CREATIVE INDIA:

TAPPING THE FULL POTENTIAL

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Abstract

India's creative economy is large, but its untapped potential is even larger. This study provides the first reliable measure on the size of India's creative economy, explores the many challenges faced by the creative industries, and provides recommendations to make India one of the most creative societies in the world. India's creative economy—measured by the number of people working in various creative occupations—is estimated to contribute nearly 8% of the country's employment, much higher than the corresponding share in Turkey (1%), Mexico (1.5%), South Korea (1.9%) and even Australia (2.1%). Creative occupations also pay reasonably well—88% higher than the non-creative ones and contribute about 20% to nation's overall GVA. Out of the top ten creative districts in India, six are non-metros—Badgam (J&K), Panipat (Haryana), Imphal (Manipur), Sant Ravi Das Nagar (Uttar Pradesh), Thane (Maharashtra), and Tirupur (Tamil Nadu)—indicating the diversity and depth of creativity across India. Yet, according to United Nations Conference on Trade and Development, India's creative exports are only one-tenth of those of the People's Republic of China. To develop the creative economy to realize its full potential, Indian policymakers would like to: (i) increase the recognition of Indian culture globally; (ii) facilitate human capital development among its youth; (iii) address the bottlenecks in the Intellectual Property (IP) framework; (iv) improve access to finance; and (v) streamline the process of policymaking by establishing one intermediary organization. India must also leverage its G20 Presidency to put creative economy concretely on the global agenda.

Keywords: creative economy, culture, employment, output, intellectual property, G20

JEL classification: J21, J24, J31, O10, O30, O53, Z10

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Creative India: Tapping the Full Potential

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1. Background

The evolution of the term "creativity" dates to the mid-twentieth century, shortly after it first appeared as a topic of academic importance in educational and psychological circles during the 1920s. However, it did not find much space in policy discussions or debates until the late 1950s when it began to be seen as a "modern" response to challenges posed by rapid social and technological changes (Pope 2005). It was only in the 1990s that economists and policymakers began to look at economic activities through the lens of creativity, and the term "creative industries" gained traction. Prior to that, many of these activities, like dance, music, film, and visual arts, were seen as "cultural industries," owing to their strong cultural roots (Newbigin 2016). Many artists associated with these activities felt it demeaning to consider their work as an "industry" and, therefore, the term "cultural industry" itself became controversial (Newbigin 2016).

The idea of "creative industries" was first brought forward in the "Creative Nation" report published by the Labour Government of Australia in 1994. The report emphasized the role of culture in national identity and defined culture more broadly by including film, radio, television, performing arts, literature, dance, music, visual arts and crafts, copyrights, libraries, interactive multimedia, design, and more (Department of Communications and the Arts 1994). This was the first time that the economic significance of cultural and creative industries was stressed. Creative industries found further support from the government of the United Kingdom, which in 1997, included creative industries in its development and political agenda, leading to the creation of the Department of Culture, Media, and Sports (DCMS hereafter) and the Creative Industries Task Force. This shift from the term "cultural industries" to "creative industries" in policy discussions could be attributed to the fact that creative industries were seen as a key sector for economic growth and a key source of employment (Florida 2002; Howkins 2001; Garnham 2005). They provide wide-ranging socioeconomic benefits to both developed and developing countries by combating unemployment, particularly youth unemployment, facilitating social inclusion[4] and cultural development, and improving quality of life (Daubaraite and Startiene 2015). Particularly for developing countries, creative industries play a significant role in contributing toward fulfilment of many of their Sustainable Development Goals (SDGs), especially those related to poverty, inequality, gender disparity, and urban development. In recognition of their economic and social significance as a driver of SDGs, the United Nations in 2019 declared 2021 as the International Year of creative economy for Sustainable Development (UNGA 74).

In India, as in other developing and emerging nations, the importance of the creative economy cannot be overemphasized. Communities here have long been the vanguard of the creative economy. Their cultural contribution through products and services, like architecture, dance, festivals, handicrafts, literature, and music, have created a legacy that has lasted across centuries. India is home to some of the oldest surviving dance and music forms, such as Odissi, Kuchipudi, Kathakali, Dhrupad, Jatra, some of the oldest literature, and magnificent architecture like the systematically planned urban settlements of the Indus Valley Civilization (Pearl Academy and FICCI n.d). India has a long history of holding elaborate festivals to honor old traditions and mythologies, and these can vary depending on the region of the nation. These festivals are known for their extravagant themes and immersive artworks that promote cultural cohesion and benefit the local economy. For instance, based on estimates from a study done by The Smart Cube and others (2021), in the Indian state of West Bengal, the festival of Durga Puja holds immense cultural and economic value for the state. The weeklong festival contributed to 2.58% of the state's GDP for the fiscal year 2019–2020.[5] India is also home to the sixth-largest number of UNESCO heritage sites and varied natural landscapes imbued with versatile cultural traditions (United Nations Educational, Scientific, and Cultural

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4 Brook et al. (2021) points out that the sector may not be socially inclusive, particularly in the UK, and may even lead to more social exclusion.
5 Mapping the Creative Economy around Durga Puja Sept 2021.cdr (britishcouncil.in)

Organization, World Heritage Centre 2021). The fact that India is the fastest-growing large economy and a rising information technology hub paves the way for it to harness its culture as an asset and expand its global footprint. In terms of exports of creative goods and services, India performed exceedingly well, as its share in global exports increased sharply from 1.9% to 5.5% between 2003 and 2012 (Shaban and Filip 2015). However, the pandemic-induced lockdowns have left the sector in shambles. The people engaged in the cultural and creative occupations were amongst the worst hit as they were the first to shut their doors in response to the pandemic and were also among the last to reopen.

However, as people are slowly beginning to accept the "new normal", the creative sector is expected to drive the next wave of growth in India. There has been a pandemic-induced emergence of technology and innovation within the creative industries through the rise of OTT and social media platforms, the live-streaming of events, the growth of virtual tourism, etc. Digital technologies have turned consumers into producers via platforms such as Instagram and YouTube. This has led to an emergence of a large number of creators with a strong following in India. While India's creative sector undoubtedly holds immense promise to be a game changer in the post-COVID world, there are certain bottlenecks that it currently faces owing largely to the absence of a comprehensive policy framework. Efficient and effective policymaking requires an identification of the needs and requirements as well as a firm understanding of the issues facing the sector, which necessitates quantification and measurement of its economic contribution. So far, little effort has been made toward measuring the size and contribution of India's creative economy due to challenges with respect to reliability and data limitation. These studies have attempted to quantify and measure the sector either by taking copyright industries as a proxy for creative industries (Patnaik 2020) or conducting a primary survey of a small group of respondents belonging to limited categories of subsectors within the creative sector (Wickham et al. 2021). While these studies do a good job of providing a quantification and measurement of the size and economic contribution of the sector, they tend to ignore a large part of India's huge unorganized sector that significantly contributes to the overall employment and Gros Value Added (GVA). Against this backdrop, the present study aims to provide one of the most comprehensive and exhaustive estimates on the contribution to overall employment and GVA of India's creative economy. We use the data collected during the Periodic Labor Force Survey (PLFS) for the years 2017–2018, 2018–2019 and 2019–2020, which is annually conducted by the National Statistical Office (NSO)—the central statistical agency of the Government of India. A key feature of the PLFS is that the survey covers both the formal and informal sectors in India, thus enabling a much more comprehensive measurement of creative employment in the country. The rest of the paper is organized as follows. The next section builds a definition of India's creative economy based on an in-depth review of the various definitions of creative economy provided in the literature. This is followed by section 3 that measures the size of India's creative economy in terms of employment and GVA and provides a number of labor market estimates based on the various approaches used in the literature. The fourth section discusses challenges that impede the growth of the creative economy in India and recommends policy suggestions to address these. The final section identifies areas in which India can take the lead during its G20 presidency and forge consensus among the G20 countries to further support and globally develop the creative economy.

2. Defining India's Creative Economy

2.1 A Review of Past Literature

Defining the creative economy has been a contentious issue so far. According to the United Nations Conference on Trade and Development (UNCTAD), the creative economy has "no single definition." It is seen as an evolving concept that builds on the "interplay between human creativity and ideas and intellectual property, knowledge and technology"(UNCTAD and UNDP 2008 pp iii-iv) Yet, various attempts have been made to define the concept in different ways. While some studies emphasize the economic aspects of the creative economy by relating it to economic growth and the potential to generate and exploit intellectual property (DCMS 2001; Howkins 2001; NESTA 2006; WIPO 2015a), there are others who primarily focus on the sociological aspects of creativity (Hesmondhalgh 2002; O'Connor 2010), giving importance to culture and heritage.

Drawing on the idea of "Creative Industries" put forward in the "Creative Nation" report, 1994, by the Australian government, Department of Culture Media and Sports(DCMS) in the UK pioneered the work on the economic aspect of creativity in 1998 by coming up with the first-ever formal definition of creative industries. They defined the creative economy through the notion of creative industries as entailing 'those activities which have their origin in individual creativity, skill and talent and which have the potential for wealth and job creation through the

generation and exploitation of intellectual property' (DCMS 1998). DCMS identified thirteen sectors as constituents of Creative Industries in the United Kingdom: advertising, architecture, arts and antique markets, crafts, design, designer fashion, music, interactive leisure software (electronic games), performing arts, publishing, software and computer services, television and radio, and film and video.

DCMS's idea of linking creativity to economy was further developed by John Howkins, who came up up with the concept of creative economy in 2001. He defined creative economy as "the transactions of creative products that have an economic good or service that results from creativity and has economic value" (Howkins 2001). Subsequently, he identified 15 industries, spanning from Arts to Science and Technology, that contribute to the creative economy by producing goods and services that "result from creativity and have economic value" (Howkins 2001).

The National Endowment for Science, Technology, and the Arts (NESTA) also worked on DCMS's idea of creative industries to arrive at a more refined model to define these industries. The objective was to identify the sectors with the greatest potential for economic growth. The model divided the Creative Industries into four groups: Creative Service Providers, Creative Content Producers, Creative Experience Providers, and Creative Originals Producers. This model brought together those industries that have a given number of commonalities in terms of business models and value chains (NESTA 2006).

The economic approach to creativity also included studies that viewed creative industries as those that were driven by innovation, encompassing both the arts and technological and scientific industries. Cunningham (2004) asserted that creative industries were simultaneously cultural and service- and knowledge-based industries. These industries were reliant on copyright and intellectual property as well as traditional art forms for their prosperity and were instrumental for the growth of the information and digital economies. In line with the knowledge-based output of these industries, the World Intellectual Property Organization (WIPO) came out with its own concept of the creative economy, which used the term "copyright-based industries" instead of "creative industries" to conceptualize the subject. It defined copyright industries as those industries that are "wholly engaged in the creation, production, performance, exhibition, communication or distribution and sales of copyright protected subject matter" (WIPO 2015a, p. 268). This approach linked the economic aspects of creativity to intellectual property.

Richard Florida departed from defining the economic aspects of creativity in terms of creative industries and defined the creative economy in terms of creative class (Florida 2012, p. 30). According to Florida, the creative class consisted of people who were engaged in creative and innovative jobs and whose function was to "create meaningful new forms." He constructed his classification of the creative class on the basis of professions and not on qualification levels or industry affiliations on the premise that professions provided a better description of what individuals actually do (Markusen et al. 2008). The creative class was further divided into two components: (a) Super-Creative Core of the Creative Class that included workers who are involved in "producing new forms or designs that are readily transferable and widely useful" and (b) Creative Professionals, who engage in "creative problem solving, drawing on complex bodies of knowledge to solve specific problems" (Florida 2012, pp. 38–39). The former included occupations like scientists and engineers, university professors, poets and novelists, artists, entertainers, actors, designers, and architects as well as the thought leadership of modern society: nonfiction writers, editors, cultural figures, think-tank researchers, analysts, other opinion makers, and Bohemians, who were involved in artistic and cultural occupations. The latter included professionals working in high-tech, financial services, legal and health care professions, and business management. In recognition of the importance of creative occupations as key elements within the creative economy, several studies emerged along the lines of Florida's definition of creative class and linked creativity of an occupation to economic indicators (DCMS 2016; Queensland University of Technology & University of Newcastle n.d.).

There have also been efforts to link creativity with the production of social meaning in the form of texts and symbols (music, images, stories), known as the sociological approach to define creativity. Using this approach, Hesmondhalgh (2002, 2013) categorized industries into Core Cultural Industries, Borderline Cultural Industries, and Peripheral Cultural Industries. According to Markusen et al. (2008), cultural industries essentially consist of activities that are involved in the direct production of social meaning in the form of texts and symbols. This includes "television, radio, cinema, newspapers, magazine and book publishing, music recording publishing industries, advertising, and the performing arts." Mercer (2009) looked at cultural industries through a distinct anthropological and sociological perspective, combining art and culture as ethno-linguistic constructs: "Arts of living, doing, and being, not just arts: that's what culture is about." O'Connor

(2010) placed a strong emphasis on the culture and sociological roots of the creative economy and advised against linking creativity and culture solely to their economic aspects.

