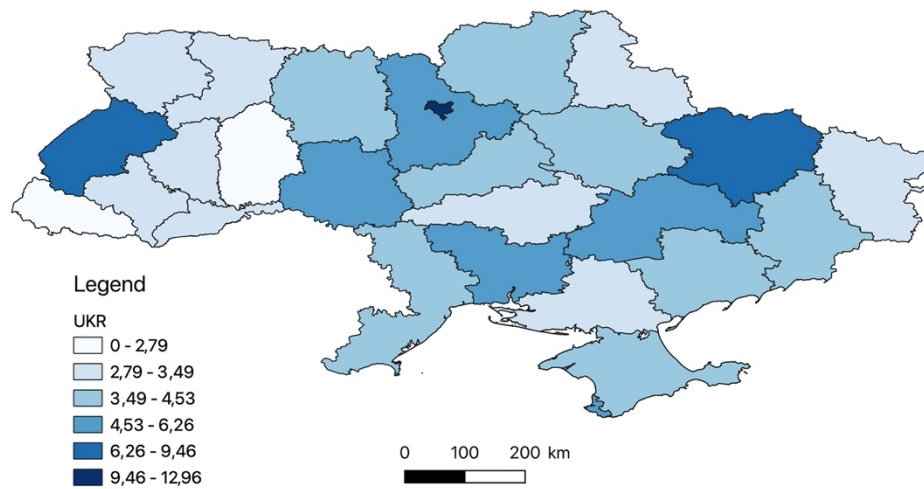
Source: own elaboration with data from State Statistics Service of Ukraine; data from Donetsk and Luhansk regions does not include areas controlled by Russia.

Figure 4: Location Quotient of CCI firms (2020)



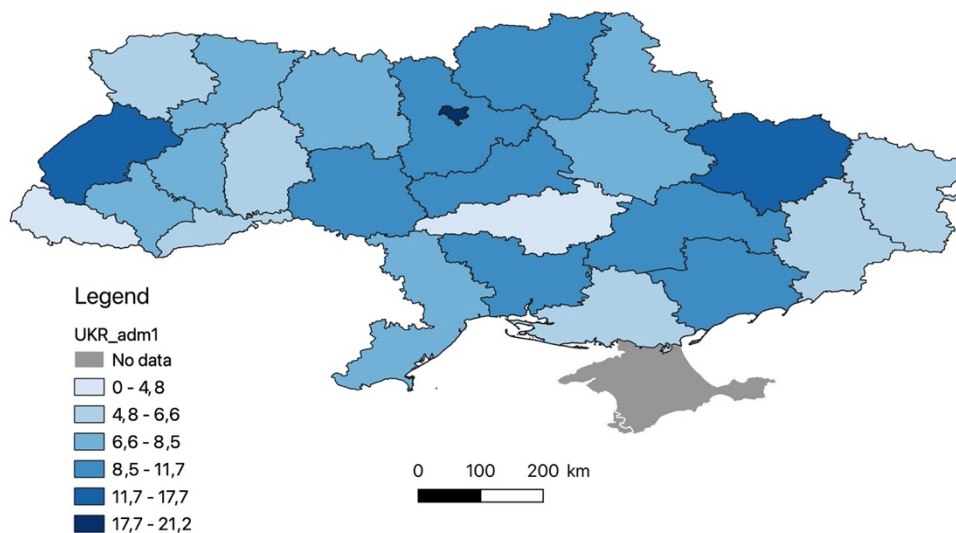
Source: own elaboration with data from State Statistics Service of Ukraine; data from Donetsk and Luhansk regions does not include areas controlled by Russia.

Figure 5: Spatial distribution of CCI firms (% of total firms) (2013)



