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The Impact of Creative Industries on Employment Rate: Using the Generalized Method of Moments (GMM)

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Abstract

In recent years, the increasing significance of creative industries has made them a topic of discussion in global economics. This has profound ramifications for the economic structures and employment of societies as the creative industries swiftly emerge as potent engines of economic growth and development. Creative industries utilize the creativity, innovation, skills, and aptitude of individuals to generate employment and have a high expansion potential. Using GMM the current study investigates the impact of creative industries on employment in 98 selected countries from 2011 to 2020. The results of this study indicate a positive and statistically significant effect of "creative industries" on employment in our three different models. The coefficient of creative industries in developed countries (0.3539) is greater than its value in developing countries (0.2992), as indicated by the results obtained. Consequently, it is anticipated that the influence of artistic, cultural, and creative productions on employment in these nations will be greater than in developing nations. Also, the results has demonstrated that inflation has an adverse effect on employment, while human capital, gross domestic product, investment, and the level of economic openness all have a positive influence on employment.

Keywords: Creative Industries, Art, Cultural Industries, Employment, Sustainable Development, Generalized Method of Moments (GMM).
JEL Classification: Z1, E24, C33.

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1. Introduction

Employment is a key issue in economic discussions and plays a fundamental role in how countries achieve growth and development, as human capital is the direct driver of the economy and the creator of wealth in societies, and the amount of production in each country depends on the knowledge and technical awareness of its active population as well as its production capacities (Beier et al., 2022). Today, modern societies are characterized as creative societies, whose propelling force is the creative industries. The creative industries function as a driving force for economic growth and development and have great potential for job creation (Snowball & Mapuma, 2021). In many nations, the discussion surrounding creative industries, particularly in terms of their concepts and classification, has intensified substantially over the past few decades. There is a broad consensus among international researchers that creative industries increasingly contribute to the expansion of world trade and the global economy, particularly in developed nations. According to the Global Database of the United Nations Conference on Trade and Development (UNCTAD), over the past two decades, creative industries have garnered the attention of an increasing number of scientists as one of the fundamental characteristics of post-industrial economies and key drivers of economic growth and development in countries. The creative industries have become crucial to the modern economy. This growing impact on economic performance has prompted governments and policymakers to make substantial investments in creative industries in an effort to revitalize their respective economies. Creative industries are productive economic sectors that emphasize the production of knowledge and novel ideas (UNCTAD, 2018). The formation of creative industries has resulted in a significant shift in economic activities and the formation of diverse employment in the economy based on innovation and creativity (White et al., 2014; Daubaraitė & Startienė, 2015).

Economy based on knowledge and innovation, high turnover growth, job creation, resistance to economic crisis, and the ability to profit from individual creativity have transformed creative industries into an opportunity for private and public investment and a subject of research and development (Flew, 2002). Carvalho & Cruz (2017) found that creative industries increase economic growth,

employment rates, social inclusion, and economic vitality. Recent reports from the United Nations Conference on Trade and Development and the United Nations Educational, Scientific, and Cultural Organization confirm that creative industries are an effective concept for inclusive development (Bilan et al., 2019). The guidelines for developing research and innovation strategies for smart specialization (RIS3) in the European Union assert that creative industries have a high potential for fostering and expanding creativity and innovation in the region, as well as the capacity to foster economic growth and development. The contribution of cultural and creative industries to the global economy and employment continues to rise, based on statistical evidence. Culture and arts professionals can gain insight into the nature of employment and livelihoods by analyzing labor market data (UNCTAD, 2018).

According to Scott (2006), creative industries accelerate development and innovation and result in the formation of a new economic sector that has spillover effects on the economy. Creativity levels that surpass those of labor, capital, and even traditional technologies are profoundly ingrained in the cultural fabric of every nation, so it is not the exclusive domain of wealthy nations. With the effective cultivation of these inventive resources, countries, particularly developing nations, can increase their share of global trade and enter new fields of wealth creation. Despite a growing interest among researchers over the past two decades, creative industries-related research is still in its infancy. Due to the significance of this issue in the economy and the lack of appropriate data in this field, quantitative and experimental research has been conducted in this area to evaluate the impact of creative industries on the employment of countries. The majority of studies in this field are theoretical, and the econometric model has been used to analyze the creative industries' impact on employment less frequently than other methods. In recent years, the publication of pertinent indicators in this field has made quantitative research and in-depth investigation more feasible. The statistical record demonstrates that the creative and cultural sectors contribute substantially to the global economy. Cultural activities contribute 3.1% to the GDP. Furthermore, cultural and creative sectors contribute to approximately 50 million positions globally, or 6.2% of the total workforce

(Outlook, 2022). The present study is guided by the research hypothesis that creative industries have a positive impact on the employment rates of nations. The purpose of this study is to investigate the impact of creative industries on employment in selected developed and developing nations, using the new index of "creative industries" which includes traditional cultural industries such as publishing, media, television, film, performing arts, handicrafts, and cultural industries, and contemporary and innovative services such as advertising, architecture, design and photography. The primary contribution of this study is an empirical quantitative analysis employing dynamic panel data regression to investigate the role of creative industry in national employment.

The remainder of this paper is organized as follows. Section 2 discusses the concept of the creative industry and the mechanism by which it effects employment, as well as a brief summary of comparative studies to date. In Section 3, the research models and data are provided. Utilizing dynamic panel data regression, Section 4 analyzes the estimated effect of the creative industry on employment. Finally, Section 5 closes the paper with a summary of the results and a conclusion.