There are other studies that combine the two approaches to arrive at their definitions of creative/cultural economy. This includes Throsby (2001) who defined culture industries as "cultural goods and services that involve creativity in their production, embody some degree of intellectual property and convey symbolic meaning" (Throsby 2001 p 112). Using this definition, Throsby (2001) created the concentric circle model with "cultural industries centred around the locus of origin of creative ideas, radiating outwards as those ideas become combined with more and more inputs to produce a wider and wider range of products" (Throsby 2001 p. 112). The four hierarchical levels defined by Throsby (2001) were: core creative arts, other core cultural industries, wider cultural industries, and related industries. In 2007, the Work Foundation, in collaboration with the DCMS, drew upon Throsby's work to create their own concentric circle model. The model outlined a creative core, cultural industries, and creative industries as layers of the creative economy (Work Foundation 2007). According to this model, sound, text, and image originate in the core creative arts. These arts constitute creative ideas and influences that diffuse outward through concentric circles, increasing the ratio of commercial to cultural content as they move toward the outer circumference. The United Nations Education Science and Culture Organization (UNESCO) combined the two approaches by including the concept of copyright in its definition of a cultural economy. It defined the cultural economy through cultural domains that "include cultural activities, goods and services that are involved in all of the different phases of a culture cycle model" (Ellis et al. 2009, p. 23). The cultural cycle includes five stages: Creation, Production, Dissemination, Transmission, and Consumption. Similar to the UNESCO framework, the Canadian Conceptual Framework for Culture Statistics (2011) defined the culture sector through domains, which are a "set of purpose-built categories." Domains are used to classify culture industries, products and occupations into groupings that are measurable for statistical purposes. The framework defines six culture domains: Heritage and Libraries, Live Performance, Visual and Applied Arts, Written and Published Works, Audio-visual and Interactive Media, and Sound Recording. These culture domains are divided into core and ancillary subsets on the basis of a "creative chain": a value chain that starts with a creative concept and moves through a number of connected phases between production and use to produce a culture-related good or service. The components of the creative chain are creation, production, dissemination (which also includes the transmission stage of UNESCO) and use. Thus, the culture sector is defined as including all industries and cultural products from each culture domain across the creative chain as well as the occupations that produce them (Daschko 2011). UNCTAD in its recent study also combined the two approaches to arrive at a unique definition of creative economy that encompassed artistic, cultural, and industrial aspects of the creative economy. It defined the creative economy as an evolving concept that involves knowledge-based activities to support economic growth and development and to promote culture and inclusion. These economic and social aspects of the creative economy are seen as interacting with technology and intellectual property, generating crosscutting linkages at both the macro and micro levels. This places creative industries at the core of the creative economy and defines the creative economy as "the cycles of creation, production and distribution of goods and services that use creativity and intellectual capital as their primary inputs. They are classified by their role in heritage, art, media, and functional creations" (Escaith 2022, p. 5).

2.2. Definition

While the above discussion clearly points to a lack of consensus on a unique definition of creative/cultural economy, several characteristics emerge that help us to arrive at a definition that could be relevant for India.

(i) Knowledge-based economic activities: The creative economy comprises all activities undertaken by an individual within a "specific" occupation for the purpose of income generation and wealth creation. A key distinctive feature of these activities is that they are based on knowledge that is either formally acquired through education and training or is inherited, that is, it requires informal skill transfer that has been preserved over generations. India's huge informal sector is known for such low productive yet high skilled economic activities. For instance, occupations like the crafting of blocks for Sanganer textiles printing in Rajasthan involve craft-based skill and knowledge that is transferred as part of informal networks of apprenticeship and does not require formal education or training. These informal, highly skilled occupations greatly outnumber the formal, highly-skilled, knowledge-based professions in India (UNESCO and UNDP 2013, p. 71)

(ii) Original idea and imagination: The "specific"

occupations must be such that they involve generation and exploitation of intellectual property. This involves innovation in ways that are not necessarily mainstream but even frugal and flexible. India is known for applying flexible approaches to solving problems, using scarce resources in innovative ways, popularly known as "Jugaad."

(iii) Non-repetitive and adaptive to technological change and mechanization: The transformation of products and services by these specific occupations over the economic and cultural value chain can vary each time due to a multitude of factors, such as creative impulse, learning, and skills (Bakhshi et al. 2013). This nonrepetitive nature of work makes these occupations more adaptive against mechanization and automation (Bakhshi et al., 2015). This feature is especially important in India where 69% of jobs are threatened due to automation (World Bank 2016, p. 23). Bakhshi et al. (2015) ascertained that creative occupations are immune to an extent to automation, with 86% of "highly creative" jobs in the US and 87% in the UK having no or low risk of being displaced by automation.

(iv) Economic and culture value chain: This comprises an original creative concept generated by an individual within a "specific" occupation, which is typically combined with other inputs to produce a cultural good or service through a series of interconnected steps between their production and consumption. Thus, a cultural product must be created, produced, potentially manufactured or reproduced, and then disseminated before it is consumed by a consumer. The consumption of these goods and services can further generate a feedback loop that can enhance competitiveness and lead to new creative ideas and products (Ellis et al. 2009; Daschko 2011). This value chain of several distinct steps typically takes place within a commercial setting (Daschko 2011). These value chains are not just simply a manifestation of economic practices governed through hierarchical control or market coordination; they also represent cultural values for communities (J. P. Singh and House 2010, p. 6). In India, these are critical as they link the organized with the unorganized sector by transmitting culture and creativity emanating from the local communities to large industries and eventually reaching the end consumer. For instance, the handicraft sector in Barmer, Rajasthan, is primarily composed of small and marginal craftsmen working in a largely unorganized setup. Their output is sold through intermediaries to production houses who process it before distributing it through either domestic retailers or Non-Governmental Organizations (NGO) to end consumers or through government agencies for exports (Pagaria and Sharma 2020).

Each of the above characteristics explains the intrinsic nature of creative and cultural economy, and clearly, all of these have relevance to India. Based on these, we arrive at a workable definition of India's creative economy as follows:

*The creative economy is the contribution made to the **economic and cultural value chain** by economic activities that involve formally or informally acquired **knowledge** and embody a substantive amount of **original** ideas, skills, imagination, or social behaviors that are **nonrepetitive** and are **adaptive** to technological change and mechanization.*

3. Measuring India's Creative Economy

As a contemporary and unorthodox sector, measurement of the creative economy has received little attention due to a lack of reliable and comprehensive data. In the case of India, measurement challenges are intensified due to the presence of a huge informal sector that employs a large proportion of creative workers, such as folk artists, local artisans, handicraft workers, and contractual staff in the media and entertainment industry, for whose contributions, in the absence of data, it become difficult to account (Patnaik, 2020).

3.1 Approaches to Measure Creative Economy

Nonetheless, there are three distinct approaches provided in the literature to measure the creative economy:

- **Industry-based approach:** Under this approach, the contribution of the creative economy is estimated using a predefined list of creative industries. The size of the creative industries is estimated using an industrial classification system that is mapped to the pre-defined list. The creative employment estimates are obtained "by allocating all jobs in earmarked creative establishments—actual physical locations of production and service—into nested industries defined by major product" (Markusen et al. 2008, p. 16) and adding all workers employed in the "creative industries" thus obtained. This approach was pioneered by DCMS (1998, 2001) in their UK Creative Industries Mapping Document that aimed to obtain empirical information about specialized industries in each sector of the creative economy. Despite the simplicity that this approach offers in

terms of quantifying the size of creative output and employment, it has come under criticism from various quarters. Pratt (2004), Markusen et al. (2008), and Granger and Hamilton (2010) argue that the use of the method leads to an underestimation of creative employment within an economy as it overlooks the creative employment present outside the industries that are deemed "creative" (Cruz and Teixeira 2013). The industrial classification coding system is also seen as too narrow to capture detailed information on each sector, even after disaggregating the codes at their maximum levels (Granger and Hamilton 2010). In addition, while creative activities are being conducted in all sectors of the economy, these activities are barely captured by the industrial classification codes. This is especially true for the design and digital media industries that are often intertwined with other activity industries, some of which are outside the "creative industries," for example, product development, industrial design, and fashion design mostly operate within manufacturing, while architecture, crafts, and visual and performing arts operate in both the manufacturing and services sectors (Cruz and Teixeira 2013).

- **Occupation-based approach:** According to this approach, creative employment estimates cover all creative occupations across all industry sectors of an economy (Cruz and Texeira 2013). Creative occupations are identified from the occupational classification list, which is divided into nested occupational groups based on "skill content and work process" (Markusen et al. 2008, p. 16), giving importance to "what cultural workers do rather than what they make" (Markusen et al. 2008, p. 5). This approach was pioneered by Florida (2002), and it went beyond industrial approaches by focusing on occupations rather than specialized industry sectors. The use of the occupational approach broadened the dimension of creative economy by accounting for occupations that are considered as creative across all economic activities, as opposed to the industry-based approach (DCMS 1998, 2001) that mostly focused on a limited number of creative industries. In this way, it makes it possible to comprehensively examine the creative workforce and occupational structure over time, across regions, and across countries. Several studies in the US have used this approach to assess labor market outcomes in the creative sector (Gabe 2006; McGranahan and Wojan 2007). One drawback of this approach is that the activities that are deemed creative (especially using Florida's [2002] classification) are often associated with those involving a higher educational level (Markusen et al. 2008), excluding others (for e.g., craft work) that are also creative but associated with a lower formal education. There are also concerns that occupational-based approaches tend to ignore self-employed workers because most official source data primarily contains information on firms employing creative workers and does not account for the self-employed, despite their apparent importance to the creative economy (Van Steen and Pellenbarg 2012). There are also criticisms regarding Florida's characterization of creative occupations, with McGranahan and Wojan (2007) pointing out the arbitrariness of the characterization of some of these occupations as "creative." Similar to the industry approach, this method also requires the availability of disaggregated data on occupational classification to robustly estimate its significance. Any absence of this data may limit the scope of the estimates (Higgs and Cunningham 2007).

- **Combined industry-based and occupation-based approach:** Higgs et al. (2005) proposed a combined approach and called it the "trident" method to map the creative economy, combining both industry and occupational classifications. In a subsequent paper, Higgs et al. (2008) used the trident method to map the creative economy in the UK, using the predefined list of industries and occupations as put forward by DCMS (2001). A concern with using this predefined list was that DCMS (2001) did not draw a linkage between the creative industries and occupations, treating occupations as an extension of creative industries rather than laying special emphasis on the significance of the creative workforce within and outside creative industries. (Bakhshi et al. 2013). To deal with this, Bakhshi et. al. (2013) used the trident approach with the "creative intensity" factor developed by Freeman (2004) to link creative occupations to creative industries. This new "dynamic" method was eventually adopted by the DCMS to measure the UK's creative economy (DCMS 2016). While this approach provided a more comprehensive account of the occupational distribution within industries (Barbour and Markusen 2007), it faced similar drawbacks to those of the occupational approach, including long time intervals between each data upgrading process for the classifications, limited data availability on self-employment, and a lack of available data at a disaggregated level for either industries or occupations (Higgs and Cunningham 2007). Further, as pointed out by Kemeny et al. (2019), a major conceptual challenge with this

approach that is not present in the occupational approach is that the creative intensity concept is of limited use for international comparisons, as the set of creatively intensive activities (and thus industries) may vary from country to country, driven by differences in industry structures, policy regimes, or urban systems. A further challenge is to set an appropriate threshold of creative intensity to define creative industries, which is often done arbitrarily. Thus, even though the method is popular among policymakers, "it remains largely untested by academics" (Kemeny et al . 2019, p. 1).

Given the conceptual and empirical challenges associated with the creative intensity measure in the combined approach and the problem of underestimation of the creative economy in the industry approach, the present study follows the occupational approach to measure India's creative economy by improving upon some of the limitations that exist.

The present study primarily uses the estimates from the Periodic Labour Force Survey (PLFS) conducted by the National Statistics Office of India that provides data on the self-employed category of workers. This allows us to incorporate the contribution of self-employed workers into the study. The study further improves upon the work of Florida (2002) by more comprehensively identifying creative occupations based on a mapping exercise of predefined lists of occupations deemed creative by the most well-cited studies[6] that follow our definition with the International Standard Classification of Occupations (ISCO-1988). This list is then concorded to the National Classification of Occupation (NCO-2004), which is the official classification of occupation followed by the PLFS data to construct a frequency matrix as shown in Table A-1. From the matrix so developed, we classified those occupations as "creative" that are deemed "creative" by at least three of the five studies under consideration. The identified "creative" occupations with their respective average employment between 2017–2018 and 2019–2020 are shown in Table 1.

Table 1: Creative Occupations in India

NCO 2004 Code	Creative Occupation Description	Average Employment
743	Textile, Garment, and Related Trades Workers	11,367,997
241	Business Professionals	4,886,986
232	Secondary Education Teaching Professionals	4,044,709
122	Production and Operations Department Managers	2,310,885
213	Computing Professionals	1,992,287
214	Architects, Engineers, and Related Professionals	1,872,659
123	Other Department Managers	1,728,945
742	Wood Treaters, Cabinet Makers, and Related Trades	1,630,579
731	Precision Workers in Metal and Related Materials	1,421,255
231	College, University, and Higher Education Teaching Professionals	1,289,503
311	Physical and Engineering Science Technicians	1,102,444
343	Administrative Associate Professionals	1,025,094
732	Potters, Glass Makers, and Related Trades Workers	911,025
733	Handicraft Workers in Wood, Textile, Leather, and Related Materials	857,605
313	Optical and Electronic Equipment Operators	692,044
347	Artistic, Entertainment, and Sports Associate Professionals	653,171
245	Writers and Creative or Performing Artists	570,140
722	Blacksmiths, Toolmakers, and Related Trades Workers	455,139
334	Other Teaching Associate Professionals	339,429
244	Social Science and Related Professionals	233,434
221	Life Science Professionals	152,136
333	Special Education Teaching Associate Professionals	128,693
243	Archivists, Librarians, and Related Information Professionals	67,770

Source: Authors' computation based on PLFS data

6 This includes Boschma and Fritsch (2009) , Ellis et al. (2009), Daschko and Allen (2011), Queensland University of Technology, Australia and University of Newcastle, Australia (n.d.) and Department of Culture, Media and Sports (2016).

3.2 Data Sources

The present study utilizes the Periodic Labour Force Survey (PLFS) data for the years 2017–2018, 2018–2019, and 2019–2020 to assess the contribution of India's creative economy to overall employment and wages. The survey has been conducted annually by the National Statistics Office since 2017–2018 and is widely used to estimate India's labor market statistics in both rural and urban areas using the usual activity status (UPSS) approach (principal status + subsidiary status) and the current weekly status approach (National Statistical Office 2019). For the purpose of the current analysis, the usual status approach is followed. The usual activity status of an individual determines the activity status of an individual based on the reference period of the last 365 days preceding the date of survey. Within the usual activity status, an activity can be defined as either the principal activity or the subsidiary activity undertaken by the individual surveyed. The activity status on which an individual in the labor force spends a relatively long time (major time criterion) during the 365 days preceding the date of survey is considered the usual principal activity status of the individual. The same individual may have pursued some economic activity in addition to his/her usual principal status for 30 days or more during the reference period of 365 days preceding the date of survey. The status in which such economic activity was pursued during the reference period of 365 days preceding the date of survey is characterized as the subsidiary economic activity status of the individual.

