# Economic Impact on Expansion of Cultural Industry Investment Promotion Zone

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**Abstract**

*This study aims to estimate the economic ripple effect on the regional economy with the designated expansion of the cultural industry investment promotion zone of Gwangju Metropolitan City. The economic ripple effect resulting from such expansions, including the existing investment plan and the sales of the cultural industries, was analyzed. Additionally, from the investment promotion zone in the Asia Culture Center district, the production, added-value, and employment-inducing effects were observed. The study showed that when expanding the investment promotion zone, the production-inducing effect is 406,246 million won, the added value causing the effect is 180,404 million won, and the employment-generating effect was 5,467 people. However, compared to the public sector investment, private sector investment was lower. Furthermore, we found that the economic ripple effect was relatively low in the content sector of the cultural industry, a more productive industrial sector. The Cultural Industry Investment Promotion Zone in Gwangju is necessary to revitalize the region's local economy and cultural industry. However, to revitalize the investment promotion districts, more sensible policies will be needed to garner further private investment and increase sales of private companies.*

**Keywords:** *Cultural Industry, Hub City of Asian Culture, Investment Promotion District, Input-output Model, Economic Ripple Effect*

## INTRODUCTION

A rich culture with a condensed plethora of knowledge and novel technologies can increase the added value of its regions and instigate the growth for regional economic development. Cities in Japan, Europe, and North America use culture as a resource or a target for regional development and strategize it to revitalize a stagnant economy or secure urban competitiveness in the global era (Griffiths, 1995). In particular, if a cultural industry settles down in a region, it can contribute to the regional competitiveness and revitalization of the local economy (Turok, 2003). Thus, many developed countries foster cultural industries in investment promotion districts led by local governments.

In line with this, for a strategic reconstruction of regional cultural policies and balanced national development, the Gwangju Metropolitan City promotes investment promotion districts as a culturally rich city. However, as the Hub City of Asian Cultural Development Plan that was promoted based on the Special Act for the Creation of Hub City of Asian Culture Centers will end in 2023, a new development plan is needed for the future.

At this point, expanding the designations of the investment promotion districts offers the Cultural Complex Zone and the surrounding regions a chance to connect, creating a synergic effect for spreading cultural energy throughout the city. With this, a foundation can be laid for developing the cultural complexes and the cultural cities. Currently, the expected expansion area of the investment promotion districts by Gwangju Metropolitan City includes those where there are many more cultural industries businesses than the existing districts, and the spatial distribution is relatively concentrated. <Figure 1> shows the spatial distribution map of 652 cultural businesses registered in the 2018 Gwangju Cultural Industry Survey as a hot spot through the Kernel Density analysis.

Additionally, the investment promotion district boundary was differentiated into the existing area (A, red line) and the expected expansion area (B, blue line) and compared with the spatial distribution. Here, the hot spot means that the darker the yellow color, the stronger the spatial integration. It can be seen from the figure that the Gwangju cultural industry businesses are mostly concentrated in the city center area, and the expected

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investment promotion district expansion areas contain some of the most concentrated levels of cultural businesses in Gwangju.

Thus, if the investment promotion area is expanded, there will be a large influx of incentives for the cultural businesses, and the resulting increases in sales will be able to generate a wave of economic effects that will be incomparable compared to the current state of investment promotion areas. However, there has not been a qualitative analysis that has been conducted regarding this phenomenon.

Thus, this current study aims to evaluate the economic ripple effects when the expected additions of the investment promotion districts by the Gwangju Metropolitan City are expanded and designated. For this, the purpose of this study can thus be summarized into two key points. First, this paper will present a quantitative basis and evidence for the expansion designation of Gwangju Metropolitan City's investment promotion districts. Second, by estimating the economic ripple effect that is likely to occur when local governments expand their investments into the local cultural businesses, this study will offer a direction for the policies and developments that will be needed for the proliferation of the cultural industry investments.
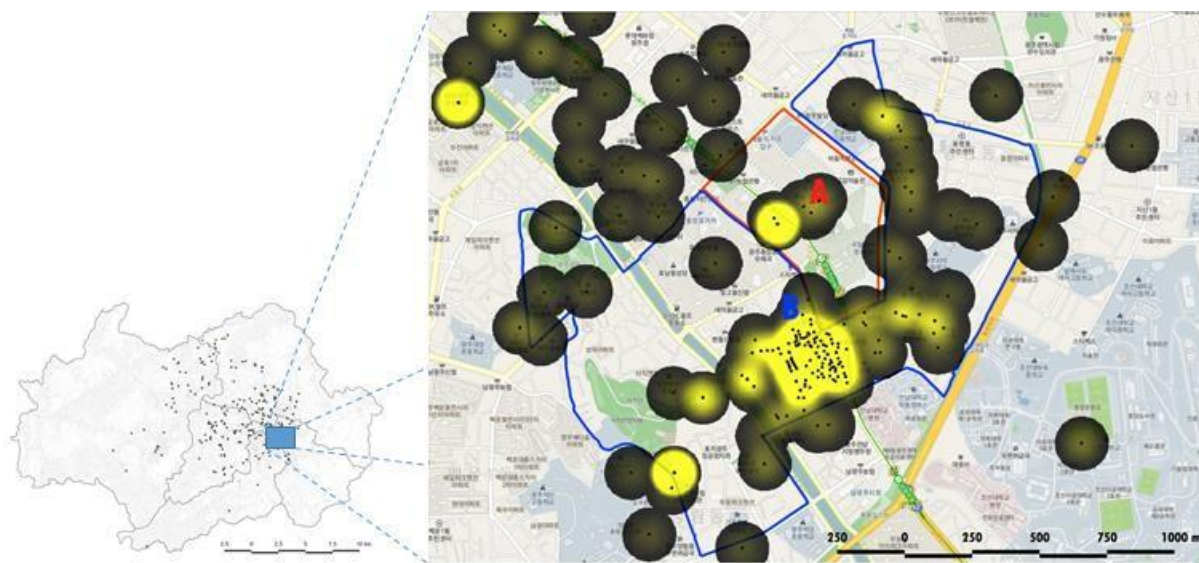