2. Literature Review

Work and employment are among the aspects of a person's existence that are regarded as values and are the most important. Adam Smith considers work to be the primary source of wealth production. "Work is a means of wealth production and the basic source for man, which provides all the necessities for the individual and which they consume," Smith writes in *The Wealth of Nations* (1869). As stated by Smith, the expansion of the industrial revolution is due to the existence of competitive economic conditions. According to the classics, the labor market is a competitive market and the equilibrium in the classical economy is always full employment, unemployment is a short-term natural phenomenon, and involuntary unemployment results from the disparity between price and wage levels. The occurrence of large recessions and widespread unemployment, which could not be termed natural unemployment, called into question the validity of classical

theories and prompted numerous criticisms of the classical school; this marked the start of a new economic theory (Melberg, 1992). Keynes believed that there is always involuntary unemployment on the labor market and that full employment equilibrium does not occur automatically on the labor market due to workers' monetary delusion and inflexible monetary wages. Keynes, in contrast to the classics, considers labor supply to be a direct function of monetary wages and government intervention in economic affairs to be the only factor in achieving full employment (Keynes, 1936).

The capitalist system has failed to provide motivated workers with employment. Unlike Keynes, neoclassical view government intervention in the economy as a source of disruption and emphasize the full employment equilibrium's automatic mechanism. According to neoclassical, there is no involuntary unemployment in the economy, but frictional unemployment in relation to the transition of labor force is acceptable. Neoclassical argue that there is no room for involuntary unemployment, and the complete working population is typically comprised of individuals of working age. In Lewis' two-sector model, a third world country is comprised of two traditional and modern sectors. This model explains the development of developing countries as the transfer of labor from the traditional sector to the industrial and capitalist sector (Lewis, 1954). Todaro (1989) defines the two primary components of the Lewis model, namely the distinction between urban and rural sectors and the transfer of labor between these two sectors. There are three types of unemployment: frictional unemployment, which is the result of natural changes in the labor market; structural unemployment, which occurs when technological advances render the skills of the labor force obsolete; and cyclical unemployment, which peaks during economic downturns and is caused by a reduction in aggregate spending. A rise in the labor supply results in a rise in employment. According to classical economics, the combination of a greater supply of labor and a demand for lower-than-average wages results in an increase in labor demand (Beaudry & Collard, 2002).

Adorno & Horkheimer (1997) proposed cultural industries. Bernard Miège (1979) was the first to classify cultural industries according to their exchange

value. Later, post-industrial nations such as the United Kingdom revised the definition of cultural industries to become creative industries. The first creative industries plan document was signed by the British government in 1998. The origin of the term creative industries can be traced to the Creative Nation report, published in Australia in 1994 (O'Connor, 2007). The Department for Culture, Media, and Sport (DCMS) of the United Kingdom discovered a sector that was not only expanding in terms of exports and job creation, but also positively impacted the innovation capacity of other sectors. Numerous definitions of creative industries have been proposed thus far, most frequently by the United Kingdom's Department for Culture, Media, and Sport (DCMS), the United Nations Conference on Trade and Development (UNCTAD), and EU authorities. The DCMS defines creative industries as those that derive from creativity, skill, and talent and generate employment through the creation of intellectual property. Creative industries are indicators of the development of cultural industries, and through the use of new technologies, creativity and innovation cause structural changes in the economy (Boix & Rausell, 2018).

UNCTAD defines creative industries as a cycle of creation, production, and distribution in which creativity and intellectual capital are the primary inputs. Therefore, it can be stated that creative industries consist of a collection of knowledge-based activities that are not limited to art and have the capacity to generate income through business and intellectual property use. These industries produce tangible and intangible intellectual and artistic products with creative content, monetary value, and market objectives. Creative industries are situated at the intersection of artistic activities and industrial and service sectors, and they constitute a new dynamic sector of international trade. In the following instances, UNCTAD summarizes the most significant characteristics of creative industries: Their production necessitates human creativity, the message they convey to consumers is symbolic, and they are viewed as intellectual property by manufacturers and service providers (UNCTAD, 2018). UNCTAD distinguishes five conceptual definition models: DCMS, which is based on individual creativity and illustrates the relationship between technology and innovation in creative industries as opposed to traditional cultural industries; the symbolic texts model

which distinguishes between cultural and creative industries and concentrates on the dissemination and transmission processes of creativity; the concentric circles model which implies that the creative capacity of each industry is distinct, creative ideas are in the center, which is the main focus of creative industries, and creativity decreases as we move away from the concentric circles model that are the main focus of related industries; the copyright model which makes a distinction between intellectual property in main and minor industries; the UNCTAD model that attempts to classify creative industries into categories and subsectors as well as differentiate between cultural heritage, art, media, and applied creativity. However, the aforementioned models are structurally distinct and have limited geographic adoption. UNCTAD provided a standard definition and classification system that includes traditional cultural industries such as publishing, media, television, film, performing arts, and handicrafts, as well as modern and creative cultural and service industries such as advertising, architecture, design, and photography, in order to rectify this discrepancy. Such a classification favors innovation in an economy that has been primarily dominated by the private sector and is associated with knowledge-intensive activities.

Some researchers contend that creative industries and cultural industries are inseparable because creative industries are historically and conceptually rooted in cultural industries (Flew, 2002). These two concepts are related, but the primary distinction between them is that creative industries seek profit through the use of creativity, whereas cultural industries seek to reduce social exclusion, define national identity, or preserve cultural heritage, and target other non-economic goals, but now are viewed as an integral part of the concept of creative industries. The creative industries create new jobs, contribute to the gross domestic product, increase turnover, and promote exports (Daubaraitė & Startienė, 2015). Creative industries are the forward-thinking sector of any developed economy, with the capacity to generate employment and boost economic growth and development. In addition, since creativity and employment are available as strategic assets in any nation, creative industries are gaining importance in the global economy, thereby generating a competitive advantage on the international level. According to the British Council, the creative and cultural industries at the intersection of culture,

art, commerce, and technology are at the core of the creative economy (Chapain & Stryjakiewicz, 2017).