PLFS also allows the analysis of the occupational and industrial distribution of workers across the country. It collects information on the employment status and wages of workers across industries and occupations and classifies them by five-digit National Industrial Classification Codes (2008) and three-digit National Occupation Codes (2004). The most important characteristic of PLFS is the coverage of both the formal and the informal sector. Further, the National Accounts Statistics (NAS) is used to measure the contribution of the creative workers to India's GVA during this period.

3.3 Methodology

The occupation-based approach is used to estimate India's creative employment. The first step is to identify India's creative occupations using a predefined list of occupations that are deemed creative by the most well-cited studies that follow our definition. This list is then concorded to the National Classification of Occupation (NCO-2004), which is the official classification of occupation followed by the PLFS data to construct a frequency matrix as shown in Table A-1. From the matrix so developed, we classified those occupations as "creative" that are deemed "creative" by at least three of the five studies under consideration.

Suppose each three-digit NCO 2004 occupation code is given by 'i' out of a total of 'n' occupation codes in the economy, such that i = 1, 2 ,3, …., n. Let E_i be the total number of people employed within each occupation code 'i'.

Further, let each three-digit NIC-2008 industry code be given by 'j' out of a total of 'p' industries in the economy, such that j=1,2, 3 ,..., p. Let E_j be the total number of people employed within each industry code 'j'.

Now, using the frequency matrix discussed above (Table A-1), 'm' creative occupations are identified from a total of 'n' occupations. Next, to arrive at the estimates for creative employment across each industry 'j', the number of people employed across 'i' creative occupation codes are aggregated for each industry code 'j', such that:

Total creative employment in industry j equals

$$\sum_{i=1}^{m} E_i^j$$

The total creative employment in the economy will be given by the sum total of creative employment of 'p' industries, such that:

Total creative employment in the economy equals

$$\sum_{j=1}^{p} \sum_{i=1}^{m} E_i^j$$

PLFS data also provides estimates on workers' wages. The survey collects wages for three categories of workers: casual workers, regular salaried workers, and self-employed workers. However, the data contains a significant number of missing values, particularly for wages of self-employed workers. To overcome this limitation, the approach followed by Das et al. (2020) is applied, wherein a Mincer-type regression equation is estimated, such that wages are seen as a function of workers' characteristics[7].

7 See Mincer (1974).

Any sample selection bias is corrected using Heckman's two-step procedure[8] as follows. As a first step, following the approach of Das et al. (2020), the selection equation (1) is estimated using a Probit model, where the dependent variable (z_v^*) explains the decision of an individual 'v' of whether to participate in the labor market, taking the value 1 if the individual is employed and 0 otherwise.

$$z_v^* = w_v * \gamma_v + u_v \qquad (1)$$

W_{vk} consists of a set of k identification factors, which are age, sex, marital status, and general education level. Hence, through this regression, we estimate the effects of individual characteristics on the decision to join the labor market. Since the objective is to impute the missing values for the wages of workers, these effects are of least interest to us. However, the residual of this Probit regression can be used to obtain information on the effect of the unmeasured characteristics that are not available in the dataset or are not captured by the estimated coefficients of the explanatory variables. In the Heckman procedure, these residuals that are contended to reflect the unmeasured characteristics related to employment are used to construct a selection bias control factor in a subsequent regression.

In the second stage regression (2), the dependent variable (y_v) represents the daily earnings of workers, whereas the set of independent variables (x_v) represents workers' characteristics. This regression helps explain wages received by workers, observable only for those for whom the dependent variable (z_v^*) in the selection equation (1) takes a value of 1.

$$y_v = x_v * \beta_v + \varepsilon_v \,; observed\ only\ if\ z_v^* = 1 \qquad (2)$$

where y_v is the earnings of individual 'v', X_{vk} are a set of k individual characteristics like gender, age, location, general and technical education level, marital status, and the industry of work. An additional independent variable is added to this equation: the residual (the inverse of Mill's ratio) from step 1, which captures the unmeasured characteristics.

(u_v,ε_v) ~ bivariate normal [0, 0, 1, σ_ε, ρ], where ρ is the correlation between ε_v and u_v.

As Das et al. (2020) pointed out, estimates obtained from this model using a standard regression would be biased if $\rho \neq 0$, but in the Heckman model, they are consistent and asymptotically efficient. This is because a likelihood ratio test is done for the independence of these equations, that is, testing for $\rho = 0$ and obtaining the corresponding chi-squared statistic. This technique helps overcome the problem of not being able to observe the wage of those who are not employed in the reference period.

The regression function in step two uses the daily earnings of self-employed workers , casual workers, and regular salaried workers as their wages are observed, and the selection model is used for workers whose wages are not observed. After computing the two step Heckman Model , we predict the missing values within the three categories of workers to obtain a more accurate estimate of daily wages. Hence, the combined average wages per day are computed for self-employed workers, regular salaried workers, and casual workers across occupations and industries.

To estimate the average GVA contribution of creative occupations, the PLFS estimates are combined with the National Account Statistics (NAS) for the given period. Employment and wage estimates from the PLFS (across NIC 2008 classification) are mapped to 25 broad industry categories of the National Account Statistics, as shown in Table A-2, to arrive at the estimate for GVA contribution by creative occupations.

To estimate creative workers' contribution to GVA, there is a need to separate creative wages from non-creative wages. Therefore, average daily wages for creative and non-creative workers are estimated across these 25 industry groups. Let there be a total of 'q' industry groups in the economy, where each industry group is given by 'h' such that h = 1,2,3 ……. q. Average creative wage for each industry group 'h' is given by: $\overline{CW}^h$, whereas average non-creative wage is given by: $\overline{NCW}^h$

Therefore, average daily creative labor income for a particular industry group 'h' is given by:

$$CLY^h = \overline{CW}^h * \sum_{i=1}^{m} E_i^h, \qquad (3)$$

where $\sum_{i=1}^{m} E_i^h$ is the total creative employment within a particular industry group 'h'.

Similarly, we can calculate the average daily non-creative labor income in a particular industry group 'h' as

$$NCLY^h = \overline{NCW}^h * \sum_{i=1}^{n-m} E_i^h, \qquad (4)$$

8 See Heckman (1976).

Where $\overline{NCW}^h$ is the average non-creative wage in a particular industry group 'h' across 'n-m' non-creative occupations, $\sum_{i=1}^{n-m} E_i^h$ is the total non-creative employment in a particular industry group 'h', and $NCLY^h$ is the average daily non-creative labor income in a particular industry group 'h'.

We assume that there are two factors of production available: Labor and Capital to produce output in each industry group 'h' in the economy, having a high degree of boundness with each other, that is, labor works with capital (Goldar and Mukhopadhyay 1991). Given this, both creative and non-creative labor will have a high degree of boundedness with capital in determining the value of GVA within each industry group 'h'. Therefore, the contribution of the two types of labor to GVA may be assumed to be proportional to their marginal productivity, which in equilibrium is equal to wages. Hence, the GVA in each industry group 'h' can be split by creative (and non-creative) labor income share to determine the GVA contribution of creative (and non-creative) workers in the economy.

Consequently, creative GVA in each industry group 'h' is given by:

$$CGVA^h = \frac{CLY^h}{CLY^h + NCLY^h} * GVA^h , \qquad (5)$$

where $CGVA^h$ is the creative GVA of a particular industry group 'h'.

This implies that the creative GVA for the entire economy is given by:

$$CGVA = \sum_{h=1}^{q} CGVA^h \qquad (6)$$

3.4 Empirical Results

3.4.1 Aggregate-Level Estimates

It is found that between 2017–2018 and 2019–2020, average annual employment in India's creative economy was around 39.73 million, accounting to about 8.30% of total employment in India during the period. This includes all three categories of workers: casual, regular salaried, and self-employed working in either the organized or the unorganized sector.

Figure 1 (a) depicts the sectoral composition of creative employment, suggesting that the contribution of the tertiary sector is the highest (50.73%), closely followed by the secondary sector (47.62%), whereas the primary sector's contribution to creative employment is miniscule (1.65%). In contrast, among the non-creative workers, as Figure 1 (b) shows, the highest share is contributed by the primary sector (46.33%), followed by the tertiary sector (44.68%), while the secondary sector lags far behind (8.99%). Comparing the two distributions, it is clear that while the non-creative workforce is concentrated in the primary sector of the economy, the creative workforce is located in the secondary sector (tertiary sector's contribution remaining similar across the two categories). This observation becomes even more pronounced when we consider the proportion of the creative workforce in the total employment of the secondary sector. A staggering 32.42% of all jobs in the secondary sector are held by the creative workforce even though it accounts for 8.30% of total employment in the economy. This has important policy implications, particularly in a country like India where there is a huge dearth of jobs in the manufacturing sector. Policies targeted toward enhancing creative employment by imparting required skills and expertise and building adequate infrastructure could eventually result in higher manufacturing jobs in the country.

Figure 1(a): Sectoral Composition of Creative Employment in India

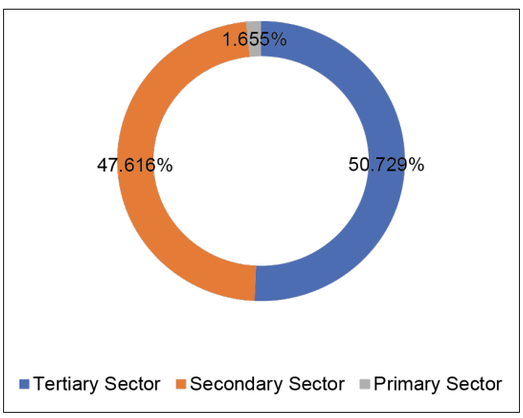
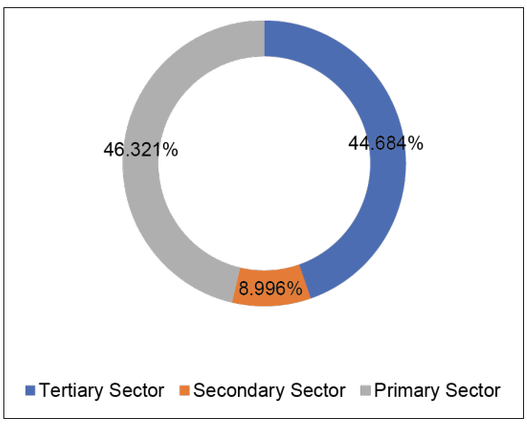


Figure 1(b): Sectoral Composition of Non-Creative Employment in India



Source: Authors' computation based on PLFS data

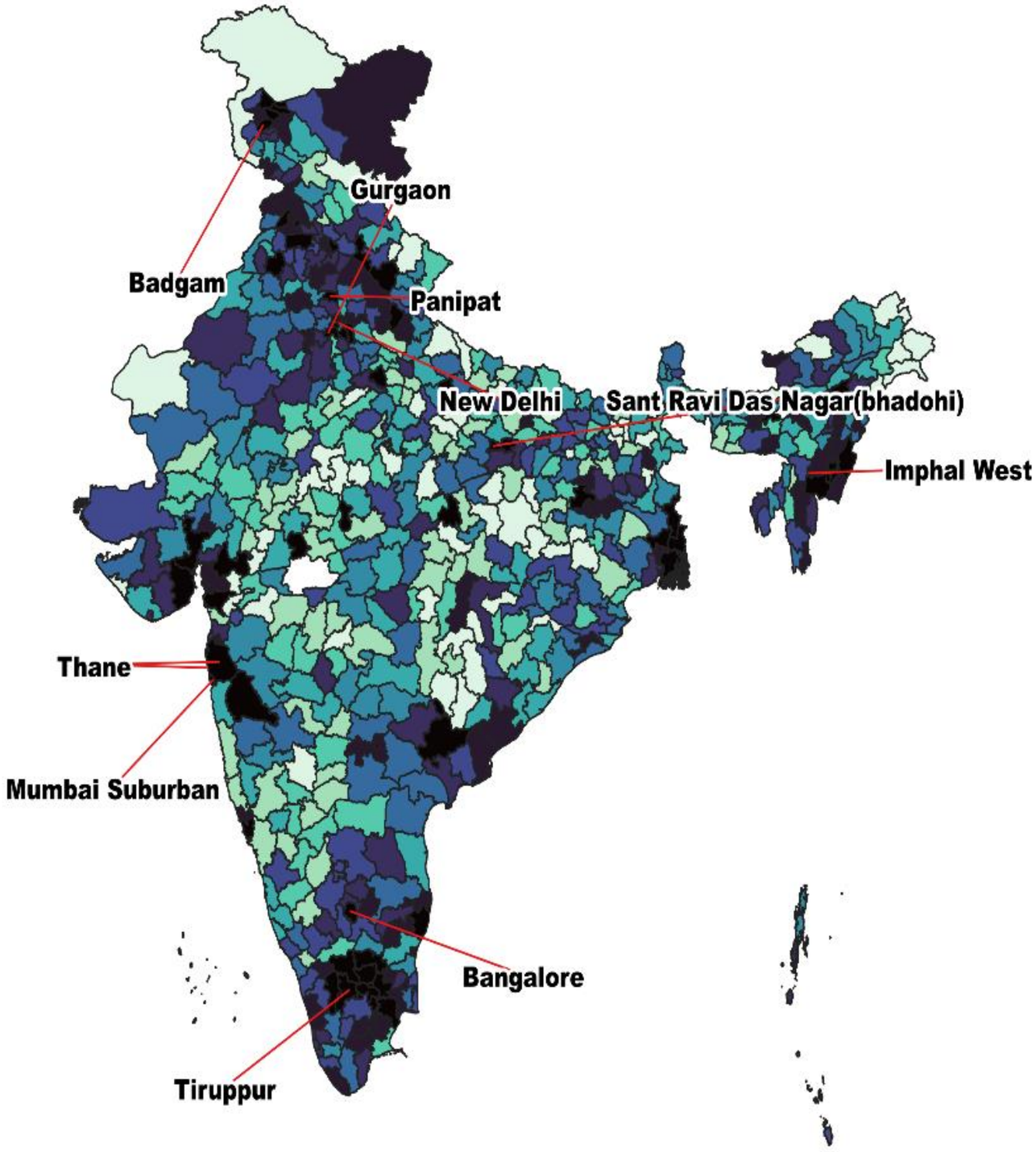
Having examined the sectoral distribution of creative employment in India, we next move to its spatial distribution to identify the creative centers in India. To do this, a Location Quotient (LQ) is estimated across 640 districts[9] of India, measuring the concentration of creative workers within a district relative to the concentration of creative workers in India as a whole.

