The impact of macroeconomic factors on the creative economy: a comparative analysis of European countries and Asian countries

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Abstract

Purpose – This study investigates the impact of key macroeconomic indicators – innovation, GDP per capita, trade openness, R&D expenditure, IP law and labor force education – on the development of the creative exports in Asian and European countries from 2010 to 2022 and compares how these factors influence each region differently.

Design/methodology/approach – Using fixed effects model (FEM) and two-step difference generalized method of moments applied to 650 observations across selected Asian and European countries; the study evaluates the relationship between macroeconomic indicators and creative exports.

Findings – GDP per capita consistently drives creative exports in both regions, while labor skills and trade openness matter mainly in Europe. R&D shows no robust effect in either regions, and intellectual property protection is significant only in Asia.

Originality/value – The research offers comparative insights into the macroeconomic dynamics shaping creative industries in different regions, contributing to academic understanding and providing targeted policy recommendations for sustainable development in the creative economy.

Keywords Creative economy, Macroeconomic determinants, Europe, Asia

Paper type Research article

1. Introduction

The United Nations declared 2021 as the International Year of Creative Economy for Sustainable Development, recognizing the importance of creative sectors in achieving the 2030 Agenda and emphasizing the role of trade in creative goods and services (United Nations

General Assembly, 2019). Often referred to as the "orange economy", the creative economy gets its name from the vibrant color symbolizing the intersection of culture, creativity and economics – a reflection of the energy and dynamism that define this emerging field (Buitrago Restrepo and Duque Márquez, 2013).

Each country has a different perspective on the creative economy. In England, the Department for Culture, Media and Sport (DCMS) categorized creative industries into 13 sectors in 1998 (DCMS UK, 1998). According to the Indonesian Agency for the Creative Economy (BEKRAF), Indonesia divided its creative economy into 17 creative industries. This diversity and differences in approaches reflect the characteristics of the creative economy.

The creative economy is an important factor in global economic growth, as it provides job opportunities for people, including the youth and women, fosters innovation and contributes to the global sustainable development goals (United Nations General Assembly, 2019). In 2022, the creative economy is estimated to be worth 985 billion USD. According to the International Finance Corporation (IFC), the creative industries also account for nearly 50 million laborers worldwide. G20 Insights predicts that the creative economy can account for 10% of global GDP in 2030, while Deloitte believes that we might witness a growth of 40% in this field in 2030.

This research evaluates the impact of macroeconomic factors on the creative economy by analyzing creative exports across 50 Asian and European countries from 2010 to 2022. Asia and Europe are selected for their diversity in cultural backgrounds, policy frameworks and stages of economic development, offering a comprehensive basis for comparative analysis (UNCTAD, 2022). The research employs a fixed effects model (FEM) and two-step difference generalized method of moments regression to examine how key macroeconomic variables, including innovation, trade openness, skilled labor, GDP per capita, R&D expenditure and IP law, influence creative exports. The study aims to solve three main questions. First, it seeks to identify the key factors that influence the development of the creative economy. Second, it examines how these factors affect creative export performance. Finally, the study explores how the results differ between Asian and European countries, providing a comparative perspective across diverse economic and cultural contexts.

The specific questions are as follows:

Q1. What are the factors that influence the creative economy?

Q2. How do the factors influence the creative economy?

Q3. How is the result different between Asian and European countries?

This research has made both theoretical and practical contributions. First, it proves the relationship between macroeconomic factors and the development of creative industries and offers a detailed comparison between Asian and European countries. Second, the research identifies the importance of R&D expenditure, skilled labor, GDP per capita, the efficiency of IP law enforcement, trade openness and innovation, while skilled labor, GDP per capita and trade openness show an unexpected negative effect. Finally, this study highlights some recommendations proposed for policymakers and stakeholders.

The remainder of this article is structured as follows. Section 2 synthesizes the previous works to point out the research gap. Section 3 provides the theoretical framework for this research. Section 4 describes the data collection method and the econometric model. Section 5 highlights the research result, followed by the discussion in section 6. Limitations and future work are drawn in the final section.

2. Literature review
Existing studies have explored various aspects of the creative economy's role in economic development. Some focus on models designed for specific countries or cities, while others examine how the creative economy interacts with different sectors. Overall, prior research can

be classified into three main areas: factors inside the creative economy in general, the impact of the creative economy on a nation's economy, and the influence of the creative economy on specific economic activities.

Previous studies have mainly examined the key components of the creative economy, focusing on three aspects: the commercialization of creative goods and services, the creativity embodied in these products, and the establishment and protection of their intellectual property rights. Veselá and Klimová have stated that this economy is based on ideas and creativity with a natural concentration of a highly qualified and creative workforce (Veselá and Klimová, 2014). Besides, John Howkins proposed that the creative economy derived from goods and services containing creativity and economic value (Howkins, 2001). DCMS UK (1998) views the creative economy as "an industry originating from the creativity, skills and talents of the individual and the potential to create wealth and jobs through the creation and exploitation of intellectual property right". The United Nations Economist Network (UNEN) identifies the creative economy as the contribution and the opportunities of creative assets to motivate economic growth, specifically in the economic, cultural and social sectors with advanced technology and intellectual property rights (UNEN, 2023). Inside the creative economy, researchers pointed out several potential trends and components, which are creative cluster and creative cities (Scott and Storper, 2005; Zheng and Chan, 2014; Boccella and Salerno, 2016).