The creative economy consists of businesses that prioritize continuous learning, creativity, and innovation. Creative economy can be understood as the intersection of culture and creativity, as well as the endeavor to identify creative elements within the economic system. Since intellectual property is nearly an integral part of these industries, the creative economy and the national economy can be considered synonymous. It is the creative industries that define the creative economy and have a significant impact on economic and social development, despite the fact that their classification and definition may vary on a national scale and over time (Thomassen, 2007). In recent decades, numerous nations around the world have focused on the expanding impact of creative industries on the economy, highlighting the connection between culture, creative industries, and economic growth. Florida (2002) introduced creative industries as a catalyst for national economic growth, and in the years that followed, numerous authors identified creative industries as a powerful economic driver. One method for balancing the supply and demand of labor is to encourage entrepreneurship and self-employment. Significant numbers of self-employed individuals rely heavily on creative industries. Creative industries are the subject of increasing theoretical research and development, as countries place a greater emphasis on creative production based on knowledge and creativity (Potts & Cunningham, 2008; White et al., 2014). Employment structure and economic conditions can influence where creative industries are located. Entrepreneurial climate and favorable culture encourage individuals to seek out new opportunities to launch new businesses; therefore, creative entrepreneurs are likely to be found in regions characterized by creativity and innovation (Lee et al., 2004). Some researchers argue that creative industries as a strategic asset in economic interactions can boost employment (Stam et al., 2008) and entrepreneurship (Boschma & Fritsch, 2009). The creative industries have a significant impact on productivity, employment, and economic innovation. This positive external effect is a result of the relatively high proportion of human capital in creative industries, which influences the performance of economic innovation and contributes to the expansion of the labor

force. In other words, the production of a country requires specialized human resources in addition to capital and technology, that is, these positive multiplier effects in creative industries are attributed to creative workers and the so-called creative class (Innocenti & Lazzeretti, 2019). Florida (2002) introduces the concept of the creative class, which distinguishes between those who are highly creative and those who work in creative occupations by measuring the number of people in creative occupations. According to him, the creative class is comprised of educated individuals who work in creative industries and contribute to the economic, social, and cultural vitality of urban areas. However, the primary benefit of the creative class is its ability to attract creative employees who work in industries other than the creative industries. Higgs & Cunningham (2007) were the first to model the 'creativity trident' for Australia. They differentiate between creative individuals working in creative industries, non-creative employees working in creative industries, and creative individuals working in other industries. Figure 1 depicts employment data for the creative industries as a two-by-two matrix, with industries on one axis and employment on the other.

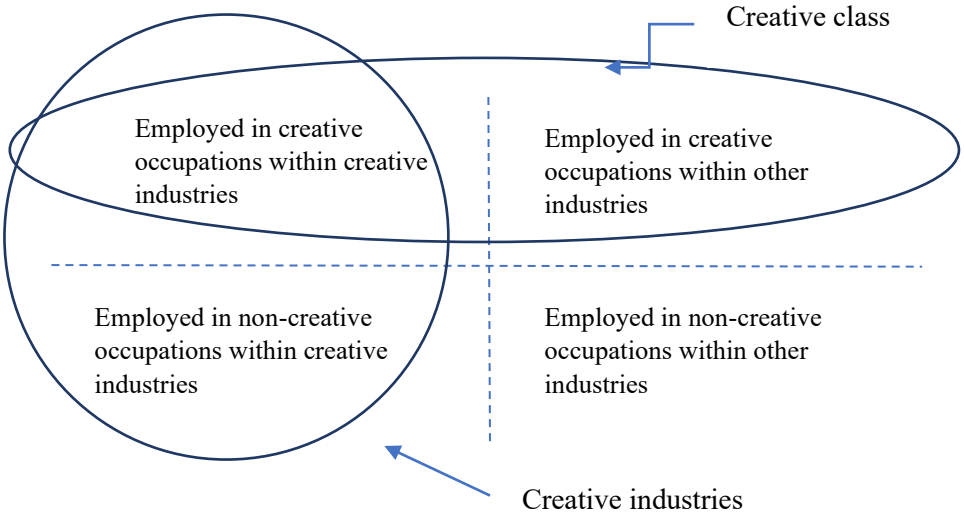

Fig. 1: The creative trident (Source: Higgs & Cunningham, 2007).

Innovative industries are strongly influenced by creative industries with a wealth of foreign knowledge. In the form of intellectual property, they provide a variety of creative products and services that stimulate innovation in other industries and provide new educational approaches that fully exploit the creative

potential of the workforce. Creative work is one of the earliest forms of tangible and intangible activities that disclose people's abilities and promote human growth. The 2015 Human Development Report indicates that creative work is characterized by originality, innovation, and humanity. It allows people to earn a livelihood, gives them the opportunity to participate, provides them with security, and boosts their self-esteem. Participation in creative work is abridged in two ways: by expanding human options as a result of expanding their capabilities, and by expanding their opportunities. The instrumental component relates to direct and indirect economic benefits, while the non-instrumental component expands social aspects. These participations are not fixed and interact with one another, whereas the latter play an indirect role by assisting in the selection of individuals who contribute to creative work. This section begins with a discussion of instrumental benefits (see Figure 2) (Kabanda, 2015).