**Figure 1:** Location of the expected investment promotion district expansions and the spatial distribution of cultural businesses

## LITERATURE REVIEW

### Definition of Culture and Industry

In a broader sense, culture encapsulates a very abstract and philosophical meaning. It can be defined as an essential adaptation mechanism for humanity, where patterns are evident in their learned way of life and daily lifestyles (Damen, 1987). In addition, culture can be viewed as the composition of learned behaviors and behavioral outcomes that members of a particular society share and convey the components to (Linton, 1945). Korea's Fundamental Law of Culture, Article 3 (partly amended on Jan. 2, 2019) states that culture is defined as a mentally, physically, intellectually, and emotionally intrinsic aspect to society or parts of society that includes culture and art, lifestyles, community ways of life, value systems, beliefs, and traditions. This broad approach to culture enables scholars to conceptualize and define culture in various ways and alter the meaning of culture depending on societal views and perspectives on life.

UNESCO (1982) has defined culture in a narrower scope as activities with cultural heritage, print and literature, music and performing arts, formative arts, film and photography, broadcasting, social and cultural activities, sports and entertainment, and nature and environmental protection. This approach encompasses a definition of culture that embodies the cultural elements and contents. Nevertheless, it should be noted that how culture is approached will have varying meanings for its definition depending on the products manufactured and

consumed in a society at any given time.

Cultural industry is the production and consumption of cultural activities related to various contents with included cultural elements (Lash & Urry, 1994). According to the Act on the Promotion of Cultural Industries, Article 2 (amended on July 26, 2017), contents related to the cultural industry are categorized as follows: movies/videos, music/games, publications/prints/periodicals, broadcast videos, cultural assets, cartoons/characters/animation, edutainment, mobile cultural contents, designs (excluding industrial design), advertisements, performances, artworks, crafts, popular cultural arts, traditional clothes, sculptures, decorative goods, accessories, and others. Thus, it can be said that the cultural industry is the production, distribution, and consumption of these cultural products.

The mutually independent roles culture has in urban lifestyles can be organized into four things (Throsby, 2008). First, specific cultural complexes and facilities as a cultural symbol or place can significantly affect the urban economy as a whole. Second, regions concentrated in artistic or cultural activities can offer the local people and tourists an attraction to appreciate. Third, the cultural industry can become a crucial aspect of the urban economy. Fourth, by way of cultural characteristics and practices defined by the city and its inhabitants, the cultural identity, creativity, and cohesion aids in blowing vitality back into a city. In particular, from an economics standpoint, cultural industry is emerging as a dominant economic sector in terms of urban production and employment (Scott, 1997).

## Effects of the Cultural Industry Investment Promotion Districts

In terms of the economic value of culture, there have already been numerous discussions in the past. First, cultural products or the consumption of services directly contributes to increased economic income. Second, culture also affects related fields such as distribution and catering services, and third, it also provides relevant employment opportunities. Fourth, culture contributes to the diversity of the economic base, and fifth, the improvement in the cultural environment offers external economic effects on economic potential and has a positive effect attracting investments (Landry, 2000; Throsby, 2004).

However, the quantitative economic effect of investment on culture has not been established. This is because the definition of culture or the analysis results differ in many cases. Regardless, some studies have shown a positive correlation between the government's fiscal spending on culture and economic growth. For example, Gabor (2011) argues that the relationship between economic growth and cultural expenditure is more likely to complement rather than be one-directional. Analyzing cases in the United Kingdom showed an interactive complementary relationship between economic performance and the government's expenditure on cultural assets. In other words, it can be summarized that if the government invests in culture, the economy flourishes, and if the economy flourishes, then expenditures on cultural assets would increase as well.

Moreover, the OECD (2009) study also indicated a positive correlation between cultural expenditure and per capita national income in major OECD member countries. Of course, that is not to say that all expenditures on culture fully contribute to economic growth. For example, Kneller et al. (1999) classified government fiscal expenditure into productive and non- productive expenditures. This study showed that productive expenditures increased growth, but non-productive expenditures such as entertainment, culture, and religion did not contribute to economic growth. It concluded that it was not possible. In other words, depending on the cultural contents, spending or investment on more productive products can create more substantiated economic growth effects.

In particular, there are many instances where synergic effects are established with the convergence of cultural industries in specific areas within the city. In other words, a cultural industry can create another external economic growth by generating mutual learning, cultural synergy, creative activities, and mutual stimulation in pertaining geographical aggregations (Scott, 2000). Therefore, local governments with weak financial power quickly adopt integrating cultural industries into specific regions as regional cultural industry policies for urban development. This is to promote the so-called industrial cluster strategy.

A cluster is a concept established by Porter (1990) and is where companies, specialized professional suppliers, service companies, and related industry organizations that compete or cooperate are aggregated in a collective bunch. Specifically, the geographical concentration of related industries intensifies the intensity of the competition, thereby enhancing the competitiveness of the industries. To explain this from the perspective of culture, the cultural clusters can be defined as geographic aggregates of cultural arts production and related functions that interact with each other in a self-organized manner (Stern & Seifert, 2007).