Secondly, previous research also focuses on the impact of the creative economy on a nation's economy. Yusuf and Nabeshima (2005) argued that the development of these industries contributes significantly to urban regeneration and growth, transforming old industrial areas into modern, creative and vibrant ones that attract both domestic and international investment. The creative economy is considered an important motivation for global economic growth. A study by John Howkins in 2001 indicated that creativity is becoming one of the most important resources for the economy, and industries that depend on creative investment have become increasingly significant to the growth of the knowledge economy. The role of the creative economy in driving innovation and productivity in the broader economy has been recognized, showing how creative workers contribute to innovation across various sectors and boost overall economic growth (Bakhshi et al., 2013). A study indicates the dynamic relationship between the creative industry and economic growth. In Malaysia, the creative industry is said to have a significant contribution to this nation's GDP (Syafri et al., 2023). The creative economy also creates jobs for the labor by significantly shifting toward arts and culture-based economic activities, also attracting many creative individuals to help contribute to the overall economy (Daubaraitė and Startienė, 2015).

Thirdly, beyond its macroeconomic impact, recent studies have explored how the creative economy influences specific sectors and economic activities. Researchers have noted that the creative economy is a new motivator for the development of many sectors. Fitzsimmons et al. (1991) argued that the creative economy has significantly contributed to the change of traditional manufacturing by combining creative design into the production process. The creative economy is more actively involved in sustainable design, creating products and solutions that minimize the impact on the environment (Julie's Bicycle, BOP Consulting and NESTA, 2022). Besides, Ouyang et al. (2021) indicated that the creative industries, such as music, film, art and design, have profoundly contributed to the tourism industry in many countries. However, a report on the creative economy in 2024 by UNCTAD indicated that the creative economy worldwide only focuses on specific sectors, leading to market concentration and hindering fair competition; therefore, they emphasized the important role of diversification in promoting the development of the creative economy in general (UNCTAD, 2024). The creative industries also contribute significantly to foreign trade. As OMC reported in 2014, creative goods account for 4.3% of the EU-27's external exports, and provides for cultural and social development in addition to the direct economic impact (Daubaraitė and Startienė, 2015).

Although previous studies focus on the impact of the creative economy on the overall development of the economy and particular sectors, they often neglect the impact of macroeconomic factors on the growth of the creative economy, especially in European and Asian countries during the crucial period 2010–2022. The effects of global events in this period, such as the financial crisis and pandemic downturn of the COVID-19 period still remain under-explored. Furthermore, previous research has not used quantitative methods to analyze the significant impact of some macro factors, such as trade openness, GDP per capital on the long-term development of the creative economy.

3. Theoretical framework

3.1 Creative economy and exported creative goods and services

The term "creative economy" first appeared in the book *The Creative Economy: How People Make Money from Ideas* by John Howkins, where the author defined the creative economy as "the transactions of creative products whose economic goods or services originate from creativity and have economic value" (Howkins, 2001). DCMS UK viewed the creative economy as "industries that originate from the creativity, skills and talents of individuals and have the potential to create wealth and jobs through the creation and exploitation of intellectual property" (DCMS, 1998). UNEN interpreted the creative economy based on the contribution and potential of creative assets to economic growth and development, which includes economic, cultural and social aspects along with technological advances and intellectual property (UNEN, 2023).

To conclude, the creative economy is an economy in which creativity and intellectual capital are factors in producing goods and services. Although there is no single definition of the creative economy, most perspectives agree on three fundamental aspects: commercializing creative goods and services, emphasizing their artistic nature and protecting their intellectual property rights.

Export of creative goods increased by more than 3.5-fold over the past two decades (compared to a 3.8-fold increase for all exported goods during the same period). International trade in creative goods continues to be regionally unequal, and the bulk of trade is intensified in a handful of economies. Developing nations account for most creative goods exports, while developed countries mostly import this type of goods (UNCTAD, 2024).

According to the Creative Economy Outlook (UNCTAD, 2022), there are 230 creative goods identified at the HS 6-digit level that fall under the following sub-categories: audiovisual, multimedia and photography; crafts and design goods; books and publishing; music, performing and visual arts; architecture; software, video games and recorded media; and cultural and natural heritage. Measuring the creative services trade is more complex than the trade in creative goods. According to UNCTAD and the Extended Balance of Payments Services Classification (EBOPS), the creative services are classified into 6 groups: advertising, market research and architecture; audiovisual; cultural, recreational and heritage services; information; R&D; and software.

It is necessary to distinguish the creative economy with some related terms: cultural and creative industries, knowledge economy and digital economy. Although these terms are often used interchangeably in academic and policy discourse, each represents a distinct conceptual framework with different economic definitions and policy implications. According to Howkins, the creative economy is defined as exchanging economic goods or services that are created from creative ideas, cultural expressions and intellectual capital. The term covers a wide range of sector, while the cultural and creative industries are defined narrowly around fields related to cultural heritage, film, music, visual arts and publication (Howkins, 2001; UNCTAD, 2010; UNESCO, 2022). In contrast, Powell and Snellman defined the knowledge economy as "production and services based on knowledge-intensive activities that contribute to an accelerated pace of technical and scientific advance, as well as rapid obsolescence". Intellectual capabilities are the most important and the key component to clarify knowledge

economy, whereas in the creative economy, creativity would be the principal component (Powell and Snellman, 2004). The digital economy might be the term that is being clarified most clearly when the economic output is mostly digital goods and services, emphasizing the role of digital technologies. If there is overlap as the creative content becomes increasingly digitized, it does not mean that the digital economy is creative (Bukht and Heeks, 2018).