LQ is calculated as $\frac{\frac{CE_d}{\sum_{d=1}^{s} CE_d}}{\frac{TE_d}{\sum_{d=1}^{s} TE_d}}$ (Wheeler, 2005), where CE_d represents creative employment in a district 'd' out of a total of 's' districts in India, such that d = 1, 2 ,3 ….. s. Similarly, TE_d is the total employment in that particular district. Further, $\sum_{d=1}^{s} CE_d$ represents the total creative employment in India and $\sum_{d=1}^{s} TE_d$ represents the total employment in India.

The higher the value of the LQ in a particular district, the greater will be the concentration of the creative workforce in that district relative to the overall concentration of creative employment in India. As Figure 2 indicates, creative workers are primarily concentrated within cities in India; the top ten districts with the highest LQ estimates are Tirupur (4.09), Mumbai Suburban (3.94), Bangalore (3.86), New Delhi (3.38), Panipat (3.20), Gurgaon (3.14) and Sant Ravi Das Nagar (3.13), Thane (2.87), Badgam (2.77), and Imphal—East and West (2.67). Each of these districts exhibits unique characteristics that make them a center of creativity. Tirupur district in Tamil Nadu is known for being a dominant player in the production and export of knitted garments (Yoganandan, 2015). Mumbai Suburban is a district within the Mumbai Metropolitan Area that is known for its significant role in the production and dissemination of Media and Entertainment in India (Bombay First 2009). This includes the world-renowned Hindi film industry (Bollywood) and creative hubs like the Dadasaheb Phalke Chitra Nagari, an integrated studio complex that contains 16 studios and 42 outdoor location venues for the purpose of movie production.[10] Bangalore is world renowned for its production and exports in the computer and software-related industries (Meenakshi 2012). New Delhi and Gurgaon districts are part of the National Capital Region (NCR) of India—a hub of education, research, news media, and information technology in the country (CII 2005). Panipat district in the Indian state of Haryana is known as the "city of weavers" and is renowned for its home furnishing and floor covering products (TERI 2016). Sant Ravidas Nagar in Uttar Pradesh has a rich cultural history of manufacturing exquisite carpets and is a major center for the same in India (K. Singh et al. 2008). Thane, with its close proximity to Mumbai, caters largely to the Indian media and entertainment sector. The district of Badgam is known for exquisite handicrafts like shawls, crewels, namdha, chain stitch, wood carving, costume jewelry, *Kani* shawls, paper mache, and carpets (Yasmin and Bhatt 2013). Imphal is home to the largest women's market in Asia—the Ima market—which is famous for handwoven items, particularly Kauna grass craft (Panwar 2017). An overview of the top 100 districts in India by their LQ is given in Table A3.

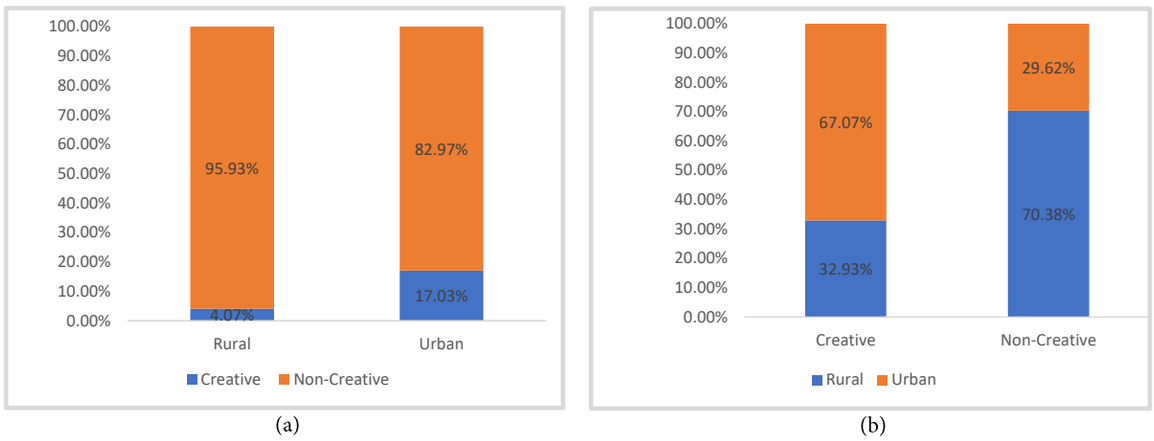
9 As per 2011 Census of India
10 Film City , Mumbai

Figure 2: Spatial Distribution of Creative Employment across Districts in India



Source: Authors' computation based on PLFS data

Figure 3: Rural–Urban Distribution of Creative and Non-Creative Workers in India



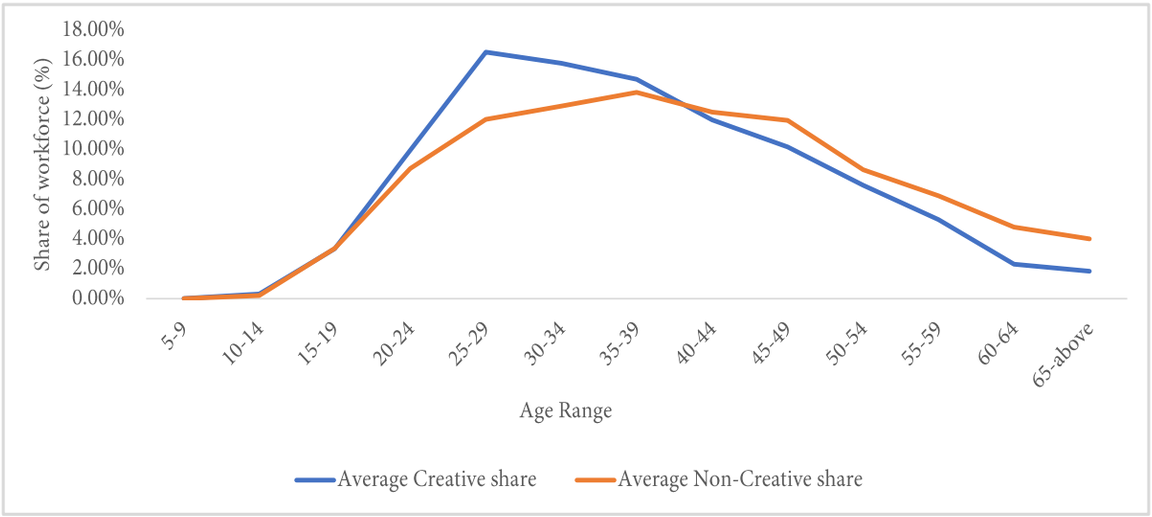
Source: Authors' computation based on PLFS data

Moving on from the geographical distribution of the creative workforce in India to the rural–urban divide as shown in Figure 3, it is found that creative employment is more urban centric; a sizeable 67.07% of all creative workers are in the urban areas, compared to merely 29.62% non-creative workers in the urban areas. Furthermore, while the creative workforce accounts for 8.03% of India's total employment, it contributes about 17.03% to total urban employment but only 4.07% to total rural employment. This result underpins the importance of the creative economy in generating employment within urban areas in India that face a much starker unemployment situation compared to the rural areas in the country. Estimates suggest that the unemployment rate in the urban sector between 2017–2018 and 2019–2020 averaged around 7.5%, significantly higher than both the average rural unemployment rate of about 4.77% and the overall average unemployment rate of 5.57% during the period (National Statistical Office 2021, p. 65).

Next, to assess the demographic trends of the creative employment, the age composition of the creative workforce is examined and is compared with that of the non-creative workforce, as shown in Figure 4. The share of the creative workforce in India is highest for the age group 25 to 29 years, consisting of 16.55% of all creative workers. On the other hand, the non-creative workforce is primarily concentrated around the age group of 35 to 39 years, capturing about 13.84% of all non-creative workers. It is clear that the creative workforce in India is more youth[11] centric with 29.87% of all creative workers falling between the age bracket of 15 and 29 compared to 24.16% of all non-creative workers falling in that bracket. This result has important policy implications for India as this shows the potential for the creative economy to create employment opportunities for the youth in the country. India has been facing high youth unemployment rates of about 16.53% per annum on average between 2017–2018 and 2019–2020 (National Statistical Office 2021, p. 66) as compared to the overall unemployment rate that averaged 5.57% during the same period (National Statistical Office 2021, p. 65). The situation gets even bleaker when we look at youth unemployment rates within the urban sector, which averaged 20.23% between 2017–2018 and 2019–2020 as compared to youth rural unemployment that averaged 15.16% during this period (National Statistical Office, 2021, p. 66). Given the urban and youth centric characteristic of the creative workforce in India, it seems imperative that concerted policy focus be shifted toward the sector to promote overall development of the country's economy.

11 Youth here refers to people between the ages of 15 and 29 years, following from the definitions of National Youth Policy (2014) and PLFS.

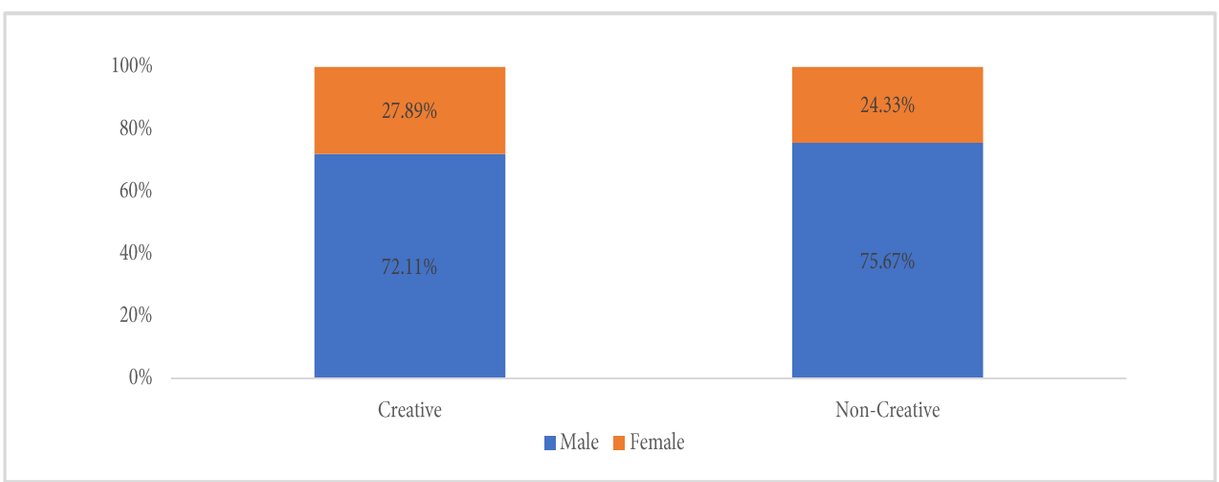
Figure 4: Age Distribution of Creative and Non-Creative Workers in India



Source: Authors' computation based on PLFS data

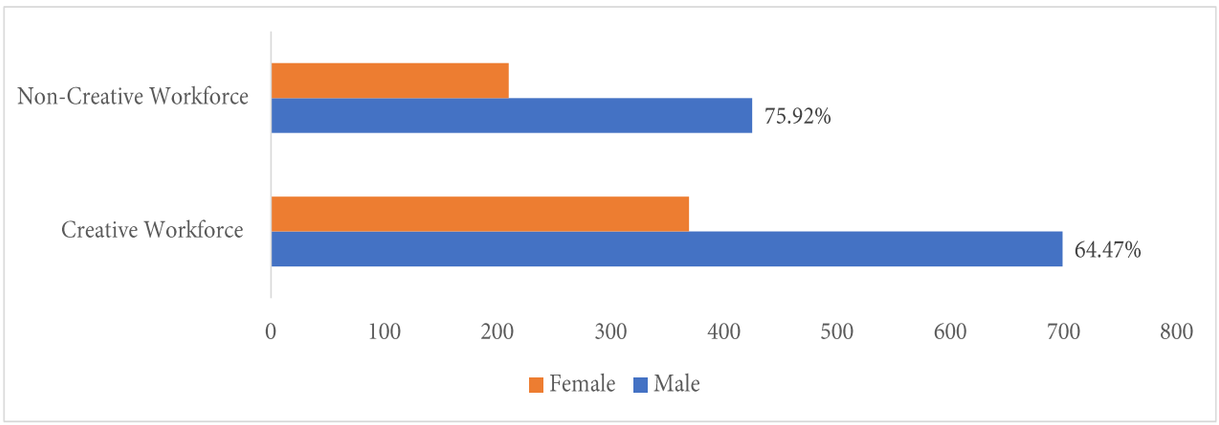
While it is clear from the above analysis that India's creative employment is both urban and youth-centric, the data suggests that it is also relatively less gender-biased. Figure 5 presents the gender distribution of creative employment in India and shows that the female share in creative employment (27.89%) is higher than in non-creative employment (24.33%) or even in overall employment (24.62%). It accounts for a total of 11.08 million female creative workers in the Indian economy. To better gauge the extent of female contribution in the sector, the gender wage differential (calculated as the difference in the daily average wage between all men and women) across all occupations within the two categories (creative or non-creative) is also assessed as shown in Figure 6. It is found that there is a significant gender wage gap prevailing across both the creative as well as non-creative workforce, though the gap is significantly wider among the latter. This implies that female workers in India employed in creative occupations accrue a higher wage than those employed in non-creative occupations. This wage premium is uniform across all of the highly creative industry groups discussed later, indicating a strong trend within the creative workforce to be more gender inclusive. Thus, given the higher prevalence of female workers in the creative workforce coupled with higher wages, the creative economy in India is positioned to be a driver for gender inclusion in India.