Cultural clusters are sometimes formed spontaneously, but there has been a tendency for cultural clusters to be established with the aid government support in conjunction with the national urban regeneration policy in recent years. Suppose a cultural industry cluster can be said to be a regional concept that mainly emphasizes the creation and production functions of artists. In that case, the cultural industry investment promotion district is a strategy from which cultural industries can be fostered and revitalized through private capital investments.

However, since the cultural industry investment promotion district is a policy that has not been established, there have not been any studies where the actual economic effects have been observed. Nevertheless, it will be possible to estimate the economic effect of the cultural industry investment promotion districts by studying and examining similar cases. For instance, CEBR (2019) used industry-related analysis to measure the contribution of the culture and arts industry to the UK's national economy. In addition, ECORYS (2014) measured the impact of investment in the cultural sector on the regional economy, and Titze et al. (2008) similarly used the industry-related analysis to measure the economic effect of regional industrial clusters. In all, it can be judged that it would be most appropriate to use these industry-related analyses in order to measure the economic effects of the cultural industry investment promotion districts.

## METHODOLOGY

### Industry-Related Model

Economist Wassily Leontief developed the input-output model in the 1930s to describe the relationships between industries in the economy. This analysis assumes the inter-industry relationships based on the close interdependence of the different sectors of the national economy. The most common purpose is to analyze the production structure of income by focusing on how the impact of change in final demand, an exogenous variable, affects the national economy (Kim & Ryu, 2017). In other words, the input-output model is an analysis method that quantitatively grasps the interrelationships between industries through production activities, in which inputs from one industry might produce outputs for consumption or another input for other industries, encompassing the entire national economy (Ghosh, 1958). In particular, this analysis has the advantage of quantitatively grasping the impact on the entire industry as a whole through the correlation with changes in final demand in a specific industry sector.

The input-output model is a linear model that represents the organic relationship between production sectors in an economy. This model can be summarized based on the studies by Yoo and Yang (1999) and Miller and Blair (2009). If it is assumed that n number of industries exist within the economy, then the goods produced in sector i either meet the final demands or are used as intermediate goods ($z_{ij}$) for production in another sector, j. If the input-output table is observed as a row, then it is divided into the industry's median demand ($z_{ij}$), final demand (Y), and total output ($X_i$), which represents the output structure of sector i. This structure can be expressed as the following equation (1).

$$X_i = \sum_{j=1}^{n} z_{ij} + Y_i = \sum_{j=1}^{n} a_{ij} X_j + Y_i \quad (1)$$

Here, $a_{ij}$ is the share ($a_{ij} = z_{ij}/X_j$) of the input amount of i material used in the j sector, called the input coefficient. This ratio refers to the amount of output in sector i that is put to produce a unit of output in sector j, and represents the relationship between input and output, thereby representing the production relationship for each sector. Equation (1) signifies that the total output of a particular sector is equal to the sum of the output of the i-th sector and the final demand that is needed for the production of one unit for all sectors in the economy.

Unlike equation (1), if the industry j in the industry association table is viewed as a column, it is divided into intermediate input ($z_{ij}$), added value ($V_{ij}$), and total input ($X_{ij}$), which represents the input structure of the j sector, and can be expressed as shown in equation (2).

$$X_j = \sum_{i=1}^{n} z_{ij} + V_j = \sum_{i=1}^{n} r_{ij} X_i + V_j \quad (2)$$

The $r_{ij}$ This equation represents the amount of increase in production of industry i to meet one unit of final demand of industry j, which is called the coefficient of calculation. Equation (2) implies that the total production of a sector is equal to the amount it purchases from all sectors and import sectors in the economy, plus all returns on the sector's primary inputs or added value.

If this expression is expressed simply as a determinant, it can be demonstrated in equation (3). Here, A is considered the input coefficient matrix, X the total output, and Y as the final demand. On the other hand, if this equation is reorganized into the total output, it can be expressed in equation (4).

X = AX + Y $\qquad$ (3)

X = (I − A)⁻¹Y $\quad$ (4)

Here, the $(I − A)-1$ represents the production induction coefficient, which is a ripple mechanism where production is induced in the entire industry due to inter-industry relations when the final demand of an industry increases by one unit. Multiplying this by the value-added coefficient (V) and the employment coefficient (E) yields the value-added coefficient and the employment inducement coefficient, respectively. Finally, equation (4) is the production inducing effect, and Equations (5) and (6) indicate the value-added inducing effect and the employment inducing effect.

X = V(I − A)⁻¹Y $\qquad$ (5)

X = E(I − A)⁻¹Y $\qquad$ (6)

## Framework of Analysis

The economic effect on the investment promotion districts can be evaluated using the Bank of Korea's industry-related table. In particular, this study analyses the Gwangju Metropolitan City, so utilizing the regional industry association table is appropriate. Furthermore, the most recent base year published by the Bank of Korea is 2013. Therefore, the 2013 regional industry association table is a table of transactions between 16 metropolitan cities in Korea. Therefore, the 2013 regional industry association table is used in this analysis.

The contents and direction of the analysis were set as follows for the economic ripple effect of the expansion of the investment promotion district.