3.2 Determinants of the creative economy

Innovation is a crucial factor in the creative economy, since this economy operates based on creativity and innovation (Howkins, 2001; Li *et al.*, 2016). The Global Innovation Index (GII), published by the World Intellectual Property Organization (WIPO), is the index used to rank the innovation capabilities and results of world economies, measuring the creativity and innovation based on criteria that include institutions, human capital and research, infrastructure, credit, investment, linkages; the creation, absorption and diffusion of knowledge; and creative outputs. The GII plays a crucial role in determining the creative economy by evaluating the creativity and innovation performance of countries worldwide. Therefore, the following hypothesis is developed:

H1. The global innovation has a positive relationship with the value of exported creative goods and services.

OECD explained R&D as "creative work undertaken on a systemic basis to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications." Expenditure on R&D is a key indicator of government and private sector efforts to achieve competitive advantage in science and technology. The development of the creative economy heavily depends on the improvement of R&D; moreover, governments promote the advancements in R&D by investing in this field, which would medially foster the development of creative economy (UK Creative Industries Policy and Evidence Centre, 2021). According to Word Bank, R&D expenditure is "Gross domestic expenditures on R&D, expressed as a percentage of GDP. They include both capital and current expenditures in the four main sectors: business enterprise, government, higher education and private non-profit. R&D covers basic research, applied research and experimental development". Hence, we proposed the following hypothesis:

H2. There is a positive relationship between the value of exported creative goods and services and the percentage of R&D expenditure.

IP laws are important factors affecting the development of the creative economy (Svensson and Larsson, 2012; Li *et al.*, 2016; Frenette, 2017). The Intellectual Property Rights Index (IPRI) is a comprehensive measure that evaluates the strength and enforcement of IP rights across countries. Developed by the Property Rights Alliance, the IPRI integrates three core components: legal and political environment, physical property rights and IP rights. These components collectively reflect the quality of a country's governance, its property protection systems and its respect for IP. The IPRI is particularly relevant in the context of the creative economy, where strong IP protection is essential for incentivizing innovation, securing ownership of creative works and fostering competitiveness. Countries with more efficient IP law enforcement typically demonstrate a robust legal framework that ensures creators and businesses can capitalize on their intellectual assets without fear of theft or infringement (Svensson and Larsson, 2012). Countries with inefficient and insufficient IP law often face challenges such as weak enforcement mechanisms and inadequate legal safeguards, which can hinder creative outputs and deter foreign investment (Li *et al.*, 2016). This index provides a valuable lens for analyzing the institutional environment of creative industries, enabling a comparative understanding of how IP protection influences the development and global trade of creative goods and services. Thus, the following hypothesis is suggested:

H3. IPRI has a positive association with the value of exported creative goods and services.

Bold ideas are one of the important characteristics of the creative economy. These ideas only come from human intelligence; therefore, one of the important driving forces promoting the development of the creative economy is creative human resources. A strong education system encompassing art, design and technology is vital to developing the next generation of creative talent. This includes not only formal education but also vocational training, workshops and online courses aimed at equipping individuals with the skills needed in the creative industries (Comunian *et al*., 2015; UNEN, 2023). Highly educated workers are more likely to engage in creative industries, contributing to developing new ideas, products and services (Naylor and Florida, 2003; OECD, 2023). Countries with a higher percentage of educated workers tend to have more vibrant creative sectors, as these individuals can use their skills to drive economic growth through creativity and cultural production (OECD, 2023). This relationship can be represented by the number of workers with intermediate and advanced education, with the former referring to upper secondary or post-secondary non-tertiary levels. Therefore, we develop the following hypothesis:

H4. There is a positive association between the value of exported creative goods and services and labor force with intermediate and advanced education.

Countries with higher GDP per capita tend to spend at a higher level on creative products and invest more in creative fields (Pedroni and Sheppard, 2013). Countries with higher GDP per capita can create more incentives for their citizens, leading to greater advancements and innovations. According to UNCTAD's reports, countries with higher GDP per capita dominate the creative economy in the world (UNCTAD, 2022, 2024). Hence, the proposed hypothesis is as follows:

H5. There is a positive relationship between the value of exported creative goods and services and GDP per capita.

The Trade Openness Index measures the extent to which a country engages in international trade relative to its GDP, calculated as the sum of a country's exports and imports divided by its GDP (OECD, 2011). The Trade Openness Index is particularly relevant for analyzing the creative economy because it reflects how integrated a country is within the global market. Countries with high trade openness are often more exposed to international trends, ideas and cultural exchanges that can stimulate their creative sectors (UNCTAD, 2022). Understanding the relationship between trade openness and the creative economy helps identify how macroeconomic policies can be designed to support cultural industries by promoting international collaboration and market access (Siddiqui and Le, 2019). Therefore, the following hypothesis is preferred:

H6. Trade openness index positively influences the value of exported creative goods and services.