Figure 5: Gender Distribution of Creative Employment in India



Source: Authors' computation based on PLFS data

Figure 6: Gender Wage Gap in India : Creative and Non-Creative Workforce

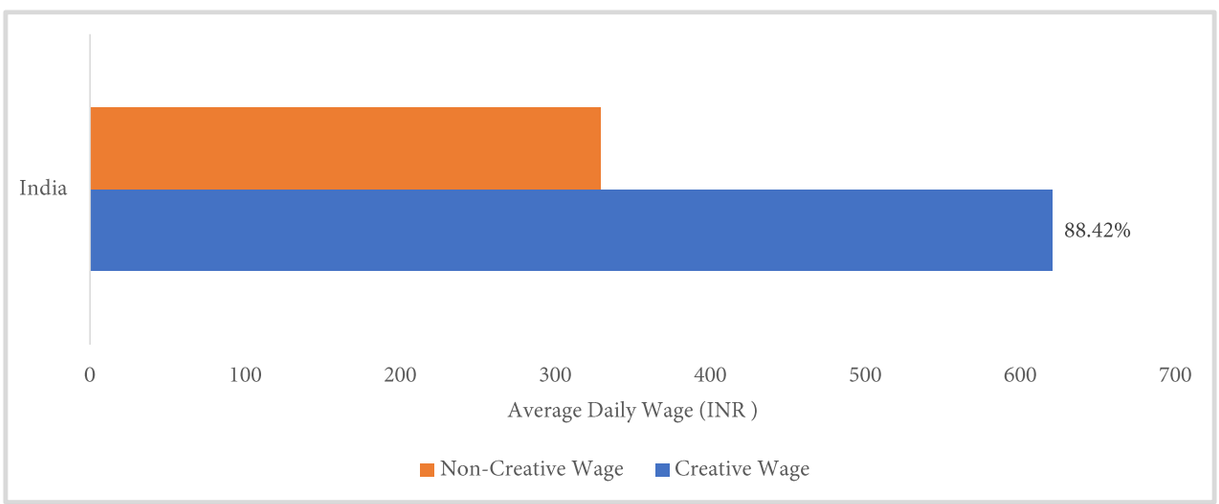


Source: Authors' computation based on PLFS data

Next, we examine the overall wage differential (calculated as the difference in the average daily wages) between creative and non-creative workers between 2017–2018 and 2019–2020, as shown in Figure 7. The findings suggest a significant wage differential of 88.42% in favor of the creative workforce, signifying the large productivity gain that could be leveraged by promoting creative employment.

Based on the methodology discussed earlier, wage estimates of creative and non-creative workers are used to ascertain the contribution of creative occupations to overall GVA. It is found that the creative occupations on average contributed 20.22% to India's total GVA between 2017–2018 and 2019–2020. The sectoral composition of the creative GVA is shown in Figure 8(a), which indicates that the tertiary sector contributes the most to the GVA in India's creative economy (69.47%), followed by the secondary sector (27.58%), whereas the primary sector lags behind (2.95%). Comparing these shares with the contribution of the non-creative occupations to GVA in Figure 8(b), it is found that the major contribution to GVA is again by the tertiary sector (63.32%), followed by the primary sector (21.23%) and the secondary sector (15.45%). These results clearly suggest that India's creative economy is largely comprised of the tertiary and the secondary sector (about 97.05%), whereas the primary sector makes significant contributions to non-creative GVA. The significant role of the creative workforce in the secondary sector is underpinned by the fact that even though it contributes to 20.22% of the economy's total GVA, it produces a remarkable 31.18% of the total value added in the secondary sector. Hence, a concerted effort toward supporting India's creative economy through optimal policy support could enable structural transformation through transition from the primary sector to the secondary sector.

Figure 7: Wage Differential Between Creative and Non-Creative Workers



Source: Authors' computation based on PLFS data

Figure 8a: Sectoral Composition of Creative GVA

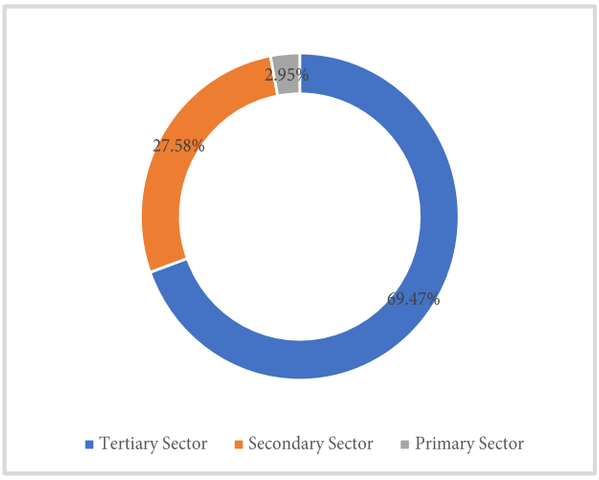
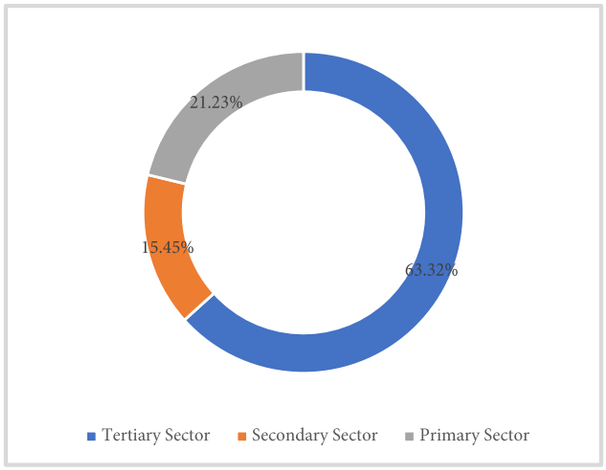


Figure 8b: Sectoral Composition of Non-Creative GVA



Source: Authors' computation based on NAS data

3.4.2 Industry-Level Estimates

Moving on to a more disaggregated analysis of creative employment and GVA, the estimates are obtained across industries. All three digit NIC 2008 industries are classified based on their respective creative intensities into four categories: (i) Highly Creative; (ii) Moderately Creative (iii); Low Creative; and (iv) Non-Creative.

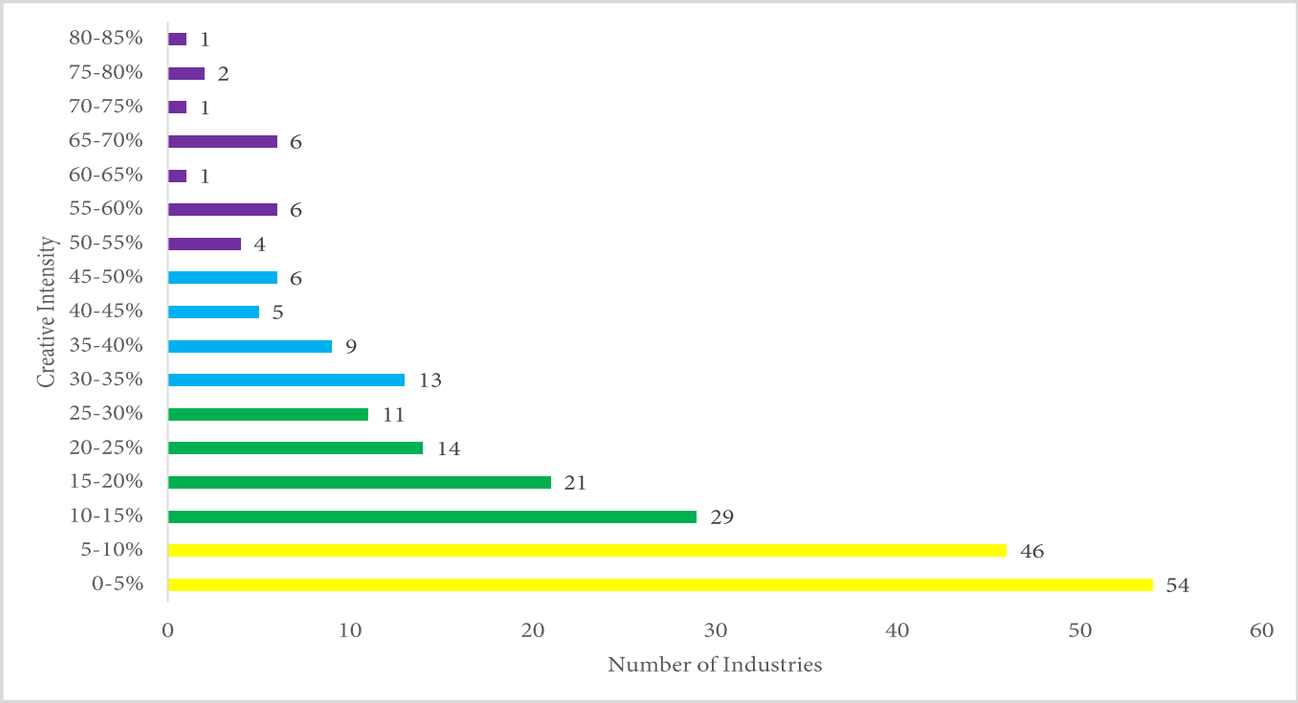
Creative intensity is the ratio of the number of people employed in creative occupations to the total number of people employed. Therefore, the creative intensity of each industry 'j' is given by:

$$CI_j = \frac{\sum_{i=1}^{m} E_i^j}{\sum_{i=1}^{n} E_i^j}$$

where E_i is the number of people employed within each occupation code 'i', 'n' represents the total number of occupations in the economy, whereas 'm' represents the total number of identified creative occupations, such that m $\in$ n. Therefore, $\sum_{i=1}^{m} E_i^j$ represents the total creative employment in a particular industry 'j', whereas $\sum_{i=1}^{m} E_i^j$ represents the total employment in a particular industry 'j'.

Figure 9 shows the distribution of industries into the four categories based on their relative creative intensity scores. All industries with creative intensity below 10% (yellow-colored bars) are classified as non-creative, which accounts for 43.67% of all industries. Next, all industries with creative intensities between 10% and 30% (green-colored bars) are classified as low-creative, which accounts for 32.75% of all industries. All industries with creative intensities between 30% and 50% (blue-colored bars) are classified as moderately creative, which accounts for 14.41% of all industries. Finally, all industries with creative Intensities above 50% (violet-colored bars) are classified as highly creative, which accounts for 9.17% of all industries. A detailed table showing the industries in India (at the three-digit level) and their respective creative intensity is given in Table A4.

Figure 9: Distribution of Industries by Creative Intensity



Source: Authors' computation based on PLFS data

Note: NIC 2008 three-digit codes 266, 268, 552, 652, 653, 774 and 990 have been excluded from the analysis on the premise that these accounted for less than 10,000 jobs and had a high coefficient of variation across years (>1).

Based on this classification, a total of 21 industries are featured among the highly creative, as shown in Table 2.

Table 2: Highly Creative Industries in India

NIC 2008	Description
722	Research and experimental development on social sciences and humanities
711	Architectural and engineering activities and related technical consultancy
601	Radio broadcasting
141	Manufacture of wearing apparel, except fur apparel
582	Software publishing
182	Reproduction of recorded media
853	Higher education
592	Sound recording and music publishing activities
931	Sports activities
602	Television programming and broadcasting activities
620	Computer programming, consultancy, and related activities
429	Construction of other civil engineering projects
143	Manufacture of knitted and crocheted apparel
142	Manufacture of articles of fur
852	Secondary education
741	Specialized design activities
131	Spinning, weaving, and finishing of textiles
712*	Technical testing and analysis
303*	Manufacture of air and spacecraft and related machinery
321	Manufacture of jewelry, bijouterie, and related articles
742	Photographic activities

**303 & 712 were later removed from the industry grouping in Table 3 based on suggestions and inputs received from experts and relevant stakeholders.*

Source: Authors' computation based on PLFS data

The industry codes presented in Table 2, characterized as "highly creative," can be further grouped into five broad industry categories, as shown in Table 3.

Table 3: Highly Creative Industry Groups

Industry Group	NIC 2008 Industry Code	Description
Media, Entertainment, and Recreation	182	Reproduction of recorded media
	592	Sound recording and music publishing activities
	601	Radio broadcasting
	602	Television programing and broadcasting activities
	742	Photographic activities
	931	Sports activities
	58203	Publishing of computer games for all platforms
Computer Programming and Software Publishing	620	Computer programming, consultancy, and related activities
	58201	Publishing of operating systems and system software
	58202	Publishing of operating business and other applications
Architecture, Design, and Engineering	429	Construction of other civil engineering projects
	711	Architectural and engineering activities and related technical consultancy
	741	Specialized design activities
Fashion: Textile, Handicrafts, and Jewelry	131	Spinning, weaving, and finishing of textiles
	141	Manufacture of wearing apparel, except fur apparel
	142	Manufacture of articles of fur
	143	Manufacture of knitted and crocheted apparel
	321	Manufacture of jewelry, bijouterie, and related articles
Education and Research	722	Research and experimental development on social sciences and humanities
	852	Secondary education
	853	Higher education

Source: Authors' computation based on PLFS data

While the aggregate level estimates suggest that India's creative industry is urban-concentrated, youth-centric, and relatively less gender biased, it is imperative to gather industry-wide insights (sectoral, demographic, and gender based), particularly on these "highly-creative" industry groups.

Findings suggest that while at the aggregate-level, the share of female employment is slightly higher among the creative workforce than in the non-creative workforce, the same is not uniform across all industry groups. For instance, within the media, entertainment, and recreation industry group, the female employment share for the creative workforce stands at 5.29% compared to 10.11% for the non-creative workforce, both of which are significantly lower than the national average. The trend is not surprising, given similar findings in the case of the EU-27, where the female share in overall cultural employment (47.7 %) was found to be slightly higher than the average share of women in employment across the whole of the economy (45.9%); however, female workers comprised only 21% of all cinematographers, directors, writers, editors, executive producers, and producers working in the top 100 grossing films in 2020 (OECD 2021). On the other hand, creative employment in industries like fashion (textiles, handicraft, and jewelry) and education and research is characterized by a high female share of 41.07% and 38.17%, respectively.