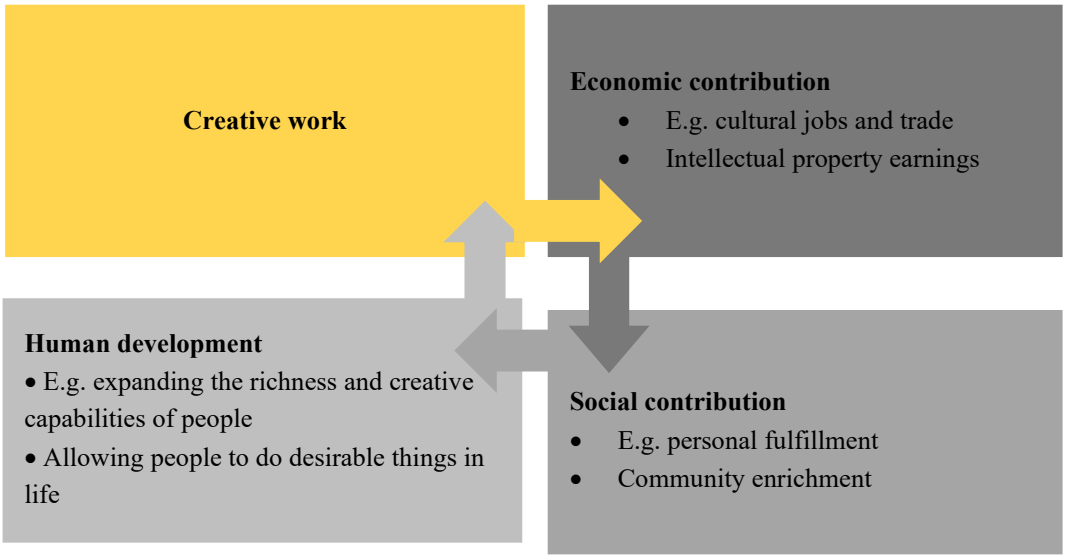

Fig. 2. Economic and social aspects interact in a dynamic manner (Source: Kabanda, 2015).

Creative work, workforce training, entrepreneurship, creation of desirable infrastructure, type of culture, government policies, technological innovation, and national classification of creative industries are among the determinants of employment growth in creative industries, and these conditions can lead to substantial differences between nations. Creative industries in developing nations typically differ from those in developed nations in that they rely primarily on

handicrafts and are frequently unrelated to intellectual property and innovation. In general, developing countries are still in the industrialization stage, although the function of the service sector is frequently expanding. Additionally, the institutional settings and entrepreneurial environment in such nations are markedly different; for in such nations, entrepreneurship is frequently viewed as a necessity rather than an opportunity (White et al., 2014).

Potts & Cunningham (2008) examined the economic impact of creative industries in terms of direct production participation, employment, productivity, innovation, and entrepreneurship. Four models of welfare, competition, growth, and innovation were proposed. In the welfare model, creative industries are afflicted by Baumol's disease, and even when creative industries are subsidized, their productivity development is lower than that of other economic sectors. In the competitive model, creative industries are viewed as an industry similar to other industries, and their impact on technological change, innovation, and productivity is comparable to that of other activities. In the growth model, creative industries are the growth and development drivers, and their effect on the economy is a result of the demand and supply effects. When production or income growth leads to an increase in demand for creative services, which in turn alters production or income and multiplies the bottom-line effects, this is an example of demand-side effects. Supply-side effects are characterized by five fundamental mechanisms: Effectiveness as a result of increased investment and institutional changes, value chain linkages, technical productivity improvements, knowledge spillovers into other sectors, and creating welfare value through which creative industries function as growth drivers. In the innovation model, creative industries are viewed as part of the process of economic evolution Marco-Serrano et al. (2014) introduce a circular causal framework and believe that an increase in GDP per capita increases the share of high-income and educated people and the expenditure on creative goods and services, which results in an increase in demand for creative goods and services and a rise in the proportion of workers in different industries and has two effects: Increasing innovation and boosting the productivity of the entire economy, presuming that creative industries are more

productive than the average economy. The cycle continues as increased innovation and productivity lead to a higher GDP per capita.

2-1. Empirical Studies

Since Max Horkheimer & Theodor W. Adorno examined the concept of cultural industries in the context of the threats posed by the industrialization of culture, interest in this topic has increased exponentially (Adorno & Horkheimer, 1997). Moreover, sociologists of the French school, such as Bernard Miège, contributed significantly to the development of the concept of cultural industries in the second half of the 20th century. He was the first individual to classify cultural industries based on their exchange value in 1979 (Miège & Garnham, 1979). Later, post-industrial nations such as the United Kingdom revised the definition of cultural industries to become creative industries. The term creative industries originated in Australia, and its origins can be traced to the Creative Nation report, which was published in Australia in 1994; its use was then extended to Britain, and the British government ratified the first creative industries plan document in 1998. Then research continued in this field. The following works can be categorized into four major groups: the first group consists of studies on the history and characteristics of creative industries (Garnham, 2005; Higgs & Cunningham, 2007; Potts & Cunningham, 2008; Miller, 2009; Rozentale & Lavanga, 2014; Hesmondhalgh, 2018; Herlina & Harianto, 2021). The second group consists of studies that examine the role of creative industries in urban and regional development (Florida, 2002; Scott, 2006; Ford, 2009; Bontje & Musterd, 2009; Flew, 2010; Florida, 2014; He & Gebhardt, 2014; Oyekunle, 2017). The third group consists of studies that emphasized the issue of creativity as a component of the economic growth and development system within the framework of the concept of creative industries (Howkins, 2001; Florida, 2002; Flew, 2002; Oakley, 2004; Boccella & Salerno, 2016; Zachorowska-Mazurkiewicz & Sierotowicz, 2017; Abisuga & Sirayi, 2018; Bilan et al., 2019; Zobeiri et al., 2022). The fourth group includes studies focusing on the impact of creative industries on other social and economic factors (Stam et al., 2008; Chapain et al., 2010; Lazzeretti et

al., 2017; Innocenti & Lazzeretti, 2019; Campi et al., 2023). Despite extensive research, the study of creative industries is still in its infancy, and ongoing research is being conducted in this field.