4. Data collection and analytical method
4.1 Data
4.1.1 Data source. We establish a panel dataset of 6 explanatory variables and a dependent variable for 50 countries in Asia and Europe with available data from 2010 to 2022. Supplementary Table A1 presents the variables' symbols, measurement units and data sources, and Supplementary Table A2 shows the list of countries in the dataset by region.

4.1.2 Data cleaning and data selection. We began by retaining 50 countries that had complete values for the selected variables. Before proceeding with the analysis, the dataset was thoroughly cleaned and prepared to ensure its accuracy and completeness. The data cleaning process involved the following steps: handling missing data and log transformation.

The dataset included missing values, which were addressed using linear interpolation. This method was selected because the missing data was assumed to be missing at random, given that they were scattered across time rather than concentrated in specific years or variables, and the dataset consisted of continuous variables. Linear interpolation filled the gaps by estimating the missing values based on the linear trend between adjacent time points. The variables in the model have significant deviation; The log transformation method is performed to stabilize the variance and reduce the impact of outliers.

4.2 Baseline model

This research will adopt a model developed from former studies by Martinaitytė and Kregždaitė (2015) and Li *et al.* (2016) about factors influencing the creative economy. To quantify the influence of macroeconomic factors on the creative economy of Asian countries and European countries from 2010 to 2022, we propose the following log-linear regression model:

$$\log creative\_exp = \beta_0 + \beta_1.\log labor\_inter\_adv + \beta_2.RD\_exp + \beta_3.\log GDPPC$$
$$+ \beta_4.\ln IPRI + \beta_5.\ln GII + \beta_6.\ln trade\_open + u_i, \tag{1}$$

where GII is Global Innovation Index; GDPPC represents Gross Domestic Product per capita; trade_open stands for Trade Openness Index; RD_exp represents research and development expenditure; IPRI denotes Intellectual Property Rights Index; labor_inter_adv stands for labor force with intermediate and advanced education; creative_exp denoted exported creative goods and services.

4.3 Dependent variable

This research uses the value of exported goods and services as an indicator for the creative economy in a nation. However, it is challenging to estimate the impact of different variables on the creative economy due to several reasons. Firstly, the creative economy consists of many sectors, some of which are hard to measure. Secondly, to achieve statistical significance, it requires access to extensive and diverse dataset, which can be difficult to obtain.

4.4 Control variables

The determinants of the creative economy can be classified into economic, institutional and creative factors. In this research, we consider variables from three major groups of possible determinants. First, R&D expenditure refers to the percentage of total research and development spending over GDP in a country. A higher level of R&D investment is expected to be positively associated with the value of exported creative goods and services. The Intellectual Property Rights Index (IPRI) captures the efficiency of IP law enforcement, and it is also hypothesized to have a positive relationship with creative exports.

Next, GDP per capita, calculated as the GDP divided by the midyear population, reflects a country's income level and is expected to correlate positively with creative exports. The trade openness index, measured by the ratio of total trade in goods and services to GDP, is anticipated to positively influence the export performance of creative goods and services. Finally, the labor force with intermediate and advanced education, representing the share of workers with higher educational attainment, is expected to support the development and export of creative products. The Global Innovation Index (GII), which ranks countries according to their innovation capacity and performance, is hypothesized to have a positive relationship with the value of exported creative goods and services.

4.5 Estimation method
For panel data, regression analysis can be conducted using three main techniques. The first approach is the pooled ordinary least squares (Pooled OLS) method. This method involves a conventional observation of data and has certain limitations when applied to panel data estimation, such as model misidentification and overly restrictive constraints on cross-sectional units.

The second approach is the FEM. This method is used to control for omitted variables that reflect differences between cross-sectional units but remain unchanged over time. It allows the use of data on variables over time to estimate the impact of independent variables on the dependent variable and is a fundamental technique in panel data regression analysis.

The third approach is the random effects model (REM). If there are omitted variables that remain constant but differ across cross-sectional units and variables that vary over time but are identical for all cross-sectional units, REM is typically used.

The first step involves selecting the most suitable model among OLS, FEM and REM. The Breusch and Pagan Lagrangian Multiplier (LM) test will be conducted to choose between REM and pooled OLS methods. The Hausman test will be applied to determine whether REM or FEM is more appropriate. Afterward, the authors will assess the model's suitability, perform regression using the selected method and address any encountered issues.

Next, following the approach suggested by Wooldridge (2010), this study employs the two-step D-GMM method developed by Arellano and Bover (1995) to address issues of autocorrelation and potential endogeneity. Specifically, lagged values are used as instruments for GDP per capita to mitigate its endogeneity problem.

5. Research result
5.1 Model selection
The LM test will be conducted to choose between REM and pooled OLS. The null hypothesis (H_0) in this test is H_0: $\delta_u^2 = 0$, meaning that if H_0 is true, there is no random effect and the pooled OLS model should be chosen. The test reveals that chibar2 (01) is 3140.26 and Prob > chibar2 is 0.000. Therefore, we reject H_0, pooled OLS should not be used since it ignores cross-sectional differences and the effect of time, making it unsuitable for panel data analysis. Using this model may lead to biased estimation results.