First, the economic ripple effect of public investment plans is analyzed. Among the entire business projects of the Asia Cultural Hub Development 2020 Annual Implementation Plan, the project corresponding to the Cultural Complex Zone is extracted, and the budget for the 4th phase (2020-23) development project is finalized. Second, the economic ramifications following private investment plans are examined. The private investment plans assume that the budget for the 4th phase (2020-23) development project in the investment plan for each unit project of the Asia Cultural Hub Development 2020 Annual Implementation Plan is the final change in demand. Moreover, investment plans for cultural industries residing in the Cultural Complex Zone and those wishing to reside in the investment promotion zone will also be included.

Third, the economic ripple effect resulting from the sales of cultural industries in the investment promotion districts is analyzed. Here, the sales are assumed to be the change in final demand based on the sales of companies located in the investment promotion districts of the Cultural Complex Zone and the planned expansion area and the companies that have announced their intention to move in the company recognition survey. However, since it is difficult to obtain past data on the tenant companies, the average sales value for the last three years (2016-18) is assumed as annual sales and utilized for analysis.

## How to Estimate final Demand Change

In Equation (4) above, $(I − A)^{-1}$ The inverse of Leontief is the production induction coefficient measured by the industry association table. Since the corresponding value of the country or region is fixed by year, in order to analyze the economic ripple effect, the final demand change, Y, needs to be estimated. In addition, the changes in final demand should be allocated according to the industry classification in the industry-related table. The industrial classification is allocated based on the classification suggested in the regional industry association table. Under these criteria, the changes in final demand for the expansion of the investment promotion district are estimated as follows.

First, the public sector's future investment plan for the investment promotion district assumes the final demand change as the budget for the government and local spending of projects in the Cultural Complex Zone in the Asia Cultural Hub Development 2020 Annual Implementation Plan. To estimate this, after extraction of the projects corresponding to the Cultural Complex Zone from the implementation plan, detailed contents were reviewed for each unit project, and the budget corresponding to each government and local expense was identified. However, in the implementation plan, the first phase (2004-08), the second phase (2009-14), and third phase (2015-19) of the Asia Cultural Complex Development Project can be considered as the previously executed budget. Thus, only the fourth phase (2020-23) budget was assumed as the investment plan of the public sector for the expansion of the investment promotion zone.

Second, the future investment plan of the private sector in the investment promotion district is the budget for private investment for projects corresponding to the Cultural Complex in the Asia Cultural Hub Development 2020 Annual Implementation Plan and cultural industries that are moving in or planning to move into the investment promotion district was assumed to be the final demand change. Therefore, the private investment budget in the implementation plan was arranged in the same way as the method for extracting the investment plan of the public sector as described above. In addition, the range was decided for cultural companies that are in or planning to move into the investment promotion district, as well as cultural companies that were currently in or wishing to occupy the cultural complex zones through the 2018 Gwangju Cultural Industry Status Survey. Therefore, the investment plans of these pertaining companies for the investment promotion districts were included in the final demand changes.

Third, the sales of companies in the investment promotion district are assumed to be the final demand changes based on the sales of companies currently occupying the district, companies located in the area that is to be expanded as the districts in the future, and companies that wish to move into the districts. In this case, the annual average sales amount described above was applied to the sales of companies currently in the investment promotion districts and included companies' sales in the area where the investment promotion district is expected to be expanded. In addition, sales of companies wishing to move into the district in the future were included as well.

## FINDINGS

### Final Demand Change Estimation Results

As described above, the final demand change for the investment promotion district in the Cultural Complex Zone is estimated by categorizing it into public investment, private investment, and industry sales. First, the investment plan of the public sector in the investment promotion district in the ACC area is as follows. In the Asia Cultural Hub Development 2020 Annual Implementation Plan, the industries in the Cultural Complex Zone mostly participated in a total of 19 projects surveyed, to be around 349,680 million won in total. The investment plan for the public sector (government and local expenses), which is scheduled to be executed in the fourth phase (2020-23), is 210 932 million won. 20,445 million won will be invested in the fourth phase in the private sector. Therefore, the total budget of the public and private sectors to be invested in the Cultural Complex Zone in Phase 4 is 231,377 million won.

The change in final demand in the private sector is divided into the private sector investment plan and the cultural business investment in the above implementation plan. As described above, private sector investment

was surveyed to be at 20,445 million won. Investments of cultural businesses are divided into existing investment performance and future investment plans, and are estimated as follows.

First, the existing investment performance was summarized only for companies whose investment performance amount was recorded based on the investment performance surveyed in the 2018 Gwangju Cultural Industry Status Survey. However, industry types were classified by referring to each company's industry type code. As a result, it could be seen that the total investment performance of the Gwangju cultural industry companies was 81 companies and 11 billion 4,334 million won. Therefore, the investment amount per company of Gwangju cultural industries is estimated to be 136.34 million won. However, since the entire cultural industry has very different sales and investment structures for each content, it is necessary to classify it more precisely by industry type. Therefore, it was deemed suitable and appropriate to reorganize the investment amount per company into 12 major content industries. As a result, the investment amount per company for each of the 12 contents of Gwangju cultural industry companies is summarized in <table 2>.