Stam et al. (2008) investigated the positive influence of creative industries on employment growth in the Netherlands and demonstrated that this effect disappears when Amsterdam is eliminated from their study sample. Based on the positive economic relationship between creative industries and the economy, Potts & Cunningham (2008) placed creative industries in two growth and innovation models. The authors argue that the expansion of creative industries aids in the struggle against unemployment. The interaction between workers in creative industries and workers in other industries, according to Chapain et al. (2010), facilitates the exchange of ideas and the diffusion of knowledge and innovation in the region. In their study, Daubaraitė & Startienė (2015) demonstrated that gross domestic product, foreign trade (exports), social participation, social and cultural development, improving quality of life, and combating unemployment are among the most significant areas in which creative industries influence the national economy. Boccella & Salerno (2016) contend that creative and cultural industries can be viewed as growth and development drivers. As stated by Boix & Soler (2017), creative industries accounted for 7.8% of total production (GDP) and 7.9% of total employment in 24 European Union countries. They believe that a significant portion of productivity should be allocated to inventive activities in order to increase productivity. Lazzeretti et al. (2017) investigated the impact of creative industries on employment development in Italy and concluded that the impact of creative industries on the economy is contingent on the interaction between creative industries and non-creative activities. By analyzing the function of creative industries in the economy, Abisuga Oyekunle & Sirayi (2018) demonstrated that creative industries have a positive impact on economic development and sustainable economy of a country. Boix & Rausell (2018) investigated the direct and indirect effects of creative industries in the EU and demonstrated that creative industries not only have a direct impact on employment, but also contribute to technological advancement and long-term growth in the EU. Bilan et al. (2019) used the experiences of European nations to

examine creative industries as a factor in economic growth and development, demonstrating that creative industries have a positive impact on GDP and employment levels. Zhou et al. (2020) examined the impact of cultural industries in China and demonstrated that they affect economic growth and employment. Using the generalized method of moments (GMM), Zobeiri et al. (2022) examined the impact of creative industries on the GDP of 98 developed and developing countries and concluded that creative industries have a positive significant impact on GDP. In a study of micro and informal creative industries in South Africa, Snowball & Mapuma (2021) found that micro enterprises operating in the formal sector create more jobs. Using regional evidence from Colombia, Campi et al. (2023) showed that, contrary to the analysis of high-income countries from creative industries, these industries have no significant effect on the employment growth of other industries.

3. Model and Data

The following methodology is specified, based on the research of Zhou et al. (2020), in order to estimate the impact of creative industries on employment in this study:

$$EMP_{it} = \alpha_i + \theta EMP_{it-1} + \beta_1 CI_{it} + \beta_2 HC_{it} + \beta_3 GDP_{it} + \beta_4 CP_{it} + \beta_5 TR_{it} + \beta_6 INF_{it} + \varepsilon_{it}$$

Where EMP_{it} represents employment (the percentage ratio of employed to the population over the age of 15), CI_{it} represents the creative industry index, HC_{it} denotes the human capital index (primary school enrollment rate), GDP_{it} represents the gross domestic product (at constant 2015 prices), and CP_{it} represents investment (the ratio of investment to GDP), TR_{it} represents the degree of economic openness (sum of exports and imports to GDP), and INF_{it} denotes the inflation rate.

The creative industries index ranges from 0 to 100. This index incorporates both creative goods (handicrafts, audio-visual, design, digital production, media, performing arts, publications, visual arts) and creative services (advertising, research services, architectural services, engineering and other technical services, personal services, cultural and entertainment, audio-visual and related services).

This index was compiled using data from the TCdata360 international bank database[1]. Between 2011 and 2020, a total of 98 developing and developed countries were examined. The information utilized is obtained from the World Bank database.

Considering that econometric methodology has been utilized to model factors influencing employment, all research variables have theoretical justification and have been utilized in prior research. Alkhateeb et al. (2017) and Pindiriri et al. (2020) provide support for incorporating the human capital variable into the employment model. The investment variable is derived from Pindiriri (2020), while the degree of economic openness is derived from Alexandre et al. (2011) and Pindiriri (2020). The inflation variable is extracted from Pindiriri (2020), providing theoretical support for the model specification.

Tab. 1: Variables of models by developed and developing countries

Independent variable						**Dependent variable**	**Developed countries**	
Inflation rate (%)	**Trade openness (%)**	**Investment (%)**	**GDP (US$ millions)**	**Human capital (%)**	**Creative industry (0-100)**	**EMP (%)**		
2.45	113.93	0.2253	498522.9	101.73	33.67	56.85	Mean	Central index
1.70	98.42	0.2223	203597.3	101.07	31.90	57.22	Median	
59.21	379.09	0.5217	3596646	128.64	86.30	80.55	Maximum	Dispersion index
-2.31	40.82	0.1073	3720.96	84.13	2.20	37.72	Minimum	
4.25	65.31	0.0506	741226.7	5.47	13.44	7.78	Std. Dev	
7.95	1.94	1.0095	2.25	0.84	0.07	0.18	Skewness	Relative dispersion index
96.24	7.31	5.9754	7.82	7.99	3.15	3.35	Kurtosis	
Independent variable						**Dependent variable**	**Developing countries**	
Inflation rate (%)	**Trade openness (%)**	**Investment (%)**	**GDP (US$ millions)**	**Human capital (%)**	**Creative industry (0-100)**	**EMP (%)**		
6.92	67.09	15.5175	227227.8	105.03	14.67	57.45	Mean	Central index
3.72	58.38	15.3293	41220.08	104.82	12.30	57.60	Median	
557.20	164.70	19.8451	2685748	149.95	51.90	85.86	Maximum	Dispersion index
-2.48	16.35	12.7999	3301.73	66.41	0.10	32.02	Minimum	
29.66	29.79	1.4420	459029.9	15.91	11.01	13.05	Std. Dev	
16.27	0.92	0.5313	3.11	0.36	0.72	0.03	Skewness	Relative

[1]. tcdata360.worldbank.org/

288.19	3.29	3.2339	12.83	3.64	2.82	2.26	Kurtosis	Dispersion index

Source: Research findings

- Employment is expressed as a percentage. The gross domestic product is measured in millions of dollars. The index for creative industries ranges from 0 to 100. Other variables (human capital, investment, inflation rate, and degree of economic openness) are expressed as percentages.