To choose between FEM and REM, the Hausman test is performed, where the null hypothesis (H_0) states that there is no correlation between u_i and the independent variables. If H_0 is not rejected, REM is preferred. Conversely, if H_0 is rejected, FEM should be used. The test reveals that Prob > χ^2 is 0.0000; therefore, we reject H_0, there is a correlation between u_i and the independent variables, and FEM is more optimal. This research uses the result of FEM as a baseline result. For the GMM technique, the results from the Arellano-Bond and Hansen tests indicate that the model is appropriately specified, suggesting that the GMM estimation provides reliable results in handling both autocorrelation and endogeneity concerns.

5.2 Summary statistics and correlation of main variables
Supplementary Table A3 presents the statistical description of the variables in the dataset, while Supplementary Table A4 shows their correlation matrix. The variance inflation factor (VIF) values reported in Supplementary Table A4 are relatively small. Therefore, the model shows no significant signs of multicollinearity among variables.

5.3 Baseline result
Supplementary Table A5 shows our sample's baseline results of estimating equations. To test for autocorrelation in the dataset, the Wooldridge test is conducted; the result reveals that Prob > F = 0.0051, and there is first-order auto-correlation. To test for heteroskedasticity, this research uses the Wald test for groupwise heteroskedasticity; the result reveals that

Prob $> \chi^2 = 0.0000$, and the model suffers from heteroskedasticity. To adjust for the violations, the robust option is added to FEM.

The coefficient for the variable representing labor with intermediate and advanced education is positive and statistically significant, suggesting that a higher proportion of skilled labor contributes to the creative exports. Skilled workers facilitate innovation and the competitive advantage of an economy. This finding is consistent with the hypothesis and earlier analysis, emphasizing the role of human capital in driving creative industries (Naylor and Florida, 2003; Potts and Cunningham, 2008).

R&D expenditure demonstrates a positive and statistically significant relationship with creative exports, underscoring the critical role of R&D in fostering innovation and enhancing the competitiveness of creative industries. This finding aligns with the theoretical hypothesis and highlights the importance of targeted investment in R&D to promote value-added creative exports. However, the magnitude of this effect suggests that R&D alone may not fully offset other structural or institutional barriers that creative industries face in global markets.

The positive and statistically significant coefficient for GDP per capita indicates that wealthier economies may export more creative goods and services. Economic prosperity enables investment in creative industries, which in turn boosts export capacity. This result is consistent with the theoretical hypothesis.

Both IP rights and innovation are statistically insignificant and differ from the hypotheses. While IP rights protection is theoretically important for creative industries, the lack of significance in this model suggests that its direct effect on creative exports is limited. This could be due to variations in how different creative industries rely on copyright, trademarks and patents. The insignificance of GII suggests that the national innovation level may not directly impact creative exports. While innovation is essential for high-tech industries, creative sectors rely on a mix of cultural, artistic and business model innovation, which is not always captured by traditional innovation index.

Trade openness has a significant positive relationship with creative exports, suggesting that increased exposure to international markets may provide more opportunities for countries to export creative goods and services. Open economies benefit from larger market access, cross-border collaboration and the exchange of cultural and creative products. This finding is consistent with the theoretical hypothesis.

5.4 GMM model

While the baseline estimation is conducted using FEM, concerns remain regarding potential endogeneity, particularly the possibility of reverse causality between GDP per capita and creative exports. For instance, higher income levels may stimulate creative activities, but at the same time, a thriving creative sector may contribute to economic growth. To account for this issue, we implement D-GMM.

The D-GMM approach addresses endogeneity by using lagged values of the endogenous regressors (in this case, GDP per capita and the lag of the dependent variable) as instruments. It also controls for unobserved heterogeneity and potential measurement errors. The model is estimated in two steps with robust standard errors to correct for heteroskedasticity.

The GMM model specification is as follows:

$$\log creative\_exp_{it} = \beta_0 + \alpha.\log creative\_exp_{i,t-1} + \beta_1.\log GDPPC_{it} + \beta_2.X_{it} + n_i + v_i, \quad (2)$$

where $\log creative\_exp_{it}$ denotes creative exports; $\log GDPPC_{it}$ stands for GDP per capita (suspected endogenous); X_{it} represents exogenous controls (R&D expenditure, skilled labor, GII, IPRI and trade openness); n_i is the country-specific effect; v_i is idiosyncratic error term.

To avoid the "too many instruments" problem, we used a limited lag structure [(2 4)]. Diagnostic tests validate the model specification: the Arellano-Bond test for AR(2) fails to reject the null of no second-order autocorrelation, and the Hansen test does not reject the

validity of the instruments. Supplementary Table A6 shows the result for the two-step D-GMM model.

The GMM estimation confirms the direction and significance of key variables observed in the FEM, except for the statistically insignificant result of trade openness. While the magnitude of GDP per capita's coefficient decreases under GMM, this supports the hypothesis of endogeneity and justifies the use of instrumental variables. The robustness of other predictors, such as R&D expenditure and labor quality, across both models further reinforces the validity of the baseline results.