Looking at the rural–urban distribution of creative employment, aggregate level estimates clearly showed that the creative workforce held a higher share in urban employment than in rural employment. Not only is this trend uniform across all highly creative industry groups, the creative workforce in these industry groups dominates the urban sector employment, exhibiting shares of more than 50% of total urban employment across all highly creative industry groups. Furthermore, in industries like fashion (textiles, handicraft, and jewelry) and education and research, the creative workforce contributes a major share even toward rural employment to the tune of

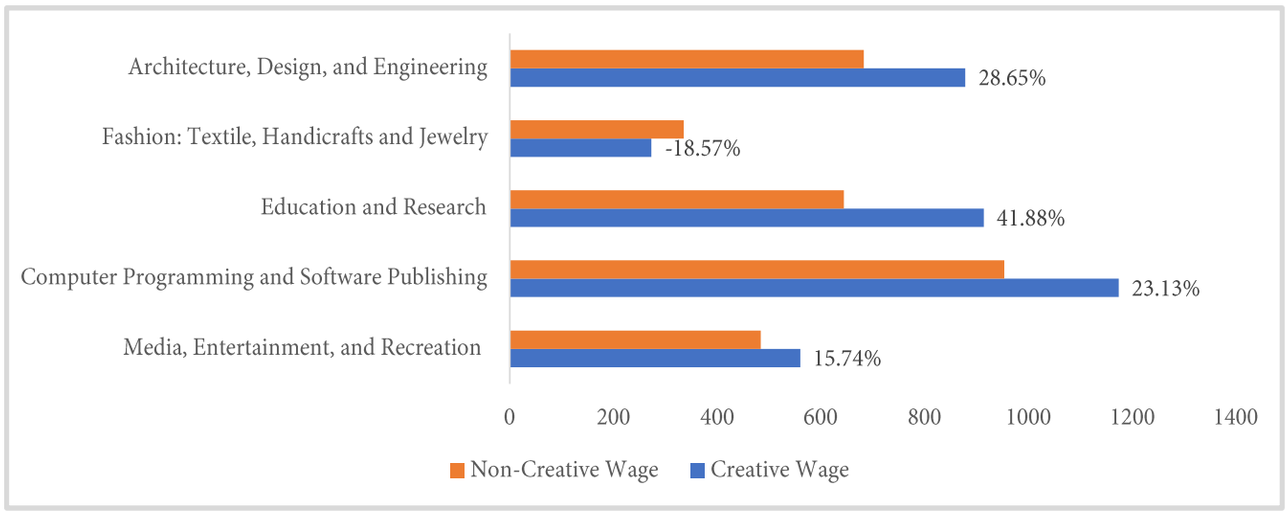
70.31% and 54.65%, respectively.

Moving to the demographic trends, industry-wide findings seem to corroborate the aggregate trends, indicating a high share of the creative workforce falling within the age group of 15 to 29 years. The highest share of youth employment was found in the industry group of Computer Programming and Software Publishing (45.88%).

Aggregate estimates indicated a significant wage differential in favor of creative workers as compared to non-creative workers—to the tune of 88.42%. To gauge the degree of wage disparity between creative and non-creative workers across the highly creative industries, Figure 10 looks at the percentage difference in wages between the two categories of workers across all highly creative industry groups. These differentials can be analyzed to study the difference in productivity within the creative and non-creative workforce in each industry group. A similar trend is observed as was seen in the case of all India—the creative workforce on average accrues a higher daily wage compared to the non-creative workforce in Media, Entertainment, and Recreation (15.74%), Computer Programming and Software Publishing (23.13%), Architecture, Design, and Engineering (28.65%) and Education and Research (41.88%) industry groups. However, the average wage of the creative workforce is less than that of the non-creative workforce by 18.57% in the Fashion industry.

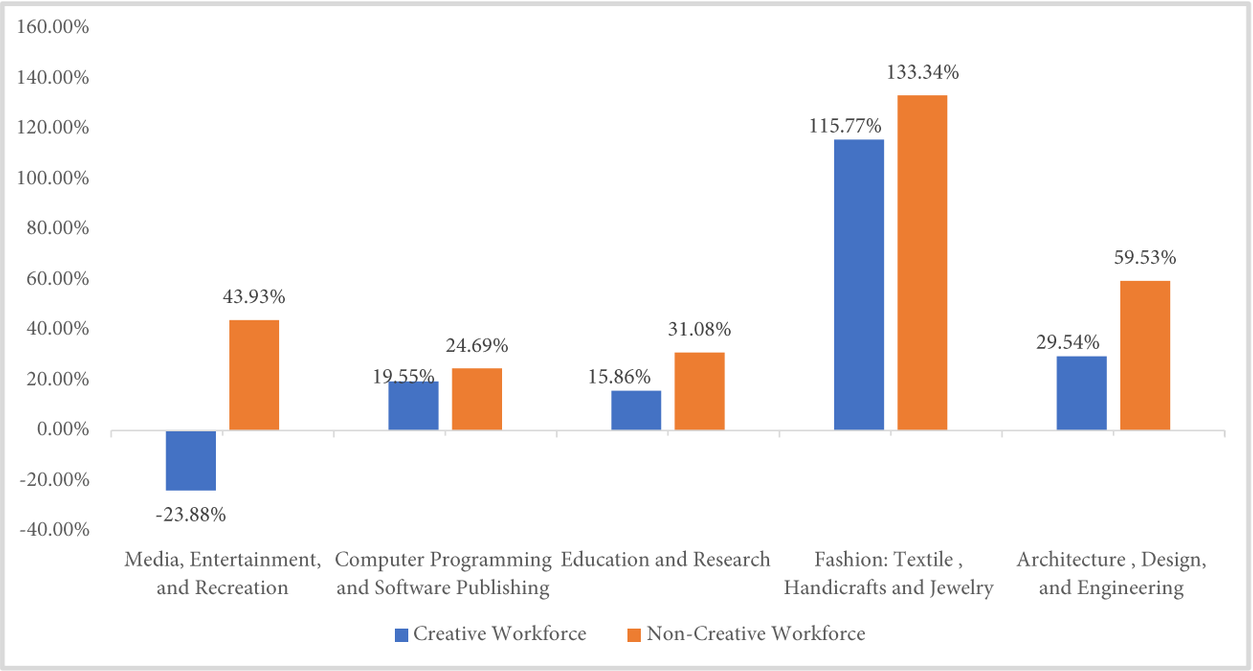
Next, to better understand the level of gender balance across highly-creative industries, Figure 11 compares male–female wage differential between creative and non-creative workers across highly-creative industry groups. The results clearly indicate that the creative workforce has a lower gender pay gap than the non-creative workforce. Interestingly, within the Media, Entertainment, and Recreation industry group, female creative workers earn significantly higher than their male counterparts. One possible explanation could be the fact that the lower paying creative occupations within this industry group are primarily taken up by the male workers, whereas the female workers (albeit significantly smaller in number) are primarily employed in the higher paying creative occupations.

Figure 10: Wage Differentials: Creative and Non-Creative Workforce



Source: Authors' computation based on PLFS data

Figure 11: Gender Wage Gap: Creative and Non-Creative Workforce



Source: Authors' computation based on PLFS data

4. Challenges and Policy Recommendations

Our results indicate that the creative workforce is younger, more urban-centric and less gender-biased as compared to the non-creative workforce. Further, a significant wage differential is found in favor of the creative workforce, indicating a sharp difference in productivity. Delving more deeply into the highly-creative industry groups, it is found that the findings are not uniform as discussed above. This seems obvious, given that a high degree of heterogeneity is observed in terms of the nature of output produced by these industry groups. Given this heterogeneity, the challenges faced by these industries and the consequent policy recommendations could greatly vary. For this purpose, a focused round-table consultation with stakeholders belonging to these industries and industry associations was conducted to gather insights on the impediments faced and policies needed in these industry groups.

There was a strong consensus among all stakeholders that India's creative sector is characterized by a high degree of localized production and its openness to investment and competition. Industries like textiles, handicrafts, animation, software services, and the Hindi film industry (Bollywood) were seen to be globally competitive, and therefore, they projected India's soft power internationally. Further, the rapid improvement in Internet penetration (which increased from 15% in 2015 to 43% in 2020[12]) and the emergence of innovative digital technologies were seen to have significantly transformed this sector. This seemed to have democratized the production of creative goods and services and streamlined structural bottlenecks in distribution of the same. This has made the creative sector in India much more inclusive and has increased its domestic as well as global reach.

However, this sector continues to face several structural and regulatory bottlenecks, as discussed below in detail, that hamper its development and growth. What is needed are policies that are specifically targeted to cater to these industries; alternatively, bottlenecks could be addressed by finding synergies within our existing policy framework. However, given the huge heterogeneity of these industries, there cannot be a one-size-fits-all policy for the entire creative sector and, therefore, based on the broad challenges faced by the sector in general, some generic policy recommendations have been provided. While these policies would help in developing the sector as a whole, there is a lot more that the policymakers and the various ministries need to do at the industry level.

12 World Bank individuals using the Internet (% of population)—India

4.1 Increasing Recognition of Indian Culture Globally

Despite the fact that the highly creative industry groups have achieved relative success in becoming globally competitive and reaching international markets, the sector still faces some lingering issues. The successful creation of a globally recognized brand is a major challenge for this sector, particularly in the textile and handicrafts industry and the media industry. The lack of awareness or misperception about local culture and arts in India is an impediment facing both industries. Because of this lack of recognition, it is difficult to build a successful brand and expand both domestic and international customer bases. There is a need to promote Indian cultural and creative goods and services through the organization of events, trade fairs, and international festivals. The Ministry of Culture of the Government of India has recently introduced a scheme called the Global Engagement scheme, which promotes Indian culture internationally by supporting Indian art forms through the organization of "Festivals of India" internationally and the provision of financial assistance to cultural societies promoting Indian culture outside India. This scheme can be utilized by the creative sector in India to enhance the international promotion and distribution of their goods and services. The creative sector could also greatly benefit from initiatives undertaken both at the federal as well as the state level to aid creative and cultural entrepreneurs in showcasing their goods and services at exhibitions and trade fairs. At the federal level, the annual international trade fairs organized by the Indian Trade Promotion Organization (ITPO) could help showcase Indian culture globally, while at the state level, initiatives like the recently proposed Delhi Shopping Festival 2023 by the Delhi government could help promote state's cultural heritage and tourism and create jobs in the sector.

India's creative workforce is found to be concentrated in the urban sector; therefore, initiatives to specifically promote the creative sector within cities by identifying and creating clusters could improve their global reach. The Building Creative Cities Network could be one way to globally promote a city's creative and cultural assets. UNESCO developed this concept to foster cooperation and facilitate the exchange of experiences and knowledge across seven cultural domains: design, film, crafts and folk art, gastronomy, media arts, literature, and music. The UNESCO Creative Cities Network's (UCCN) online platform features information on member cities' initiatives for knowledge exchange, and the organization hosts an annual conference to foster dialogue among members (World Bank 2020). India currently has six cities (Jaipur, Varanasi, Chennai, Hyderabad, Mumbai, and Srinagar) within the UCCN. India can also learn from the Indonesian Creative Cities Network (ICCN), which established its own national creative cities network comprised of 51 cities and regencies throughout Indonesia. A national network of this type could fully capitalize creative assets in the cultural centers of the country and, through this, build sustainable, inclusive, and balanced growth. An existing scheme of the government of India that can be used to establish a creative cities network is the HRIDAY scheme. The scheme aims to preserve and revitalize heritage in 12 cities in the country with the objective of linking the city's cultural heritage to increasing tourism and enhancing avenues of livelihoods for its residents. The government can lay the groundwork for an Indian creative city network by using the network of cities currently included in the HRIDAY scheme, one of which (Varanasi) has already been designated as a creative city by UNESCO. The creative centers identified by the present study could also be considered as potential candidates to be part of this network.

4.2 Improving Access To Finance

Access to finance continues to be a major challenge for entrepreneurs and micro, small, and medium-sized enterprises (MSMEs) in the highly creative industry groups, particularly in the fashion industries. Traditional financing schemes are unsuitable for some of these entrepreneurs and enterprises due to high uncertainty of market demand, lack of tangible assets for collateral, and a lengthy value generation period. Another challenge that is also present among established firms is the difficulty in quantifying the true economic value of intellectual property, which inhibits firms and creative entrepreneurs from accessing formal sources of finance, thus raising their cost of capital. Credit guarantee schemes and crowdfunding can be useful in financing entrepreneurs and MSMEs in the creative sector. These methods can be appropriate for creative goods and services, such as the creation of handicrafts, photography, graphic design, individual music publishing, and other creative activities that involve small-scale production. The Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) was established by the Indian government to provide credit to micro and small enterprises without the use of collateral or third-party guarantees. This scheme employs a "Hybrid Security" product that implicitly guarantees the portion of the credit facility that is not

covered by collateral security. The government could devise a similar scheme to include entrepreneurs and micro and small businesses in the creative sector. The government could also set up a crowdfunding platform to connect creative small- and medium-sized enterprises (SMEs) and entrepreneurs with the crowdfunding community. For instance, in Europe, an online portal "Crowdfunding4Culture" was created by the European Commission to collect data on the crowdfunding market for the cultural and creative industries and to facilitate connections among creative professionals and crowdfunding communities. This allowed users to search for crowdfunding campaigns for cultural and creative projects in Europe (World Bank, 2020). For enterprises requiring a larger capital injection, venture capital can be a suitable source of funding. This is because venture capital firms have a longer time horizon for their investments and invest in businesses involving greater uncertainty. For example, the HEVA Fund is an African fund dedicated to assisting creative professionals in Rwanda, Tanzania, Kenya, and Uganda. The Cultural Heritage Seed Fund is a scheme within this fund that promotes start-ups in the crafts, fashion, film, gaming, music, performing arts, and tourism sectors (World Bank 2020). India can also establish a government-sponsored venture capital fund with the sole purpose of promoting enterprises in the creative sector.