The descriptive statistics of research model variables for 55 developed countries[2] and 43 developing countries[3] are displayed in Table 1. As can be seen, there are significant differences between developing and developed nations in terms of average employment, creative industries, and other model variables. The average index of creative industries in developing countries is 14.67, while it is 33.67 in developed countries. The country with the highest creative industries classification among developing countries is Mexico, with a score of 51.90, while Malta's score is 86.30. The average employment rate in developing countries is 57.45, while in developed countries it is 56.85. In the developing countries of Madagascar, the highest employment rank was 85.86, while in the developed countries of the United Arab Emirates, it was 80.55. Based on the central and dispersion indices shown in Table 1 for all variables, additional descriptive statistics can be derived.

Very little correlation coefficient has been observed between creative industries and employment. In some instances, a high rate of creative industries is associated with a high employment rate, while in others the inverse is true. Figure 3 depicts reality more accurately, but its intensity and significance cannot be inferred from such observations. Consequently, regression analysis is employed in the following.

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[2]. Australia, Austria, Bahrain, Belarus, Belgium, Bulgaria, Canada, Chile, China, Costa Rica, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Korea, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Mauritius, Montenegro, Netherlands, New Zealand, Norway, Oman, Panama, Poland, Portugal, Romania, Russian Federation, Saudi Arabia, Serbia, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkiye, United Arab Emirates, United Kingdom, Uruguay.

[3]. Albania, Algeria, Armenia, Benin, Bolivia, Botswana, Brazil, Cambodia, Cameroon, Colombia, Cote d'Ivoire, Dominican Republic, Ecuador, Ethiopia, Ghana, Guatemala, Guinea, India, Indonesia, Iran, Jordan, Kyrgyz Republic, Madagascar, Mali, Mexico, Moldova, Mongolia, Morocco, Namibia, Nepal, Niger, Nigeria, Pakistan, Peru, Rwanda, Senegal, South Africa, Tanzania, Thailand, Togo, Tunisia, Vietnam, Zimbabwe.

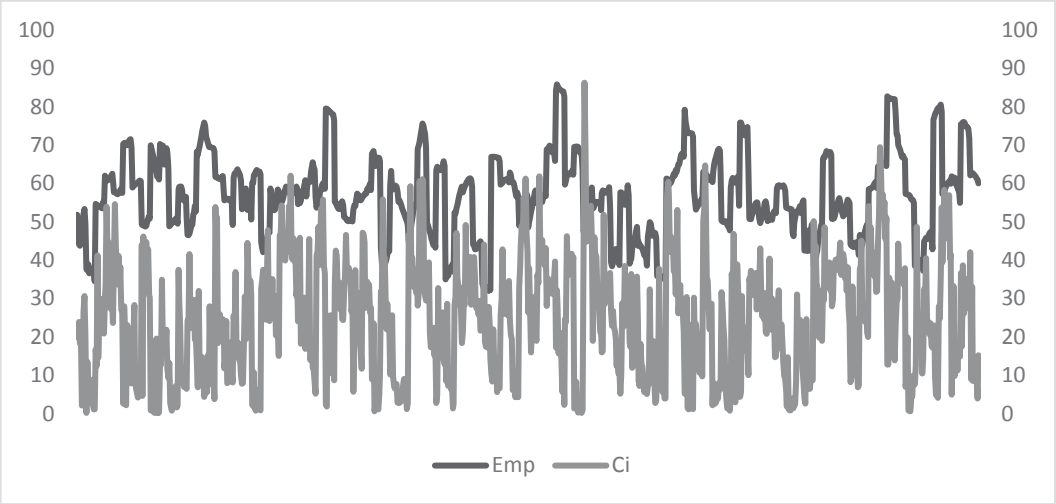

Fig. 3: Creative industries and employment in selected countries (Source: Research findings).

4. Experimental Estimation Results

In order to investigate the impact of creative industries on employment, the dynamic panel method with coefficients estimated using GMM is utilized in this study. This estimator increases the estimation's stability by decreasing sample bias. In this method, the instrumental variables used for estimation must first be determined. This model's instrumental variables are the lagged values of the dependent variable and explanatory variables. The consistency of GMM estimator depends on the validity of the assumption of serial non-correlation between the error terms and the means, which can be evaluated using the Sargan test. In addition, Arellano & Bond (1991) proposed the Sargan test to validate the model; failure to reject the null hypothesis indicates the assumption of no serial correlation and the validity of the instruments. Non-correlation between the tools and the error term is a requirement for the model's validity. Using the first-order difference of variables as an instrumental variable and solving the endogeneity problem, reducing the multicollinearity in the model by using the dependent variable lag, solving the problem of eliminating omitted variables, the proper efficiency of fixed and random effects, and solving the problem of variance heterogeneity due to the use of GMM estimators are among the benefits of this method. (Bond, 2002; Baltagi, 2008). In the estimation of GMM, according to

Arellano and Bond, the terms have independent uniform distribution if the error terms have serial autocorrelation of the first order but no serial autocorrelation of the second order. The first model illustrates the effect of creative industries on employment in each of the 98 developed and developing nations. As can be seen in Table 2, there is serial autocorrelation of the first order with a probability less than 0.05 in all three models of error terms, but there is no serial autocorrelation of the second order with a probability greater than 0.05. The possibility of the absence of autocorrelation among error terms is accepted based on the data in Table 2.