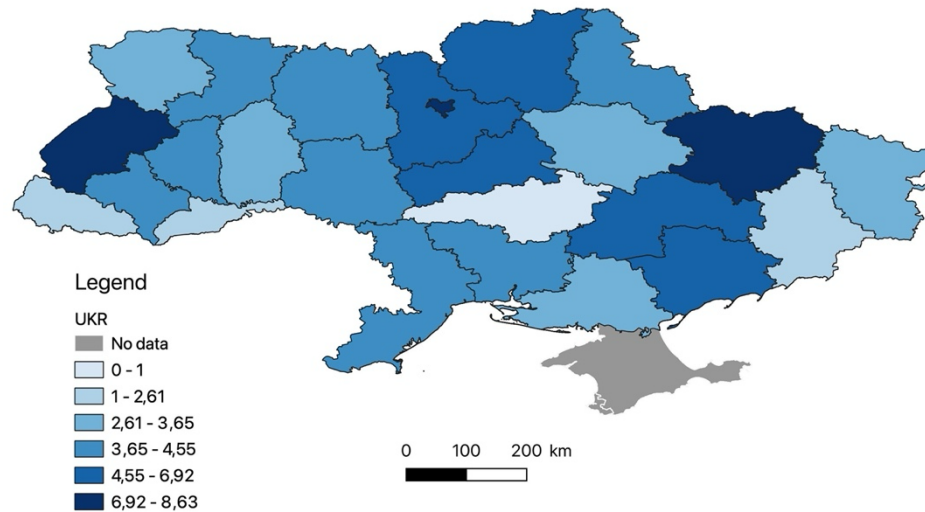
Source: own elaboration with data from State Statistics Service of Ukraine; data from Donetsk and Luhansk regions does not include areas controlled by Russia.

Figure 6: Spatial distribution of CCI firms (% of total firms) (2020)



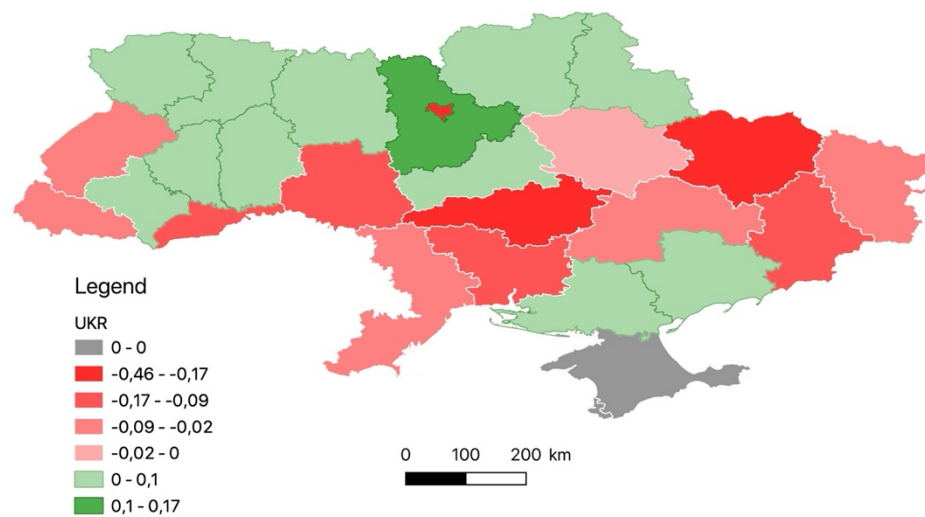
Source: own elaboration with data from State Statistics Service of Ukraine; data from Donetsk and Luhansk regions does not include areas controlled by Russia.

Figure 7: Change of spatial distribution of CCI firms (%) (2013–2020)



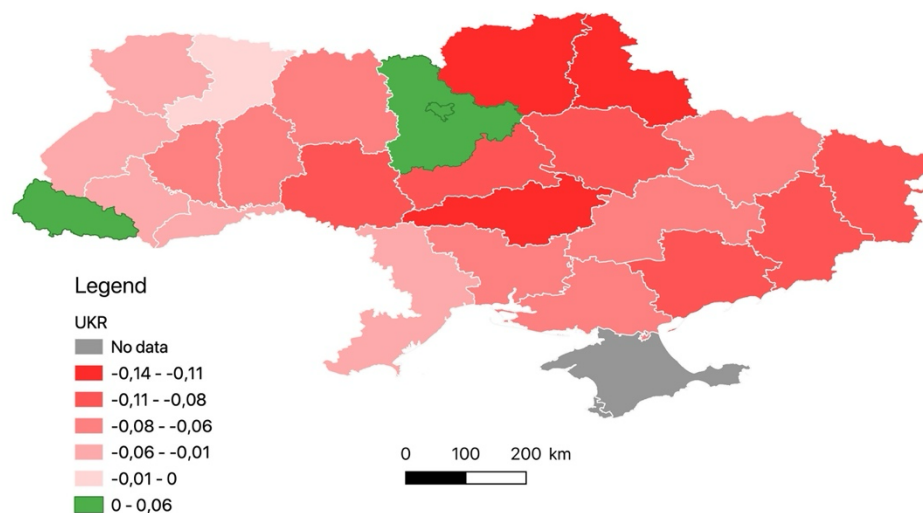
Source: own elaboration with data from State Statistics Service of Ukraine; data from Donetsk and Luhansk regions does not include areas controlled by Russia.