5.5 Results for sub-samples

In this section, this research evaluates and compares the impacts of the macro-determinants on European and Asian countries. The creative economy in Asia and Europe has become a dynamic driver of economic growth and innovation. Asian countries, especially nations like China, Korea and Japan, have witnessed a significant development in the creative economy and outpaced all other regions (UNCTAD, 2024). In Europe, the creative economy has leveraged disruptive technology and cross-border collaboration to achieve global recognition and economic success and emerged as a global hub for creative talents (Clifton et al., 2015). The estimated results are obtained from FEM estimation.

Supplementary Table A7 shows the results for two subsamples categorized by region. In Asia, the coefficient of skilled labor is positive but statistically insignificant, indicating that the size of the advanced labor force does not significantly contribute to the export of creative goods and services, suggesting that the presence of a skilled labor force does not currently exert a strong direct influence on creative export performance in the region. This outcome may reflect structural differences, where creative industries in Asia rely more on labor-intensive production processes or traditional, culture-driven goods that do not require a highly educated workforce (Kong et al., 2006). Europe witnesses a strong and positive association between skilled labor and creative exports. This supports the idea that Europe's creative economy is human-capital intensive, benefiting from advanced educational institutions, mobility of talent and robust policy support for cultural industries. The result aligns with previous studies, stating a significant correlation between human capital and creative industry growth in the UK and EU (Caves, 2003; Bakhshi et al., 2013).

R&D expenditure does not have a significant effect in either region, suggesting that traditional R&D spending does not directly impact creative exports. This aligns with previous findings that creative industries are more influenced by cultural innovation, market trends and design capabilities rather than technological R&D investments (Bakhshi et al., 2013). Creative industries often rely on experimentation, artistic talent and digital transformation rather than traditional research structures found in tech or pharmaceutical industries (Potts and Cunningham, 2008).

GDP per capita has a positive and highly significant impact in both regions, indicating that wealthier economies tend to have higher creative exports. The effect is stronger in Europe, likely due to mature creative industries, strong market demand and well-established cultural brands. In Asia, while GDP per capita also significantly impacts creative exports, the smaller coefficient suggests that other factors might also play a key role.

While the coefficient for IPRI in Asia is positive and statistically significant, indicating a strong and direct contribution to the export of creative goods and services, the coefficient in Europe is negative, although still statistically significant. In Asia, the positive and substantial coefficient of IPRI suggests that improvements in IP protections are highly impactful for creative exports. Many Asian countries are still in the process of enhancing their IP systems, making these reforms transformative to promote innovation and enabling creative industries to flourish. The positive relationship also highlights the key role of strong IP protections in mitigating issues such as counterfeiting and piracy, which have previously hindered creative industries in the region. On the other hand, Europe is characterized by mature IP systems and

well-established creative industries. The negative relationship may indicate that overly stringent IP protections could, in some cases, hinder the fluidity and accessibility of creative goods and services by increasing the cost of production. This issue was previously suggested by Markus that, beyond a certain point, rigid IP systems can pose barriers to creativity and trade by creating monopolistic structures that limit innovation and market competition (Maskus, 2000).

Regarding innovation, the coefficient of GII is statistically insignificant in both regions. This finding aligns with the baseline model of 50 countries above. These insights are consistent with Throsby (2008), who distinguishes cultural creativity from scientific/technological innovation. Similarly, Bilton and Cummings (2014) emphasize that creative production is not always dependent on innovation infrastructure but may rely on community, heritage and artistic skills.

In Asia, the coefficient for trade openness is positive and statistically insignificant, suggesting that increased trade openness has no direct effect on the export performance of creative goods and services, which may be due to the higher reliance on domestic markets. In contrast, in Europe, the coefficient for trade openness is positive and statistically significant, indicating that creative industries benefit strongly from access to international markets, where openness not only expands demand but also facilitates knowledge exchange, innovation and competitiveness across borders (Shepherd, 2017).

6. Discussion

The findings underscore the necessity of tailored strategies to bolster the creative economy across different regions, with distinct policy implications for governments and actionable steps for stakeholders. The consistently strong positive effect of GDP per capita highlights the importance of sustained economic development and broader income growth as a foundation for creative exports. Policies that enhance infrastructure, digitalization and access to finance indirectly bolster creative sectors by expanding domestic demand and productive capacity.

In Asia, the positive and significant role of intellectual property protection suggests that improving IP law enforcement remains a priority. Governments should streamline patent and copyright registration processes and reinforce anti-counterfeiting measures to safeguard creative outputs and attract foreign investment. In contrast, variables such as R&D expenditure, human capital and trade openness were not statistically significant in this region, implying that policy support should not rely solely on innovation subsidies or liberalization but rather on institutional quality and legal certainty.

In Europe, the significance of skilled labor and trade openness points to different policy priorities. Investments in vocational education, creative industry training programs and mobility schemes can ensure a steady pipeline of creative talent. At the same time, trade policies should emphasize market access and international collaborations, as openness demonstrably facilitates export competitiveness in the European context.

For stakeholders and industry players, the results highlight the importance of tailoring strategies to regional strengths. Asian firms should leverage stronger IP frameworks to build brand value, ensuring that creative products are perceived as premium and trustworthy in international markets. European firms, by contrast, can maximize the benefits of trade openness by scaling up cross-border partnerships and expanding into new export destinations. Across both regions, businesses must continue to capitalize on rising GDP per capita by diversifying offerings to meet increasingly sophisticated consumer demand.