**Table 1: Gwangju Metropolitan City's Investment Plan for the Investment Promotion District in the Culture Complex Zone**

| Operating expenses (million won) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project name | Phase 1~3 (2004~19) | | | Phase 4 (2020~2023) | | | Total |
| | Public sector | Private sector | Sum | Public sector | Private sector | Sum | |
| Gwangju Poli project promotion | 11,350 | - | 11,350 | 5,000 | - | 5,000 | 16,350 |
| Creation of multiple districts for international conferences | 3,000 | - | 3,000 | 4,000 | - | 4,000 | 7,000 |
| Creation of Namdo Tourism Promotion Marketing Center | 2,000 | - | 2,000 | 800 | - | 800 | 2,800 |
| Designated cultural industry investment promotion district operations | 29,109 | 20,950 | 50,059 | 86,468 | 8,175 | 94,643 | 144,702 |
| Creation of Gwangju, the center city for culture and art healing | - | - | - | 4,000 | - | 4,000 | 4,000 |
| Culture Center Masil-gil Road | 1,024 | - | 1,024 | 2,688 | - | 2,688 | 3,712 |
| Support for the production of cultural content symbolizing democracy | 2,300 | - | 2,300 | 6,000 | - | 6,000 | 8,300 |
| Media Art Festival, a symbol of the city of light | 2,120 | 26 | 2,146 | 3,200 | - | 3,200 | 5,346 |
| Construction of outdoor music hall in Sajik International Cultural Exchange Town | - | - | - | 20,000 | - | 20,000 | 20,000 |
| Promotion of Asian Community Tradition Culture Center operations | - | - | - | 2,500 | - | 2,500 | 2,500 |
| Asia Art Tourism Central City Project | - | - | - | 14,600 | - | 14,600 | 14,600 |
| Creation of Asian food culture district | 9,250 | 6,070 | 15,320 | 5,250 | 3,930 | 9,180 | 24,500 |
| Creation of Asia Justice Road | - | - | - | 7,500 | - | 7,500 | 7,500 |
| Asia's Next Generation Artist Residence Support Project | - | - | - | 4,500 | - | 4,500 | 4,500 |
| Program operations to revitalize Asian culture and arts | 13,750 | 2,060 | 15,810 | 15,050 | 8,340 | 23,390 | 39,200 |
| Creation of UNESCO Media Art Creative City Platform | 7,724 | - | 7,724 | 21,276 | - | 21,276 | 29,000 |
| Creation of the UNESCO Media Art Creative Belt | 2,000 | - | 2,000 | 3,900 | - | 3,900 | 5,900 |
| Support for fostering regional-based music industry | 5,250 | - | 5,250 | 2,600 | - | 2,600 | 7,850 |
| Happy Book Village creation | 320 | - | 320 | 1,600 | - | 1,600 | 1,920 |
| Total | 89,197 | 29,106 | 118,303 | 210,932 | 20,445 | 231,377 | 349,680 |

**Note:** The "Cultural Industry Investment Promotion District Designated Operation" in the public and private sector budgets were not clearly separated for each district, so they were distributed uniformly.
Source: Gwangju (2018), Asia Cultural Hub Development 2020 Annual Implementation Plan.

**Table 2: The investment amount of 12 major content industries in the Gwangju cultural industry companies**

| Content classification | Investment company Number | Amount invested (million won) | Invested amount by one industry (million won) |
|---|---|---|---|
| Game industry | 7 | 2,322.00 | 331.71 |
| Performance industry | 1 | 100.00 | 100.00 |
| Craft/design industry | 16 | 2,546.54 | 159.16 |
| Advertising industry | 9 | 167.00 | 18.56 |
| Cartoon industry | - | - | - |
| Broadcasting industry | 1 | 3.00 | 3.00 |
| Animation industry | 6 | 950.00 | 158.33 |
| Film industry | 2 | 280.00 | 140.00 |
| Music industry | 2 | 100.10 | 50.05 |

| | | | |
|---|---|---|---|
| Knowledge Information Industry | 4 | 599.00 | 149.75 |
| Publishing industry | 18 | 1,432.40 | 79.58 |
| Content Solution Industry | 15 | 2,543.30 | 169.55 |
| Total | 81 | 11,043.34 | 136.34 |

Companies, where the Likert scale for investment expansion was 4 or higher in the 2018 Gwangju Cultural Industry Survey were considered to have higher investment inclinations. Therefore, future investment plans for these were estimated by substituting the above-described investment performance for each content industry. In the Gwangju cultural industry status survey, 11 companies in the Cultural Complex Zone showed strong investment intentions. Moreover, 50 companies wished to move in or invest in the Cultural Complex Zone in the future. For these companies, if the investment amount per company for each content industry is substituted and the investment plan for each business type is summarized, it is estimated that about 7.58,289 million won will be additionally invested.

Next, the sales of the existing companies in the Culture Complex Investment Promotion District and the culture industry companies that wish to move into the district were estimated. It was shown that from the 2018 Gwangju cultural industry status survey, there were a total of 279 companies that had moved or wished to move into the investment promotion district of the Cultural Complex zone. The current status survey has revealed that the total sales of the 279 cultural industry companies over the past three years was 167,187 million won. However, since sales reflect the current year's price, if the nominal data is used, the present value will not be reflected, and it would likely be underestimated.

**Table 3: Existing investment performance and future investment plans of cultural industries in the Cultural Complex Zone**

| Main Category | Amount invested (million won) | Investment plan (million won) |
|---|---|---|
| Publishing industry | - | 1,751 |
| Game industry | 387 | 1,327 |
| Animation industry | - | 1,425 |
| Broadcasting industry | - | 3 |
| Advertising industry | 5 | 117 |
| Knowledge Information Industry | - | 449 |
| Content Solution Industry | 208 | 1,356 |
| Craft/design industry | 1 | 1,155 |
| Total | 601 | 7,583 |

Note: The investment amount is the investment performance of a company that is already occupying the Culture Complex Zone, and the investment plan is an estimate of the investment plan of companies that are either already in the cultural complex Zone, or those that wish to move/invest in it.