Tab. 2: The estimation results of the models using two-step GMM

Variable	Model 1	Model 2	Model 3
	Coef.	Coef.	Coef.
EMP_{it-1}	0.5261* (0.0122) [0.0000]	0.4874* (0.0182) [0.0000]	0.7950* (0.0170) [0.0000]
CI_{it}	0.5003* (0.0213) [0.0000]	0.3539* (0.0435) [0.0000]	0.2992* (0.0194) [0.0000]
HC_{it}	6.9442* (0.8281) [0.0000]	2.3594* (0.9066) [0.0119]	2.8982* (0.2675) [0.0000]
GDP_{it}	1.3421* (0.3557) [0.0003]	5.1990* (0.3170) [0.0000]	5.1185* (0.3851) [0.0000]
CP_{it}	2.9110* (0.2297) [0.0000]	2.4859* (0.2350) [0.0000]	0.6042* (0.1749) [0.0013]
TR_{it}	5.7941* (0.1990) [0.0000]	9.5439* (0.3952) [0.0000]	5.6252* (0.1260) [0.0000]
INF_{it}	-0.0496* (0.0199) [0.0145]	-0.1130* (0.0092) [0.0000]	-0.1585* (0.0236) [0.0000]
Model diagnostics			
AR (1)	0.0113	0.0431	0.0302
AR (2)	0.9444	0.6011	0.6672
SARGAN	0.2516	0.3277	0.4239
Prob > chi2	0.0000	0.0000	0.0000

Source: Research findings

Note: The standard error is denoted by (), the probability value is denoted by [], and the symbol * represent significance levels of 1%.

The estimation results of the research model are presented in Table 2 and are summarized as follows.

Consistent with the estimated coefficients in all three models, the creative industries coefficient is both positive and statistically significant. Positive and statistically significant is the coefficient of creative industries in the first model for 98 selected countries (first model); a 0.5003 unit increase/decrease in employment corresponds to one unit increase/decrease in creative industries. The creative industries in the economy convert culture and art into productive inputs, and by employing creativity and knowledge, they foster innovation and entrepreneurship, thereby contributing positively to the creation of jobs and economic value. Developed countries have a coefficient of 0.3539 for creative industries (second model), whereas developing countries have an estimated coefficient of 0.2992 (third model), which is lesser than that of developed countries. Lack of access to the most vital service markets, trade restrictions in the realm of creative goods and services, and deficiencies in basic and institutional infrastructure impede the participation of developing nations in creative services. These barriers prevent developing economies from becoming competitive players in production. In quantifying services, developing nations encounter numerous obstacles. When data is collected, they frequently lack adequate statistical infrastructure, such as business registration. Hence, it is anticipated that the influence of artistic, cultural, and creative productions on employment in developing nations will be comparatively diminished in magnitude than in developed nations.

The first lag of employment has a positive significant effect on employment in the current period. Specifically, a one-unit increase/decrease in employment during the lag results in a 0.5261 units increase/decrease in employment during the current period. At a significance level of 0.01, the coefficient of human capital is 6.9442, which signifies that human capital has a positive and statistically significant impact on employment. Employment increases/decreases by 6.9442 units for every unit of human capital index that is increased/decreased.

Increasing the education, expertise, and productivity of the labor force as one of the production inputs has provided the necessary background and platform for

increasing economic growth, which leads to an increase in employment. The coefficient of 1.3421 for GDP on employment is significant at the 0.01 level, suggesting that GDP has a positive and statistically significant impact on employment. Employment increases/decreases by 1.3421 units for every unit of GDP growth. Clearly, a rise in GDP results in a rise in employment. At the 0.01 significance level, investment's coefficient of 2.9110 indicates that it has a positive significant impact on employment. Employment increases/decreases by 2.9110 units for every unit that the ratio of investment to GDP increases/decreases. According to the theoretical literature, the increase in physical capital as a production input and factor of capital accumulation is the key factor in increasing production, which has resulted in a rise in demand for specialized labor and employment. The coefficient for the degree of economic openness is 5.7941, which is statistically significant at the 0.01 level. On this basis, it can be concluded that a 5.7941-unit increase/decrease in employment corresponds to a one-unit change in the economic openness index. Based on the theoretical literature, it is anticipated that the expansion of the scope of commercial exchanges will play a significant role in the absorption of knowledge and technology and the application of new and creative ideas, which can lead to the improvement and increase in productivity of production factors, resulting in an increase in labor demand and employment. The expansion of trade and interaction with the global economy will have a positive impact on the development of labor market variables and employment levels. The coefficient of inflation is -0.0496 and at the 0.01 significance level, it is significant. Based on the available data, it can be concluded that a -0.0496 unit decrease in employment corresponds to a one unit increase/decrease in the inflation rate. Consequently, a rise in inflation results in a decline in employment. A high rate of inflation increases transaction costs and diverts capital to non-productive endeavors. High inflation decreases the efficacy of savings on the financial markets, resulting in a decline in investment, production, and employment. As anticipated, the coefficient of creative industries is positive and significant for both developed and developing countries (models 2 and 3). According to the information obtained from Table 2, all other coefficients are estimates for developed and developing countries based on the obtained

coefficients of the primary research model. In addition, Table 2 summarizes the results of Sargan test. This test's null hypothesis indicates that there is no serial correlation between the utilized instruments and error terms. Based on Sargan test with a margin of error of 5%, the estimated model has adequate validity.

5. Conclusion

One of the indicators of development in societies is the increase in employment and decrease in unemployment, such that the loss of resources, particularly the unemployment of human resources, transforms the period of transitional development into a period of economic erosion and has far-reaching effects on the economy. The expansive and undeniable significance of the creative industries has made them an integral part of the economy. As generators of growth and innovation, creative industries provide an excellent opportunity for entrepreneurship and job creation. Various definitions of the creative industry have already been presented. UNCTAD defines creative industries as a set of knowledge-based activities that are not limited to art and have the ability to generate income through trade and exploitation of intellectual property. The classification and definition of creative industries may vary nationally and over time, but it is the creative industries themselves that shape and define the creative economy. Considering the significance of the fact that cultural creative industries and employment are not static and that their relationship is dynamic, we decided to investigate the impact of creative industries on the employment of the countries under study. In this regard, GMM was used to investigate the impact of creative industries on employment in 98 developed and developing nations between 2011 and 2020. Three econometric models were evaluated for this purpose, and the results of all three models demonstrated a positive and statistically significant effect of creative industries on employment in the countries under study. These findings are consistent with Zhou et al.'s (2020) research. The current research also revealed the negative impact of inflation on employment, as well as the positive impact of human capital, gross domestic product, investment, and trade openness. Positive and significant coefficients have been observed for creative industries in 98 selected nations (first model). A 0.5003 unit increase/decrease in