Finally, while R&D expenditure and GII were not significant in the sub-sample analyses, they remain relevant for long-term competitiveness. Firms and governments should therefore treat innovation not as an immediate driver of export performance but as a medium-to-long-term investment that complements institutional and trade-related reforms.

7. Conclusion

The examination of macroeconomic factors in Asian and European countries from 2010 to 2022 shows that the creative economy is shaped by multiple drivers, with clear disparities across regions due to differences in economic structures, innovation systems and market dynamics. Overall, the findings underline the impact of macroeconomic factors on the creative economy. While some variables show strong connections to the creative economy's growth, others exhibit limited or even negative associations, suggesting the multifaceted and complex nature of this sector.

Despite valuable insights, the study has limitations. Data are drawn from diverse sources with varying measurement standards, which may affect consistency and interpretation. Future work should address this by improving data harmonization. In addition, the scope of variables is restricted. While the selected macroeconomic factors provide useful perspectives, omitted dimensions such as digital infrastructure, cultural policies, or sector-specific innovation may bias results. Future research should expand the scope to capture a more comprehensive picture.

In conclusion, this study provides a detailed analysis of the macroeconomic factors influencing the creative economy in Asian and European countries from 2010 to 2022, comparing the differences in developing creative economies between these two continents. The findings contain valuable insights for policymakers, businesses and stakeholders who are seeking to understand and promote the creative industries and enhance economic growth. However, despite our efforts, the paper still has certain limitations due to both subjective and objective factors.

Supplementary material

The supplementary material for this article can be found online.

References

Bakhshi, H., Freeman, A. and Higgs, P. (2013), "A dynamic mapping of the UK's creative industries", Nesta Report, London.

Bilton, C. and Cummings, S. (2014), *Handbook of Management and Creativity*, Edward Elgar, Cheltenham and Northampton.

Boccella, N. and Salerno, I. (2016), "Creative economy, cultural industries and local development", *Procedia - Social and Behavioral Sciences*, Vol. 223, pp. 291-296, doi: 10.1016/j.sbspro.2016.05.370.

Buitrago Restrepo, P.F. and Duque Márquez, I. (2013), *The Orange Economy: an Infinite Opportunity*, Inter-American Development Bank, Washington, DC, doi: 10.18235/0012837.

Bukht, R. and Heeks, R. (2018), "Defining, conceptualising and measuring the digital economy", *International Organisations Research Journal*, Vol. 13 No. 2, pp. 143-172, doi: 10.17323/1996-7845-2018-02-07.

Caves, R.E. (2003), "Contracts between art and commerce", *The Journal of Economic Perspectives*, Vol. 17 No. 2, pp. 73-84, doi: 10.1257/089533003765888430.

Clifton, N., Comunian, R. and Chapain, C. (2015), "Creative regions in Europe: challenges and opportunities for policy", *European Planning Studies*, Vol. 23 No. 12, pp. 2331-2335, doi: 10.1080/09654313.2015.1104815.

Comunian, R., Gilmore, A. and Jacobi, S. (2015), "Higher education and the creative economy: creative graduates, knowledge transfer and regional impact debates", *Geography Compass*, Vol. 9 No. 7, pp. 371-383, doi: 10.1111/gec3.12220.

Daubaraitė, U. and Startienė, G. (2015), "Creative industries impact on national economy in regard to sub-sectors", *Procedia - Social and Behavioral Sciences*, Vol. 213, pp. 129-134, doi: 10.1016/j.sbspro.2015.11.415.

Department of Culture, Media and Sport (1998), *Creative Industries Mapping Document 1998*, DCMS, London.

Fitzsimmons, J.A., Kouvelis, P. and Mallick, D.N. (1991), "Design strategy and its interface with manufacturing and marketing: a conceptual framework", *Journal of Operations Management*, Vol. 10 No. 3, pp. 398-415, doi: 10.1016/0272-6963(91)90076-A.

Frenette, A. (2017), "The rise of creative placemaking: cross-sector collaboration as cultural policy in the United States", *The Journal of Arts Management, Law, and Society*, Vol. 47 No. 5, pp. 333-345, doi: 10.1080/10632921.2017.1391727.

Howkins, J. (2001), *The Creative Economy: How People Make Money from Ideas*, Allen Lane, London.

Julie's Bicycle, BOP Consulting and NESTA (2022), *Creative Industries and the Climate Emergency: The Path to Net Zero*, NESTA, London.

Kong, L., Gibson, C., Khoo, L.M. and Semple, A.L. (2006), "Knowledges of the creative economy: towards a relational geography of diffusion and adaptation in Asia", *Asia Pacific Viewpoint*, Vol. 47 No. 2, pp. 173-194, doi: 10.1111/j.1467-8373.2006.00313.x.

Li, X., Yang, Z. and Hou, B. (2016), "Analysis of internal and external factors affecting the development of cross-strait cultural and creative industries", *Proceedings of the 6th International Conference on Social Network, Communication and Education (SNCE 2016)*, Atlantis Press, Xi'an, China, doi: 10.2991/snce-16.2016.31.