Therefore, in this analysis, the price fluctuations for each year were removed using the Consumer Price Index (CPI) and corrected to the price level in 2018 for only the sales data. The estimation equation for this is as follows, where $x_{2016}$ and $x_{2017}$ are nominal data of sales in 2016 and 2017, respectively, and $\hat{x}_{2016}$ and $\hat{x}_{2017}$ are corrections for sales in 2016 and 2017 by removing inflation.

$$X_{2016} = \frac{X_{2016}}{CPI_{2016}} \; X \; CPI_{2018}$$

$$X_{2017} = \frac{X_{2017}}{CPI_{2017}} \; X \; CPI_{2018}$$

The average value of nominal sales before correction for the last three years was 55,729 million won. Here, if the sales for each year are corrected for the 2018 prices, the average value for the last three years is estimated to be 56,582 million won. The sales were all corrected and summarized in <Table 4> by the content industry.

Since the estimated sales of the Gwangju cultural industry companies are likely to be underestimated due to the limitations of the current status survey, they must be revised. As of 2017, there is a statistical difference between the cultural industry's current status in the 2018 Contents Industry Statistical Survey by the Korea Creative

Content Agency and the 2018 Gwangju Cultural Industry Status Survey by the Gwangju Information & Culture Industry Promotion Agency.

The above two surveys differ in the sampling and aggregation method, and some items do not match the classification of the industries, but it is necessary to compare the two data as they are the most official and credible statistical data on cultural industry. In particular, the Gwangju cultural industry status survey was conducted based on a list of cultural industry companies owned by related organizations, and thus there is a high possibility that the actual size of the cultural industry was underestimated. Following this, it is necessary to correct this inconsistency to accurately estimate the Gwangju cultural industry's size.

**Table 4: Revenue by content classification for the last 3 years (2016-18) of cultural companies in the Cultural Complex Zone**

| Main Category | Sales amount as of 2018 (million won) | | | |
|---|---|---|---|---|
| | 2016 | 2017 | 2018 | yearly average |
| Publishing industry | 29,087 | 30,703 | 33,418 | 31,069 |
| Cartoon industry | 41 | 20 | 110 | 57 |
| Music industry | 53 | 54 | 65 | 57 |
| Film industry | 178 | 173 | 200 | 183 |
| Game industry | 173 | 466 | 588 | 409 |
| Animation industry | 544 | 1,953 | 2,420 | 1,639 |
| Broadcasting industry | 10 | 10 | 30 | 17 |
| Advertising industry | 5,517 | 6,855 | 7,085 | 6,486 |
| Knowledge Information industry | 2,681 | 2,588 | 2,567 | 2,612 |
| Content Solution industry | 4,480 | 4,047 | 4,122 | 4,216 |
| Performance industry | 21 | 20 | 20 | 20 |
| Craft/design industry | 9,012 | 10,309 | 10,125 | 9,815 |
| Total | 51,797 | 57,198 | 60,750 | 56,852 |

As of 2017, the differences between the two surveys are as follows. According to the statistical survey of the contents industry, the number of businesses in Gwangju's contents industry is 3,516, and sales of these industries was KRW 1,005,745 million. In contrast, the Gwangju cultural industry status survey has counted Gwangju's cultural industry business numbers to be around 652 and the sales to be around 556,868 million won in sales. The correction factor was applied as the difference between the two surveys and was estimated to be about 1.81.ii Thus, if the annual average sales of KRW 56,582 million for the last three years is multiplied by the correction factor, then the final annual average sales is estimated to be KRW 102,191 million. The corrected amount is input as the change in final demand for companies' sales in the investment promotion district.

Finally, when all the final demand changes for the expansion designation of the investment promotion district in the Cultural Complex Zone are summarized, it is estimated to be around 341,150 million won. Therefore, the change in final demand for public investment was shown to be KRW 210,932 million, the change in final demand for private investment was KRW 28,027 million, and the sales of cultural industries were estimated at KRW 102,191 million.iii When the estimated change in final demand is categorized into the sub-category of the industry-related table, it is summarized as follows below.

**Table 5: Estimated changes in final demand for expansion of investment promotion districts in the Cultural Complex Zone**

| | Industry-related table sub-classification | Final demand changes (million won) | | |
|---|---|---|---|---|
| Code | Industry name | Public investment | Private investmentIndustry sales | Subtotal |
| 15 | Printing and Reproduction | - | 1,671 | 53,781 | 55,452 |
| 45 | Other manufacturing | - | 159 | 12,408 | 12,567 |
| 51 | Building construction and construction repair | 64,181 | 9,040 | - | 43,221 |
| 52 | Civil construction | 3,688 | 160 | - | 3,848 |
| 58 | Restaurants and hospitality | 1,880 | 1,770 | - | 3,650 |
| 61 | Information services | - | 828 | 8,449 | 9,277 |

| 62 | Software development & computer management services | - | 2,305 | 4,621 | 6,926 |
| 63 | Publishing | 2,000 | 159 | 4,095 | 6,254 |
| 64 | Video, audio production and water distributor | 7,800 | 1,465 | 6,812 | 16,077 |
| 71 | Research and development | 1,900 | - | - | 1,900 |
| 72 | Business-related professional service | - | - | 6,622 | 6,622 |
| 73 | Science and technology professional service | 3,775 | 996 | 5,319 | 10,090 |
| 74 | Business support services | 1,200 | - | - | 1,200 |
| 75 | Public administration and defense | 2,000 | - | - | 2,000 |
| 76 | Education services | 1,100 | - | - | 1,100 |
| 79 | Cultural services | 121,408 | 9,475 | 84 | 130,967 |
| | Total | 210,932 | 28,027 | 102,191 | 341,150 |

## Economic Ripple Effect Analysis Result

The economic ramifications of the expansion designation of investment promotion districts in the Cultural Complex Zone are as follows. First, the production inducing effect in Gwangju is estimated to be around 406.2 billion won, the added value inducing effect to be 180.4 billion won, and the employment inducement effect estimated to be around 5,467 people. In addition, it is estimated that the production inducement effect that spreads nationwide to be 679.9 billion won, the added value inducing effect to be around 2,679 billion won, and the employment inducement effect of being around 7,129 people.