Figure 8: Change of Location Quotient of CCI firms (2013–2020)



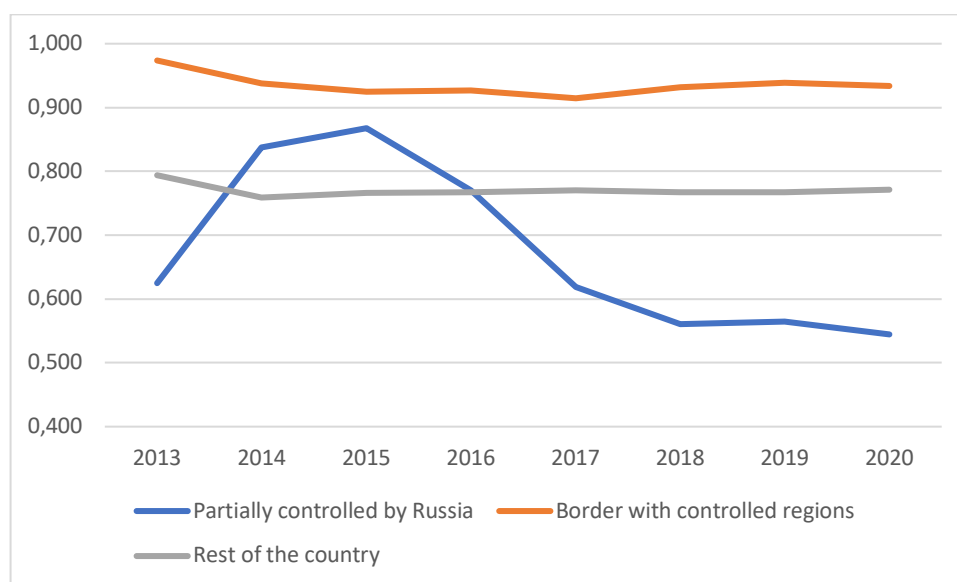
Source: own elaboration with data from State Statistics Service of Ukraine; data from Donetsk and Luhansk regions does not include areas controlled by Russia.

Figure 9: Change of spatial distribution of population (2013–2020)



Source: own elaboration with data from State Statistics Service of Ukraine; data from Donetsk and Luhansk regions does not include areas controlled by Russia.

Figure 10: Change in LQ of CCIs (2013–2020)



Source: own elaboration with data from State Statistics Service of Ukraine; data from Donetsk and Luhansk regions does not include areas controlled by Russia.

Figure 11: Change in LQ of selected CCIs (2013–2020)



Source: own elaboration with data from State Statistics Service of Ukraine; data from Donetsk and Luhansk regions does not include areas controlled by Russia.

Appendices

Table A.1: List of Cultural and Creative Industries (CCIs)

Code	Description
32.12	Manufacture of jewellery and related articles
32.13	Manufacture of imitation jewellery and related articles
32.20	Manufacture of music instruments
58.11	Book publishing
58.13	Publishing of newspapers
58.14	Publishing of journals and periodicals
58.19	Other publishing activities
58.21	Publishing of computer games
58.29	Other software publishing
59.11	Motion picture, video and television programme production activities
59.12	Motion picture, video and television programme post-production activities
59.13	Motion picture, video and television programme distribution activities
59.14	Motion picture projection activities
59.20	Sound recording and music publishing activities
60.10	Radio broadcasting
60.20	Television programming and broadcasting activities
62.01	Computer programming activities
62.02	Computer consultancy activities
63.91	News agency activities
70.21	Public relations and communication activities
71.11	Architectural activities
72.20	Research and experimental development on social sciences and humanities
73.11	Advertising agencies
73.12	Media representation
74.10	Specialised design activities
74.20	Photographic activities
74.30	Translation and interpretation activities
85.52	Cultural education
90.01	Performing arts
90.02	Support activities to performing arts
90.03	Artistic creation
90.04	Operation of arts facilities
91.01	Library and archives activities
91.02	Museums activities

Source: Order of the Cabinet of Ministers of Ukraine on April 24, 2019, No. 256-p "On approval of the types of economic activity that belong to creative industries".