4.3 Reforming Intellectual Property Rights Framework

The creative sector faces critical bottlenecks regarding the protection of intellectual property. This includes the lack of an effective copyright enforcement framework, insufficient Intellectual Property (IP) training and expertise, particularly to address specific issues of digital copyright infringement, a cumbersome registration process and complex paperwork, a lack of coordination among enforcement agencies, inefficiency in collective management society operations, and expensive judicial procedures.[13] Due to such weak enforcement and complex procedures for damage claims, piracy, Intellectual Property Rights(IPR) thefts, and copyright infringement pose considerable challenges to the operations of the highly creative industry groups and are responsible for the loss of a large share of output of creative producers in India. The National Policy on IPR (2016) was introduced to tackle some of these issues, particularly those related to the administration and enforcement framework for IPRs in India. This policy reduced certain limitations and simplified some processes within the IPR framework; however, there is still scope for improvement. First, there is a need to reform existing laws to keep in line with the rapidly evolving technological landscape in the country. A positive step would be for the government to reform the Design Act, which seems to be losing its true relevance in light of the creative sector's fluid nature. The law stifles innovation in the creative sector by increasing compliance costs. Second, a concerted effort is required to address the procedural delays and complexity that still plague India's IPR regime. For instance, the average pendency for a final decision in acquiring a patent in India is 42 months, compared to 20.8 months in the US, 20 months in the People's Republic of China, 15.8 months in the Republic of Korea, and 15 months in Japan (Department of Economic Affaris, Ministry of Finance 2022, pp. 339–342). This is one major reason that India lags behind these countries when it comes to patent grants. Possible solutions to this problem could be requiring the controller to publish the applications for patents in a shorter timeframe and increasing the number of patent examiners in India.

4.4 Human Capital Development Among Youth

A distinctive feature of India's creative economy is that a significant proportion of the workforce is young. India's education and skilling ecosystem must be improved to prepare its youth for the rapid technological changes that are transforming the creative sector. This entails instilling digital skills, such as digital marketing and graphic design in young workers and creative entrepreneurs. This is critical given the rise of online freelancing and microwork in the creative sector. Further, a lot of creative industries in India, like the animation and gaming industry, focus on producing content for the international market rather than the domestic market. This is because India's skilling ecosystem puts greater emphasis on imparting technical skills rather than developing creative skills to produce unique products. Hence, it is imperative to develop both creative and digital skills within the youth. A national level initiative which can be utilized in digitally skilling the youth for the creative sector is the Government of India's digital skilling program in emerging and future technologies. This program

13 Also pointed out by Patnaik (2020).

creates a platform that will focus on skilling, reskilling, and upskilling students via internships, apprenticeships, and employment in Emerging Technologies. The program has already onboarded 100+ technology corporate/manufacturing firms to its platform for providing free-of-cost emerging technology certifications. Furthermore, the encouragement of creative entrepreneurship can help young people develop their creative skills. This can be achieved by developing entrepreneurship skills in young creative entrepreneurs, which includes the development of marketing and technical skills. A scheme of the government of India that could aid youth entrepreneurs in the creative sector would be the Pilot Project on Entrepreneurship, which aims to promote entrepreneurship as an alternate career choice by providing end-to-end entrepreneurship education, handholding, and mentoring support to potential and existing entrepreneurs who aspire to start or scale-up their existing enterprises.

4.5 Need For An Integrated Policymaking Institution

While there exist strong synergies between the policy needs of the sector and existing policies and initiatives of the government, there is no integrated policymaking institution for the sector in the country. The policymaking for creative industries remains scattered among 14–16 ministries, limiting its growth. Further, due to the heterogenous nature of the creative economy, there is no single association or informed industry body to take forward its views on regulations and policies beneficial to its growth and development. Hence, streamlining the policy development process for the sector will greatly aid its growth. This can be accomplished by establishing an intermediary organization that can better inform policymakers on the policy support needed for the creative economy's growth and development.

5. Role of G20: Can India Lead the Way?

For the creative and cultural industries to play a critical role in driving the growth process, governments across the globe need to reform policies in their own countries as well as to collectively come together and form a consensus within country groups, such as the G20 (Kukreja 2022). Of late, the creative economy has become a critical component of the agendas of almost every G20 presidency. Saudi Arabia in 2020 was the first to recognize and acknowledge the cultural and creative industries as key drivers of inclusive and sustainable economic development. Subsequently, the issue was carried forward during the Italian G20 presidency in 2021 and was firmly placed on the agenda. Indonesia, which assumed the G20 presidency in 2022, also emphasized on the role of the creative economy sector in promoting sustainable development, and the discussion further took place at the various engagement groups like the T20 and the U20. As India has now assumed the G20 presidency, it is important that it leverages this opportunity to concretely place creative economy on its agenda. Given that the sector accounts for a significant share of employment and GVA in India, its importance to the country's economy cannot be overemphasized.

A major challenge for this sector is the lack of an available database and statistics. This can be achieved if there is consensus at the G20 on an internationally acceptable uniform definition of the creative economy and its constituents. This will greatly assist in assessing the impact of the creative sectors on economic growth within a country and will allow evidence-based policymaking at both the national and regional levels. In this regard, India could take the lead in bringing the G20 nations together to collectively arrive at an umbrella definition for the sector.

There is also a need to improve information dissemination, training, market access, knowledge management, policy formulation, and research in the sector. In this regard, India could take the lead by way of its G20 presidency in getting the G20 nations to work toward establishing an intercountry network to promote the cultural and creative sectors. This could be along the lines of the Arterial Network in Africa: a non-profit civil society network formed in 2007 and comprised of artists, organizations, and cultural practitioners from 17 African countries. The network has worked to strengthen Africa's cultural and creative sectors through information dissemination (World Bank 2020).

A large number of artists and creative actors, particularly in developing countries like India, work as freelancers with limited financial support, inhibiting their ability to reach a global audience and, thereby, limiting international cultural exchanges. The G20 can help by providing mobility grants to artists and creative workers across its member countries. This grant will support artists and creative workers to travel internationally and present their work to new audiences and to experience diverse cultural exchanges. This could be the perfect opportunity for India to place the proposal on the G20 table. Countries could also work together toward

creating a digital platform for creative and cultural workers to increase their visibility. The online platform could help present and archive the artistic production (animation, audio/visual production, design, handicrafts, film, graphic art, and interactive projects) of creative workers across G20 countries.

Finally, the creative sector plays an important role for the success of the 2030 Agenda for Sustainable Development, thus India could lead the G20 nations toward integrating culture into their broader economic and social development strategies, bringing them in line with the UN Sustainable Development Goals (OECD 2021).

We are at an inflexion point currently, as far as the G20 is concerned. The first inflexion point at the G20 came in 2010, when the Republic of Korea took over the G20 presidency and it put development very strongly on the agenda, by bringing out the Development consensus. Prior to that, development issues lacked discussion space at the G20-level. Today, the G20 stands at another historic moment when three developing countries are supposed to chair the G20 back-to-back: Indonesia will be followed by India and then Brazil. This seems to be the perfect opportunity for these countries to place creative economy strongly on the G20 agenda and help build a momentum to bring about a significant impact by obtaining consensus towards policy support for the sector.

6. Conclusion

The creative economy has become a powerful transformative force in the world today. It is one of the most rapidly growing sectors of the world economy in terms of income generation, job creation, and export earnings. However, since there is no uniform definition of the term, and as it varies by time and space, any estimates related to it are likely to be largely ambiguous and unreliable. This calls for an utmost need to look for a comprehensive and wide-ranging definition of India's creative economy that will help to provide more reliable estimates on the sector. Against this backdrop, the present study identifies specific characteristics of the creative economy that are relevant for India based on an in-depth analysis of the various definitions of creative economy provided in the literature. These characteristics are then used to arrive at a definition for India's creative economy. With reference to the definition so developed and based on the various approaches used in the literature to measure the creative economy, the study provides one of the most comprehensive and exhaustive estimates on the contribution of India's creative economy to the country's overall employment and GVA, using the data from the Periodic Labour Force Survey (PLFS) for the years 2017–2018, 2018–2019, and 2019–2020. It is found that India's creative economy on average accounted for 8.30% of total employment between 2017–2018 and 2019–2020. Further, it contributed about 20.22% to India's Gross Value Added during the period. Interestingly, as compared to the non-creative workforce, a huge 88.42% wage differential in favor of creative workforce is observed. Also, the creative workforce is found to be more urban-centric, younger, and less gender biased as compared to the non-creative workforce. In terms of spatial concentration of employment, the creative workforce is found to be concentrated in cities, with Tirupur, Mumbai Suburban, Bangalore, New Delhi, and Gurgaon turning out to be the top five creative centers in India. In terms of industrial concentration, the creative workforce was found to be most highly concentrated in the industries of: (a) Media, Entertainment, and Recreation; (b) Computer Programming and Software Publishing; (c) Architecture, Design, and Engineering; (c) Fashion; and (d) Education and R&D industries. Based on the findings and consultations with experts and stakeholders, some policy suggestions are then made to support the development of the sector. These include increasing the recognition of Indian culture globally, improving access to finance for this sector, addressing bottlenecks within the country's IPR framework, and facilitating human capital development among the youth. While it is important for India to support the sector through domestic policy reforms, its G20 Presidency in 2023 can be a great opportunity to take the lead in driving policy reforms in the sector at a global level.

7. Limitations of the Study

It must be noted that the findings of the study are strongly dependent on the specific occupations that are identified as creative based on mapping of the Indian occupation categories with those from the other countries. The Periodic Labour Force Survey (PLFS) data, which is used for the present analysis, provides information on occupations based on the National Classification of Occupation (NCO)-2004 at a relatively broad disaggregation of three-digit level only. The analysis could significantly improve if this classification is made available at a more disaggregate level.

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Appendix

Table A1: Creative Occupation Identification Matrix

NCO 2004 Code	Occupation Label	Boschma and Fritsch (2009)	Ellis et al. (2009)	Daschko and Allen (2011)	QUT and University of Newcastle (n.d.)	DCMS (2016)	Total Frequency
122	Production and Operations Department Managers	1	1	1	1	1	5
123	Other Department Managers	1	1	1	1	1	5
213	Computing Professionals	1	1	1	1	1	5
214	Architects, Engineers, and Related Professionals	1	1	1	1	1	5
241	Business Professionals	1	1	1	1	1	5
243	Archivists, Librarians, and Related Information Professionals	1	1	1	1	1	5
245	Writers and Creative or Performing Artists	1	1	1	1	1	5
313	Optical and Electronic Equipment Operators	1	1	1	1	1	5
347	Artistic, Entertainment, and Sports Associate Professionals	1	1	1	1	1	5
311	Physical and Engineering Science Technicians	1	1	1	0	1	4
334	Other Teaching Associate Professionals	1	1	1	0	1	4
221	Life Science Professionals	1	1	1	0	0	3
231	College, University, and Higher Education Teaching Professionals	1	1	1	0	0	3
232	Secondary Education Teaching Professionals	1	1	1	0	0	3
244	Social Science and Related Professionals	1	1	1	0	0	3
333	Special Education Teaching Associate Professionals	1	1	1	0	0	3
343	Administrative Associate Professionals	1	1	1	0	0	3
722	Blacksmiths, Toolmakers, and Related Trades Workers	0	1	1	0	1	3
731	Precision Workers in Metal and Related Materials	0	1	1	1	0	3
732	Potters, Glass Makers, and Related Trades Workers	0	1	1	0	1	3
733	Handicraft Workers in Wood, Textile, Leather, and Related Materials	0	1	1	0	1	3
742	Wood Treaters, Cabinet Makers, and Related Trades	0	1	1	0	1	3
743	Textile, Garment, and Related Trades Workers	0	1	1	0	1	3

Source: Authors' computation based on PLFS data

Table A2: Concordance between NIC 2008 and NAS

Economic Sector	Industrial Groups In National Accounts	NIC 2008 Industrial Classifications
Primary Sector	Crops	011,012,013,015,0161,01631,01633,01639,0164
	Livestock	014,017,0162
	Forestry and Logging	02
	Fishing and Aquaculture	03
	Mining and Quarrying	05,06,07,08,09
Secondary Sector	Food Products, Beverages, and Tobacco	10,11,12
	Textiles, Apparel, and Leather Products	13,01632,14,15
	Metal Products	24,25
	Machinery and Equipment	26,27,28,29,30
	Other Manufactured Goods	16,17,18,19,20,21,22,23,31,32,33
Tertiary Sector	Electricity, Gas, Water Supply, and Other Utility Services	35,36,37,38,39
	Construction	41,42,43
	Trade & Repair Services	45,46,47,95
	Hotels and Restaurants	55,56
	Railways	491
	Road Transport	492,493
	Water Transport	50
	Air Transport	51
	Services Incidental to Transport	522
	Storage	521
	Communication and Services Related to Broadcasting	53,60,61
	Financial Services	64,65,66
	Real estate, Ownership of Dwellings, and Professional Services	62,63,68,69,70,71,72,73,74,75,77,78,79,80,81,82, 582
	Public Administration and Defense	84
	Other Services	59,85,86,87,88,90,91,92,93,94,96,97,98,99,581

Source: Authors' computation based on PLFS and NAS data

Table A3: Top 100 Districts in India by Location Quotient (LQ)

District	LQ
Tiruppur	4.09
Mumbai Suburban	3.94
Bangalore	3.86
New Delhi	3.38
Panipat	3.20
Gurgaon	3.14
Sant Ravidas Nagar (Bhadohi)	3.13
Thane	2.87
Badgam	2.77
Imphal West	2.67
Imphal East	2.67
Hyderabad	2.57
South West Delhi	2.51
Ahmedabad	2.50
Surat	2.48
North East Delhi	2.48
North West Delhi	2.47
Bishnupur	2.46
Ganderbal	2.35
Tiruchirappalli	2.32
Thoubal	2.32
Coimbatore	2.25
Srinagar	2.24
Ukhrul	2.23
Churachandpur	2.23
West Delhi	2.21
Hazaribagh	2.13
Nadia	2.11
Chandigarh	2.05
Indore	2.05
Bhavnagar	2.04
Raigarh	2.03
Chennai	2.02
Puducherry	1.99
Dehradun	1.99
Kolkata	1.98
Erode	1.98
Ludhiana	1.97
Varanasi	1.96
Faridabad	1.95
Firozabad	1.95
Kancheepuram	1.95
Jorhat	1.94
Bhopal	1.92
Karur	1.91
Pune	1.90
Vadodara	1.88
Lucknow	1.86
Central Delhi	1.86
Umaria	1.86