**Table 6:** Economic ripple effect from expansion designation of investment promotion districts in the Cultural Complex Zone

| Category | Production inducing effect (million won) | | Added value inducing effect (million won) | | Employment inducing effect (number of people) | |
|---|---|---|---|---|---|---|
| | Gwangju | Nationwide | Gwangju | Nationwide | Gwangju | Nationwide |
| Public investment | 250,750 | 411,380 | 117,528 | 168,116 | 3,237 | 4,201 |
| Private investment | 33,506 | 56,742 | 14,411 | 21,837 | 415 | 556 |
| Sales | 121,990 | 211,852 | 48,466 | 78,015 | 1,814 | 2,371 |
| Total | 406,246 | 679,974 | 180,404 | 267,968 | 5,467 | 7,129 |

When examining these estimates by industry category, it could be observed that the "cultural and other services" industry category had the highest economic ripple effect on the Gwangju area. The production inducement effect was seen to be the highest in the 'cultural and other services' industries with 136.9 billion won, followed by the 'construction' industries with 77.8 billion won, and the 'wood, paper, printing and reproduction' industry with 59 billion won. The value-added inducement effect is the highest in the 'cultural and other services' industries with 76 billion won, followed by the 'construction' industry with 24.3 billion won, and the 'wood, paper, printing and reproduction' industry with 21.1 billion won. The employment inducement effect was estimated to be the highest in the 'culture and service industry' with 2,139 people, then 866 people in the 'wood, paper, printing and reproduction industry' and 616 people in the 'construction industry'.

The aforementioned economic ripple effect was analyzed by estimating companies' future public and private investments and sales in the Cultural Complex Zone. In order to examine the effects of the expansion designation of the investment promotion district more closely, the ripple effect before and after the expansion designation was compared. The same analysis was performed for the same items, but it should be kept in mind that the change in final demand and the period are different. For example, from 2004 to 2019, when the Asia Cultural Hub Development Project started, it corresponded to each of the first to third phases, and it is crucial to assume that this is before the expansion designation of the investment promotion district. The estimated value was compared with the estimated 2020 to 2023, which was step 4 as described above. However, the analysis period differed for public, private, and sales.

Specifically, in the case of public and private investments, the analysis period before the expansion designation was 16 years from 2004 to 2019, and the analysis period after the expansion designation was four years from 2020 to 2023. In the case of sales, the analysis period refers to a single year. Thus, to compare all these items, the estimated values for each item were revised to the annual effect.

**Table 7:** Economic ripple effect by industry from expansion designation of investment promotion districts in the Cultural Complex Zone

| Industry | Production inducement (million won) | | Added value inducement (million won) | | Employment inducement (number of people) | |
|---|---|---|---|---|---|---|
| | Gwangju | Nationwide | Gwangju | Nationwide | Gwangju | Nationwide |
| Agriculture, forestry and fishing | 86 | 3,691 | 55 | 2,035 | 4 | 99 |
| Mining | 8 | 1,067 | 6 | 616 | 0 | 4 |
| Food Beverage and Tobacco Manufacturing | 265 | 6,844 | 44 | 997 | 1 | 21 |
| Textile and leather products manufacturing | 399 | 6,343 | 89 | 1,481 | 3 | 29 |
| Wood, Paper, Printing and Reproduction | 59,028 | 87,876 | 21,104 | 28,822 | 866 | 998 |
| Coal and oil products manufacturing | 24 | 13,623 | 6 | 949 | 0 | 1 |
| Chemical Products | 249 | 19,603 | 77 | 3,802 | 2 | 21 |
| Non-metallic mineral product manufacturing | 4,637 | 20,683 | 754 | 4,650 | 11 | 52 |
| Tea metal product manufacturing | 784 | 25,850 | 118 | 3,376 | 2 | 21 |
| Metal Product Manufacturing | 1,205 | 13,308 | 344 | 4,127 | 3 | 36 |
| Machinery and equipment manufacturing | 1,104 | 6,127 | 307 | 1,709 | 2 | 18 |
| Electric and electronic device manufacturing | 3,038 | 14,088 | 855 | 3,731 | 6 | 31 |
| Precision equipment manufacturing | 117 | 2,232 | 37 | 630 | 1 | 9 |
| Transportation equipment manufacturing | 498 | 2,567 | 98 | 568 | 1 | 6 |
| Other manufacturing | 13,944 | 21,996 | 4,393 | 8,049 | 123 | 182 |
| Electricity and gas manufacturing | 1,159 | 16,888 | 241 | 3,699 | 1 | 13 |
| Water, waste and recycling services | 1,629 | 4,509 | 680 | 1,893 | 5 | 18 |
| Construction | 77,993 | 79,434 | 24,388 | 24,854 | 616 | 628 |