employment results from a one unit increase/decrease in creative industries. Creative sectors within the economy transform artistic expression and culture into productive inputs. They foster innovation and entrepreneurship through the application of their expertise and creativity, thereby contributing positively to job creation and economic growth. Developed countries have a coefficient of 0.3539 for creative industries (second model), whereas developing countries have an estimated coefficient of 0.2992 (third model), which is lesser than that of developed countries. Lack of fundamental and institutional infrastructure and skills, trade restrictions on creative products and services, and inaccessibility to the most vital service markets for developing nations are a few of the contributing factors. At a significance level of 0.01, the coefficient of human capital is 6.9442, which signifies that human capital has a positive and statistically significant impact on employment. The coefficient of 1.3421 for GDP on employment is significant at the 0.01% level, suggesting that GDP has a positive and statistically significant impact on employment. The coefficient for investment on employment is 2.9110, which is statistically significant at the 0.01 level.

This suggests that investment has a positive significant impact on employment. The coefficient for the degree of economic openness is 5.7941, which is statistically significant at the 0.01 level. The coefficient of inflation is -0.0496 and is significant at the 0.01 significance level. Today, creative industries are a global phenomenon, and countries must take greater measures than in the past to strengthen the requirements for measuring and promoting their creative products in order to achieve greater economic growth and prosperity and increase employment. Policies that bolster the creative sector of the economy include but are not limited to the establishment and modernization of intellectual property laws, the enhancement of institutional capacities within government agencies, the development of suitable infrastructure, and the improvement of access to creative markets in other nations to facilitate the transfer of knowledge and innovation. Creative sectors that possess a substantial amount of foreign knowledge serve as a powerful catalyst for the development of innovative industries. By means of intellectual property, they provide an extensive array of inventive products and services that foster innovation in other sectors and present novel pedagogical

methodologies to effectively harness the creative capabilities of the workforce. Iran possesses fundamental capabilities in the production of handicrafts, art, and media, in addition to cultural assets including historical monuments, tourism centers, and a wealth of literature and history. These capabilities collectively offer the country the potential to generate employment. Consequently, it is imperative to enact appropriate policies to enhance this potential.

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Authors contributed equally to the conceptualization and writing of the article. All of the authors approved the content of the manuscript and agreed on all aspects of the work.

Conflict of Interest

Authors declared no conflict of interest.

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اثر صنایع خلاق بر نرخ اشتغال (روش گشتاورهای تعمیم‌یافته)

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صص: ۲۲۱-۱۹۳

چکیده

اهمیت رو به رشد صنایع خلاق در طی سالیان اخیر، این صنایع را به موضوع بحث در اقتصاد جهانی مبدل کرده است؛ به‌نحوی‌که بسیاری از کشورها جایگاه ویژه‌ای را برای این صنایع درنظر می‌گیرند. در دهه‌های اخیر تغییراتی در ساختار اقتصادها به‌وقوع پیوسته که موجب تغییر شکل ساختار اشتغال در کشورها شده است. صنایع خلاق به‌سرعت درحال تبدیل شدن به موتورهای قدرتمند رشد و توسعهٔ اقتصادی هستند و این امر پیامدهای عمیقی در ساختارهای اقتصادی و اشتغال جوامع به‌دنبال دارد. صنایع خلاق از خلاقیت، نوآوری، مهارت‌ها و توانایی افراد برای ایجاد اشتغال استفاده می‌کنند و پتانسیل بالایی در گسترش آن دارند. خلاقیت به‌عنوان یک دارایی استراتژیک کلیدی که در فرآیند تولید همهٔ کالاها و خدمات مهم است، در الگوهای اقتصادی نمود پیدا کرده است. ازطرف دیگر، خلاقیت، یک فرآیند ذهنی است که نمی‌توان آن را از نظام فرهنگی و اجتماعی که افراد در آن فعالیت می‌کنند، جدا نمود؛ از این‌رو، پژوهش حاضر نقش صنایع خلاق را در اشتغال ۹۸ کشور توسعه‌یافته و درحال توسعه طی دورهٔ زمانی ۲۰۱۱ الی ۲۰۲۰م. با استفاده از روش گشتاورهای تعمیم‌یافته (GMM) مورد بررسی قرار می‌دهد؛ بدین‌منظور در این پژوهش، سه الگو برآورد شده است. نتایج این پژوهش نشان‌دهندهٔ اثر مثبت و معنادار صنایع خلاق بر اشتغال کشورهای موردمطالعه در تمامی الگوهای پژوهش است. براساس نتایج به‌دست آمده ضریب صنایع خلاق در کشورهای توسعه‌یافته (۰٫۳۵۳۹) از مقدار این ضریب در کشورهای درحال توسعه (۰٫۲۹۹۲) بیشتر است؛ بنابراین انتظار می‌رود میزان تأثیرگذاری تولیدات خلاقانهٔ فرهنگی و هنری بر اشتغال در این کشورها بیشتر از کشورهای درحال توسعه باشد؛ از دیگر یافته‌های پژوهش می‌توان به تأثیر منفی تورم بر اشتغال و هم‌چنین تأثیر مثبت سرمایهٔ انسانی، تولید ناخالص داخلی، سرمایه‌گذاری و درجهٔ باز بودن اقتصاد بر اشتغال اشاره نمود.

کلیدواژگان: صنایع خلاق، هنر، صنایع فرهنگی، اشتغال، توسعهٔ پایدار، روش گشتاورهای تعمیم‌یافته (GMM).
طبقه‌بندی JEL: Z1, E24, C33.

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