

Analysis of the Effect of Local Universities on the Local Economy - Based on the Daranee Analysis -

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Abstract

As a result of this study, the income generation effect of local universities on the local economy through the Daranee (1976) model was found to be 110.9 billion won (direct and indirect income 78 billion won, induced income 32.9 billion won). In the case of Korea, it has been verified through a number of previous studies that local universities play a role in preventing the outflow of local talent to the metropolitan area. Considering this, it seems that the government should make bold investments to foster local universities in terms of balanced national development. This is because the movement of local talents to the metropolitan area not only undermines the growth potential of the provinces and undermines the basis for regional existence, but also creates a vicious cycle that hinders balanced national development. To break this vicious cycle, the development of local universities is very important. It is judged that the horizon of balanced national development will be opened when local universities revitalize the local economy through the government's bold investment in local universities and are reborn as entities that provide various services based on the facilities and equipment of local universities.

Keywords: *Income creation effect of local universities, Daranee Model, Regional economic effects created by regional universities*

1. Introduction

Local universities have a great influence on the development of the region through local education, research, and community service activities. location has a positive effect on the development of the local economy and community through its educational, research, and social service functions [1], [2]. First, local universities provide manpower to companies and improve their productivity through research activities and fostering talents needed by the local community [3].

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In addition, local universities contribute to the maintenance of local commercial rights and vitalization of the local economy through the consumption activities of university members. In addition, local universities increase local innovation and integration through community service and participation in local culture, and contribute to the succession and development of local culture [4]. Lastly, local universities play a certain role in forming and maintaining local social capital and establishing local identity as a local center.

Local universities and local universities are in a mutually positive and developing relationship, and the role of local universities is very important in local development. Nevertheless, local universities today stand at the crossroads of survival, let alone maintenance. Due to the rapid decline in the school age population due to low birth rate, the government is inducing reductions in university quota, which will have a greater negative impact on local universities than universities in the metropolitan area.

A number of local universities have been closed, and it is realistically proven that the closure of these local universities has a negative impact on the local economy. Furthermore, the closure of local universities intensifies the outflow of local talent to the metropolitan area, which accelerates the phenomenon of overcrowding in the metropolitan area and hollowing out of the provinces at the same time. According to the government's announcement, there are 89 local governments facing the risk of extinction due to population decline, with Jeonnam and Gyeongbuk accounting for the most with 16 each, followed by Gangwon with 12. Due to the hollowing out of the provinces where local youth move to the metropolitan area and the severe low birth rate, local disappearance is accelerating. It turns out that the biggest reasons for moving to the metropolitan area for young people in their 20s and 30s are college admissions, marriage, and employment.

Therefore, this study first analyzes the effect of the economic activities of university students in the western Jeonnam area on the local economy. Based on this, I would like to consider the necessity and essential role of local universities. To this end, this study modified the factory location model of Daranne (1976) [5] to calculate the regional income generation effect according to university location by dividing it into direct and indirect income effects and induced income effects, and then used the research method of Kang Seung-gu and Lee Min-hwan (2004) [6] as a bench. You want to mark and perform relevant analysis

2. Prior Research, Theory and Hypothesis

In order to discuss the role and necessity of local universities, the relationship between local universities and regional development must be examined [7]. The contribution of local universities to regional development means that the overall sectors such as politics, economy, society, and culture of the region where the local universities are located are preferably improved due to education and research activities of the local universities, ultimately improving the quality of life of local residents. This means improving The effects of local universities on national or regional development are very diverse and extensive, and the effects of local universities on regional and regional development are also very diverse and extensive [7]. Specifically, first, the influence of local universities on regional development is discriminated according to the region of origin of the students entering the local university and the region of employment after graduation. Second, local universities endogenously induce regional development through the creation of new industries and jobs in the region by playing a diffuse role in relation to industry-academia cooperation and the basis of the regional innovation system. Third, human resources educated at local universities changed the structure of local residents' political consciousness, and contributed to the integration of the local community by cultivating a sense of community and development-oriented consciousness. From the perspective of balanced national development, the role of local universities must first move toward a relationship that plays a role in local self-sustaining and independent development, and from this point of view, social interest in local independent

development and self-reliance is higher than ever. Globally, the role of local universities is being emphasized more than ever as competition is forming between regions and cities rather than pursuing competition between the metropolitan area and the provinces. In the era of the 4th industrial revolution, the role and status of local universities will have to be reestablished. In the era of the 4th industrial revolution, developed countries highly value the role of universities as an axis that will determine the future national destiny. It has been proven that regions with prestigious universities can become a subject that pursues self-sustaining and independent economic activities where human resources and capital gather and continue to develop. In the end, when local universities and local communities become one and act harmoniously for local development, the economic development of the area and ultimately the quality of life of the local residents will be greatly improved.

In the case of regional cities where local universities exist, it is analyzed that local universities give economic stimulation to the region by 1.39 times the average of large cities, 1.46 times the average of medium cities, and 1.20 times the average of small cities [4]. Steinacker estimated the direct and indirect economic effect of Claymont University on the local economy at 10 million dollars per year based on the results of a survey on the consumption behavior of members of Claymont University [8].