District	LQ
Panchkula	1.86
Pudukkottai	1.85
Salem	1.85
South Delhi	1.84
Bathinda	1.84
Khammam	1.82
South Twenty-Four Parganas	1.82
Kapurthala	1.81
North Twenty-Four Parganas	1.80
Rampur	1.77
Gautam Buddha Nagar	1.77
Hugli	1.75
Kamrup Metropolitan	1.74
Bandipore	1.73
Garhwal	1.73
South Goa	1.70
Namakkal	1.69
Virudhunagar	1.69
Bareilly	1.68
Sahibganj	1.67
Nagaon	1.67
Jalandhar	1.67
Serchhip	1.66
Amritsar	1.66
Leh (Ladakh)	1.66
Kohima	1.66
Pathankot	1.65
Khordha	1.61
Kodarma	1.60
Thiruvananthapuram	1.60
Pulwama	1.60
Kiphire	1.57
Mau	1.57
Kamrup	1.57
Senapati	1.55
Ghaziabad	1.54
Karaikal	1.52
Tiruvannamalai	1.50
Baramula	1.49
Chandel	1.48
Ernakulam	1.47
Gurdaspur	1.47
Saharanpur	1.46
Moradabad	1.45
Bijnor	1.44
Sivaganga	1.43
Tawang	1.43
Dhanbad	1.43
Hisar	1.43
North Goa	1.42

Source: Authors' computation based on PLFS data

Table A4: Industries (NIC 2008 three-digit classification) by Average Creative Intensity in India

Sector	NIC 2008	Description	Average Creative Intensity
Primary	011	Growing of non-perennial crops	0.17%
	012	Growing of perennial crops	0.51%
	013	Plant propagation	2.37%
	014	Animal production	0.92%
	015	Mixed farming	0.02%
	016[14]	Support activities to agriculture and post-harvest crop activities	0.46%
	017	Hunting, trapping and related service activities	0.32%
	021	Silviculture and other forestry activities	12.13%
	022	Logging	3.56%
	023	Gathering of non-wood forest products	0.16%
	024	Support services to forestry	3.48%
	031	Fishing	0.80%
	032	Aquaculture	2.61%
	051	Mining of hard coal	7.01%
	052	Mining of lignite	15.28%
	061	Extraction of crude petroleum	29.69%
	062	Extraction of natural gas	36.37%
	071	Mining of iron ores	10.14%
	072	Mining of non-ferrous metal ores	4.11%
	081	Quarrying of stone, sand and clay	4.54%
	089	Mining and quarrying n.e.c	14.32%
	091	Support activities for petroleum and natural gas mining	32.35%
	099	Support activities for other mining and quarrying	15.29%
Secondary	101	Processing and preserving of meat	2.22%
	102	Processing and preserving of fish, crustaceans and molluscs	2.70%
	103	Processing and preserving of fruit and vegetables	6.43%
	104	Manufacture of vegetable and animal oils and fats	7.17%
	105	Manufacture of dairy products	6.64%
	106	Manufacture of grain mill products, starches and starch products	3.34%
	107	Manufacture of other food products	5.54%
	108	Manufacture of prepared animal feeds	5.43%
	110	Manufacture of beverages	17.12%
	120	Manufacture of tobacco products	1.27%
	131	Spinning, weaving and finishing of textiles	55.27%
	139	Manufacture of other textiles	48.80%
	141	Manufacture of wearing apparel, except fur apparel	74.75%
	142	Manufacture of articles of fur	58.56%
	143	Manufacture of knitted and crocheted apparel	59.45%
	151	Tanning and dressing of leather; manufacture of luggage, handbags, saddler and harness; dressing and dyeing of fur	27.60%
	152	Manufacture of footwear	5.77%
	161	Sawmilling and planing of wood	23.72%
	162	Manufacture of products of wood, cork, straw and plaiting materials	33.81%
	170	Manufacture of paper, paper products	6.79%
	181	Printing and service activities related to printing	8.41%
	182	Reproduction of recorded media	67.46%
	191	Manufacture of coke oven products	6.03%
	192	Manufacture of refined petroleum products	23.87%
	201	Manufacture of basic chemicals, fertilizer and nitrogen compounds, plastics and synthetic rubber in primary forms	19.12%
	202	Manufacture of other chemical products	9.95%

14 0161, 0162,01631,01633,01639,0164 in the primary sector and 01632 in the secondary sector.

Sector	NIC 2008	Description	Average Creative Intensity
	203	Manufacture of man-made fibres	13.93%
	210	Manufacture of pharmaceuticals, medicinal chemical and botanical products	19.92%
	221	Manufacture of rubber products	13.66%
	222	Manufacture of plastics products	7.49%
	231	Manufacture of glass and glass products	48.20%
	239	Manufacture of non-metallic mineral products n.e.c.	20.52%
	241	Manufacture of basic iron and steel	13.21%
	242	Manufacture of basic precious and other non-ferrous metals	26.32%
	243	Casting of metals	14.84%
	251	Manufacture of structural metal products, tanks, reservoirs and steam generators	11.31%
	252	Manufacture of weapons and ammunition	16.90%
	259	Manufacture of other fabricated metal products; metalworking service activities	15.68%
	261	Manufacture of electronic components	36.55%
	262	Manufacture of computers and peripheral equipment	40.41%
	263	Manufacture of communication equipment	47.34%
	264	Manufacture of consumer electronics	37.75%
	265	Manufacture of measuring, testing, navigating and control equipment; watches and clocks	33.50%
	267	Manufacture of optical instruments and equipment	45.37%
	271	Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus	17.35%
	272	Manufacture of batteries and accumulators	7.67%
	273	Manufacture of wiring and wiring devices	11.52%
	274	Manufacture of electric lighting equipment	13.47%
	275	Manufacture of domestic appliances	14.17%
	279	Manufacture of other electrical equipment	22.66%
	281	Manufacture of general purpose machinery	24.09%
	282	Manufacture of special-purpose machinery	12.60%
	291	Manufacture of motor vehicles	26.03%
	292	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	14.56%
	293	Manufacture of parts and accessories for motor vehicles	11.02%
	301	Building of ships and boats	19.94%
	302	Manufacture of railway locomotives and rolling stock	29.10%
	303	Manufacture of air and spacecraft and related machinery	53.06%
	304	Manufacture of military fighting vehicles	37.66%
	309	Manufacture of transport equipment n.e.c.	14.33%
	310	Manufacture of furniture	31.34%
	321	Manufacture of jewellery, bijouterie and related articles	51.48%
	322	Manufacture of musical instruments	47.34%
	323	Manufacture of sports goods	29.06%
	324	Manufacture of games and toys	36.98%
	325	Manufacture of medical and dental instruments and supplies	27.70%
	329	Other manufacturing n.e.c.	28.40%
	331	Repair of fabricated metal products, machinery and equipment	7.35%
	332	Installation of industrial machinery and equipment	12.94%
Tertiary	351	Electric power generation, transmission, distribution	19.56%
	352	Manufacture of gas; distribution of gaseous fuels through mains	11.89%
	353	Steam and air conditioning supply	2.85%

Sector	NIC 2008	Description	Average Creative Intensity
	360	Water collection, treatment and supply	8.53%
	370	Sewerage	4.87%
	381	Waste collection	5.81%
	382	Waste treatment and disposal	1.11%
	383	Materials recovery	9.95%
	390	Remediation activities and other waste management services	7.49%
	410	Construction of buildings	1.08%
	421	Construction of roads and railways	4.36%
	422	Construction of utility projects	4.48%
	429	Construction of other civil engineering projects	59.76%
	431	Demolition and site preparation	2.05%
	432	Electrical, plumbing and other construction installation activities	4.64%
	433	Building completion and finishing	4.21%
	439	Other specialized construction activities	2.30%
	451	Sale of motor vehicles	15.82%
	452	Maintenance and repair of motor vehicles	4.66%
	453	Sale of motor vehicle parts and accessories	9.01%
	454	Sale, maintenance and repair of motorcycles and related parts and Accessories	6.89%
	461	Wholesale on a fee or contract basis	9.20%
	462	Wholesale of agricultural raw materials and live animals	4.41%
	463	Wholesale of food, beverages and tobacco	6.59%
	464	Wholesale of household goods	10.96%
	465	Wholesale of machinery, equipment and supplies	20.21%
	466	Other specialized wholesale	9.41%
	469	Non-specialized wholesale trade	8.98%
	471	Retail sale in non-specialized stores	4.27%
	472	Retail sale of food, beverages and tobacco in specialized stores	4.34%
	473	Retail sale of automotive fuel in specialized stores	3.86%
	474	Retail sale of information and communications equipment in specialized stores	4.38%
	475	Retail sale of other household equipment in specialized stores	6.49%
	476	Retail sale of cultural and recreation goods in specialized stores	3.35%
	477	Retail sale of other goods in specialized stores	5.12%
	478	Retail sale via stalls and markets	3.03%
	479	Retail trade not in stores, stalls or markets	3.53%
	491	Transport via railways	18.72%
	492	Other land transport	1.01%
	493	Transport via pipeline	9.97%
	501	Sea and coastal water transport	19.71%
	502	Inland water transport	6.72%
	511	Passenger air transport	23.88%
	512	Freight air transport	30.23%
	521	Warehousing and storage	6.71%
	522	Support activities for transportation	11.13%
	531	Postal activities	9.87%
	532	Courier activities	5.63%
	551	Short term accommodation activities	14.10%
	559	Other accommodation	5.13%
	561	Restaurants and mobile food service activities	4.74%
	562	Event catering and other food service activities	4.86%

Sector	NIC 2008	Description	Average Creative Intensity
	563	Beverage serving activities	3.64%
	581	Publishing of books, periodicals and other publishing activities	32.76%
	582	Software publishing	69.82%
	591	Motion picture, video and television programme activities	34.75%
	592	Sound recording and music publishing activities	66.87%
	601	Radio broadcasting	77.98%
	602	Television programming and broadcasting activities	66.53%
	611	Wired telecommunications activities	24.78%
	612	Wireless telecommunications activities	33.89%
	613	Satellite telecommunications activities	38.60%
	619	Other telecommunications activities	35.17%
	620	Computer programming, consultancy and related activities	63.74%
	631	Data processing, hosting and related activities; web portals	34.27%
	639	Other information service activities	30.63%
	641	Monetary intermediation	25.03%
	642	Activities of holding companies	13.83%
	643	Trusts, funds and other financial vehicles	14.83%
	649	Other financial service activities, except insurance and pension funding activities	20.45%
	651	Insurance	14.62%
	661	Activities auxiliary to financial service activities, except insurance and pension funding	22.95%
	662	Activities auxiliary to insurance and pension funding	8.34%
	663	Fund management activities	21.08%
	681	Real estate activities with own or leased property	14.49%
	682	Real estate activities on a fee or contract basis	6.69%
	691	Legal activities	8.42%
	692	Accounting, bookkeeping and auditing activities; tax consultancy	42.69%
	701	Activities of head offices	24.77%
	702	Management consultancy activities, *ship management and crew management	36.06%
	711	Architectural and engineering activities and related technical consultancy	78.15%
	712	Technical testing and analysis	53.88%
	721	Research and experimental development on natural sciences and engineering	47.12%
	722	Research and experimental development on social sciences and humanities	83.57%
	731	Advertising	37.68%
	732	Market research and public opinion polling	16.03%
	741	Specialized design activities	56.85%
	742	Photographic activities	50.82%
	749	Other professional, scientific and technical activities n.e.c.	34.03%
	750	Veterinary activities	4.79%
	771	Renting and leasing of motor vehicles	2.49%
	772	Renting and leasing of personal and household goods	18.61%
	773	Renting and leasing of other machinery, equipment and tangible goods n.e.c.	4.19%
	781	Activities of employment placement agencies	20.53%
	782	Temporary employment agency activities	18.46%
	783	Human resources provision and management of human resources functions	40.69%

Sector	NIC 2008	Description	Average Creative Intensity
	791	Travel agency and tour operator activities	13.92%
	799	Other reservation service activities	15.87%
	801	Private security activities	0.64%
	802	Security systems service activities	4.72%
	803	Investigation activities	7.67%
	811	Combined facilities support activities	8.44%
	812	Cleaning activities	1.30%
	813	Landscape care and maintenance service activities	3.72%
	821	Office administrative and support activities	13.02%
	822	Activities of call centres	18.97%
	823	Organization of conventions and trade shows	25.28%
	829	Business support service activities n.e.c	23.28%
	841	Administration of the State and the economic and social policy of the Community	12.06%
	842	Provision of services to the community as a whole	5.09%
	843	Compulsory social security activities	5.64%
	851	Primary education	7.25%
	852	Secondary education	57.44%
	853	Higher education	66.90%
	854	Other education	32.43%
	855	Educational support services	15.37%
	861	Hospital activities	5.67%
	862	Medical and dental practice activities	3.69%
	869	Other human health activities	7.79%
	871	Nursing care facilities	2.29%
	872	Residential care activities for mental retardation, mental health and substance abuse	9.75%
	873	Residential care activities for the elderly and disabled	3.55%
	879	Other residential care activities n.e.c.	9.93%
	881	Social work activities without accommodation for the elderly and disabled	15.91%
	889	Other social work activities without accommodation n.e.c.	28.05%
	900	Creative, arts and entertainment activities	44.19%
	910	Libraries, archives, museums and other cultural activities	34.54%
	920	Gambling and betting activities	12.13%
	931	Sports activities	66.71%
	932	Other amusement and recreation activities	44.38%
	941	Activities of business, employers and professional membership organizations	5.56%
	942	Activities of trade unions	7.30%
	949	Activities of other membership organizations	2.54%
	951	Repair of computers, communication equipment	15.94%
	952	Repair of personal and household goods	11.29%
	960	Other personal service activities	3.22%
	970	Activities of households as employers of domestic personnel	1.35%

Source: Authors' computation based on PLFS and NAS data

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