| | | | | | |
|---|---|---|---|---|---|
| Wholesale and retail | 4,165 | 26,697 | 2,385 | 13,818 | 84 | 382 |
| Transportation | 2,833 | 14,155 | 1,281 | 5,818 | 78 | 223 |
| Restaurant and lodging | 7,201 | 14,719 | 2,560 | 5,397 | 130 | 272 |
| Information Communication and Broadcasting | 44,671 | 63,742 | 16,597 | 24,057 | 582 | 711 |
| Finance and insurance | 6,957 | 15,909 | 3,954 | 8,846 | 43 | 91 |
| Real estate and rental | 4,118 | 9,992 | 2,601 | 6,281 | 51 | 101 |
| Professional, scientific and technical services | 23,139 | 32,940 | 13,909 | 19,300 | 487 | 620 |
| Project support services | 6,749 | 11,112 | 4,360 | 7,296 | 183 | 299 |
| Public administration and defense | 2,369 | 2,647 | 1,814 | 2,030 | 16 | 18 |
| Education services | 1,217 | 1,312 | 864 | 934 | 18 | 20 |
| Health and social welfare services | 736 | 1,329 | 388 | 697 | 8 | 13 |
| Culture and other services | 135,925 | 138,689 | 76,095 | 77,505 | 2,139 | 2,190 |
| Total | 406,246 | 679,974 | 180,404 | 267,968 | 5,467 | 7,129 |

Comparing the annual economic ripple effect before and after the Investment Promotion Districts, it can be observed that the economic ripple effect in Gwangju after the assigned investment promotion districts was increased to approximately 6.8 to 8.6 times. The production inducing effect increased from 22.3 billion won to 193 billion won, the added value inducing effect increased from 11 billion won to 81.4 billion won, and the employment inducing effect increased from 404 to 2,727 people. In the Cultural Complex Zone, public investment from the Asia Cultural Center Development Project has expanded on a large scale, and the economic ripple effect of public investment has increased by about 9.4 to 9.5 times. The response from private investments increased by about 3.4 to 3.8 times. Of note, in the company's sales, if the investment promotion zones are expanding, companies moving in will increase from 28 to 279 and will play a role in significantly increasing revenues in investment promotion zones.

**Table 8: Comparison of annual economic ripple effects before and after the expansion designation of investment promotion districts in the Cultural Complex Zone**

| | Category | Production inducement (million won) | | Added value inducement (million won) | | Employment inducement (number of people) | |
|---|---|---|---|---|---|---|---|
| | | Gwangju | Nationwide | Gwangju | Nationwide | Gwangju | Nationwide |
| Current | Public investment | 6,623 | 10,810 | 3,123 | 4,457 | 86 | 112 |
| | Private investment | 2,192 | 3,509 | 1,075 | 1,501 | 31 | 40 |
| | Industry sales | 13,570 | 19,961 | 6,809 | 9,209 | 288 | 332 |
| | Total | 22,385 | 34,281 | 11,007 | 15,167 | 404 | 484 |
| After Expected | Public investment | 62,687 | 102,845 | 29,382 | 42,029 | 809 | 1,050 |

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| expansion | Private investment | 8,377 | 14,186 | 3,603 | 5,459 | 104 | 139 |
|---|---|---|---|---|---|---|---|
| | Industry sales | 121,990 | 211,852 | 48,466 | 78,015 | 1,814 | 2,371 |
| | Total | 193,054 | 328,882 | 81,450 | 125,503 | 2,727 | 3,561 |

## CONCLUSION

This study aimed to elucidate the logic for the expansion designation of the investment promotion districts of the Asian Cultural Complex Zone promoted by the Gwangju Metropolitan City. Additionally, the direction of development for the regional cultural industry policy in the investment promotion district using the industry-related model was also examined. To this end, the final demand change of the industry-related model was first estimated. When the final demand change, such as public investment, private investment, and industry sales related to the investment promotion district, was predicted for the next four years, it was estimated to be around KRW 341.1 billion. The results of estimating the ripple effect of the regional economy due to this change in final demand are summarized as follows.

First, it was estimated that if the investment promotion district in the Cultural Complex Zone was designated as an expansion, the production inducing effects of KRW 406.2 billion, the added value inducing effects of KRW 180.4 billion, and the employment inducing effects in the Gwangju area would spread to 5,467 people. This is because the effect of output versus input was clearly observed in this instance. In particular, it was believed that the inducing effect of employment spreading to the region would be substantial. Second, by industry, investment in the public sector has a high economic ripple effect in the foundations of the cultural industry such as those of 'culture and other service industries' and 'construction industries,' and the investment and sales of the private sector also had a high ripple effect.

Applying the argument of Kneller et al. (1999) more broadly, among investments in the cultural industry, private sector investments or industry sales correspond to more productive expenditures. In other words, productive investments are made more in the private sector than in the public sector. Third, when comparing the annual economic ripple effect before and after the expansion designation of the investment promotion district, the increase in the ripple effect by public investment was the highest at 9.4~9.5 times, followed by industry sales at 6.3~9.0 times, and private investment at 3.4~3.8 times. Namely, the current plan seemed to show relatively poor performance on private investments. Although the private sector investment may be a more productive expenditure than public investment, the investment attraction seems to be relatively lacking.

Taken together, the expansion of the investment promotion district of Gwangju, an Asian Cultural Complex Zone city, will significantly contribute to vitalizing the regional economy. In particular, the fact that it induces a flourishing number of employments may have considerable significance in the current period of employment-free growth. Considering that private sector investment or increased sales of cultural companies is a more productive expenditure or investment, to sustainably revitalize the cultural industry investment promotion district in the future, additional investment from the private sector will be needed. Moreover, methods to increase the industry's sales within the investment promotion district will also need to be studied in greater scope and detail for the future.

## ACKNOWLEDGEMENTS

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