Martinaitytė, E. and Kregždaitė, R. (2015), "The factors of creative industries development in nowadays stage", *Economics and Sociology*, Vol. 8 No. 1, pp. 55-70, doi: 10.14254/2071-789X.2015/8-1/5.

Maskus, K.E. (2000), *Intellectual Property Rights in the Global Economy*, Institute for International Economics, Washington, DC.

Naylor, T.D. and Florida, R. (2003), "The rise of the creative class: and how it's transforming work, leisure, community and everyday life", *Canadian Public Policy/Analisis Politico*, Vol. 29 No. 3, p. 378, doi: 10.2307/3552294.

OECD (2011), *OECD Science, Technology and Industry Scoreboard 2011*, OECD Publishing, Paris, doi: 10.1787/sti_scoreboard-2011-en.

OECD (2023), *Education at a Glance 2023: OECD Indicators*, OECD Publishing, Paris, doi: 10.1787/e13bef63-en.

Ouyang, X., Liu, Z. and Gui, C. (2021), "Creativity in the hospitality and tourism industry: a meta-analysis", *International Journal of Contemporary Hospitality Management*, Vol. 33 No. 10, pp. 3685-3704, doi: 10.1108/IJCHM-03-2021-0411.

Pedroni, P. and Sheppard, S. (2013), "Culture shocks and consequences: the causal link between the arts and economic growth", *National Endowment for the Arts Research Report*, available at: https://www.arts.gov/sites/default/files/Research-Art-Works-Williams1.pdf

Potts, J. and Cunningham, S. (2008), "Four models of the creative industries", *International Journal of Cultural Policy*, Vol. 14 No. 3, pp. 233-247, doi: 10.1080/10286630802281780.

Powell, W.W. and Snellman, K. (2004), "The knowledge economy", *Annual Review of Sociology*, Vol. 30 No. 1, pp. 199-220, doi: 10.1146/annurev.soc.29.010202.100037.

Scott, A.J. and Storper, M. (2005), *Pathways to Industrialization and Regional Development*, Routledge, London, doi: 10.4324/9780203995549.

Shepherd, B. (2017), "Openness and innovation: firm-level evidence from India", *South Asia Economic Journal*, Vol. 18 No. 1, pp. 64-75, doi: 10.1177/1391561416689748.

Siddiqui, A.A. and Le, P.D. (2019), "Impact of trade facilitation on trade performance in case of Vietnam, Kenya and Germany", *Journal of International Economics and Management*, Vol. 118, pp. 64-74, available at: https://jiem.ftu.edu.vn/index.php/jiem/article/view/205

Svensson, M. and Larsson, S. (2012), "Intellectual property law compliance in Europe: illegal file sharing and the role of social norms", *New Media and Society*, Vol. 14 No. 7, pp. 1147-1163, doi: 10.1177/1461444812439553.

Syafri, M., Shobirin, M.S., Ekowati, D. and Maghfirah, N. (2023), "The impact of creative industries on economic growth: case studies in developing countries in Malaysia and Indonesia", *West Science Journal Economic and Entrepreneurship*, Vol. 1 No. 10, pp. 271-278, doi: 10.58812/wsjee.v1i10.295.

Throsby, D. (2008), "The concentric circles model of the cultural industries", *Cultural Trends*, Vol. 17 No. 3, pp. 147-164, doi: 10.1080/09548960802361951.

UK Creative Industries Policy and Evidence Centre (2021), "Investment into R&D will be vital for the recovery of creative and cultural organisations", available at: https://pec.ac.uk/blog_entries/investment-into-r-d-will-be-vital-for-the-recovery-of-creative-and-cultural-organisations-from-covid-19/

UNCTAD (2010), *Creative Economy Report 2010*, United Nations, Geneva, available at: https://unctad.org/system/files/official-document/ditctab20103_en.pdf

UNCTAD (2022), *Creative Economy Outlook 2022*, United Nations, Geneva.

UNCTAD (2024), *Creative Economy Outlook 2024*, United Nations, Geneva, available at: https://unctad.org/system/files/official-document/ditctsce2024d2_en.pdf

UNEN (2023), *New Economics for Sustainable Development: Creative Economy, United Nations Economist Network*, United Nations Economist Network, New York, available at: https://www.un.org/sites/un2.un.org/files/orange_economy_14_march.pdf

UNESCO (2022), *Reshaping Policies for Creativity: Addressing Culture as a Global Public Good*, UNESCO Publishing, Paris, doi: 10.58337/oiln3726.

United Nations General Assembly (2019), *International Year of Creative Economy for Sustainable Development, 2021*, A/C.2/74/L.16/Rev.1, United Nations, New York.

Veselá, D. and Klimová, K. (2014), "Knowledge-based economy vs. creative economy", *Procedia - Social and Behavioral Sciences*, Vol. 141, pp. 413-417, doi: 10.1016/j.sbspro.2014.05.072.

Yusuf, S. and Nabeshima, K. (2005), "Creative industries in East Asia", *Cities*, Vol. 22 No. 2, pp. 109-122, doi: 10.1016/j.cities.2005.01.001.

Zheng, J. and Chan, R. (2014), "The impact of 'creative industry clusters' on cultural and creative industry development in Shanghai", *City, Culture and Society*, Vol. 5 No. 1, pp. 9-22, doi: 10.1016/j.ccs.2013.08.001.

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