As of 2020, there are a total of 327 schools in Korea, including 191 general universities and 136 junior colleges. The number of students in general universities is 1,981,003, the number of students in junior colleges is 621,772, and the number of students in distance colleges such as Korea National Open University is 352,957. to be. The total number of university students in Korea is 2,955,732. Of the 191 general universities, 71 (37.2%) are in the metropolitan area and the remaining 120 (62.8%) are in the provinces. There are 38 universities in Seoul, 30 in Gyeonggi-do, 19 in Gyeongsangbuk-do, 13 in Chungcheongnam-do, 12 in Busan, 11 in Chungbuk and Daejeon, 10 in Jeonnam and Gwangju, and 10 in Gyeongnam. In the case of junior colleges, the number of junior colleges located in the metropolitan area is 43 (31.6%), and the number of junior colleges located in the provinces is 93 (68.4%). There are 31 junior colleges in Gyeonggi-do, 15 in Gyeongsangbuk-do, 10 in Gyeongsangnam-do, and 9 each in Seoul, Busan, Jeonbuk, and Jeonnam. Therefore, among the universities located in Jeollanam-do, the target area of this study, there are 11 general universities, 9 junior colleges, and 3 other universities. By establishment entity, there are 4 national universities, 1 public university, and 18 private universities. By region, there are 3 in Naju, 3 in Mokpo, 4 in Suncheon, 2 in Yeosu, 1 in Damyang, 1 in Gokseong, 3 in Gwangyang, 1 in Yeonggwang, 3 in Muan, and 2 in Yeongam [9,10,11,12]. There is a dog.].The basic status of universities in the western Jeonnam area, the target area of this study, is shown in Table 1 below. The employment rate in the table below is as of the end of 2020.

Table 1. Basic Status of Universities in the Western Region of Jeonnam (as of 2021)

University	Education cost per student(KRW)	Annual scholarship per student(KRW)	Dormitory occupancy rate
Mokpo National Univ	17,063,000	3,111,000	25.8%
Mokpo Maritime Univ	17,915,000	2,242,000	93.9%
Mokpo Science Univ	8,699,000	3,976,000	23.7%
Sehan Univ	8,159,000	31,000,000	35.2%
Chodang Univ	11,530,000	3,958,000	33.2%
Dong-A Health Univ	6,772,000	3,221,000	26%
Mokpo Catholic Univ	14,103,000	4,559,000	27.1%
Korea Polytechnics V univ	9,758,000	1,432,000	128%

3. Analysis of economic activity effect of local college students - Economic effect through regional industry linkage table

This study first analyzes the income-generating effect of local universities on the region using the analysis model of Daranee (1976) [5]. The analysis path is divided into three main categories. In other words, the direct income effect is the degree to which personnel expenses are invested in the region, the effect generated by the expenditure is the indirect income effect, and finally, the induced income effect caused by the direct and indirect income effect in the region is classified into three types.

First, the direct income effect refers to the amount of cost reduction (housing expenses, living expenses, tuition, etc.) that occurs when college students residing in a region go to a university in the region instead of going to another region, and is calculated by the following formula.

$$Y_D = O \cdot C \quad (1)$$

Y_D : Direct Income Creation Effect,

O : The number of students who went on to study abroad when universities in the western Jeonnam area were not opened,

C : Annual average additional cost per person for going abroad

As a result of the analysis, the proportion of students residing in the area where the university is located is 16.0%, and since the number of students enrolled in 2020 is 22,582, the number of students living in the area where the university is located is estimated to be 3,606. The average annual additional cost per person for admission to another region was calculated as the difference between the housing and living expenses of university students in the area where the university is located and those in other regions. The monthly difference per college student is 164.6 thousand won, and when multiplied by the number of months of residency, it is 1,481.6 thousand won. Therefore, the direct income generation effect is calculated as 5,341,932 thousand won by multiplying by 3,606 people.

Second, the indirect income effect refers to the added value created by expenditures related to living and daily activities of college students, and is calculated by the following formula. The value added rate was calculated by reclassifying the product classification in the Jeonnam Regional Industry Linkage Table according to the expenditure items of the survey.

$$Y_{ID} = \sum_{l=1}^n \sum_{m=1}^s P_l \cdot R_l \cdot H_{lm} \cdot V_{lm} \quad (2)$$

Y_{ID} : Indirect income creation effect,

P_l : Number of students by residence type,

R_l : Number of months of actual residence by residence type,

H_{lm} : By residence type (l) by student expenditure category (m) average monthly expenditure per person,

V_{lm} : Rate of added value by type of residence (l) by student expenditure category (m).

Based on the survey results, enrolled students were classified by place of residence, and the number of months residing in the area where the university was located was estimated for each place of origin. In addition, as a result of calculating the monthly expenditure per student for each expenditure category by place of

residence and estimating the value-added rate for each expenditure category using the Jeonnam Regional Industry Linkage Table 2, the total indirect income creation effect is KRW 72.7 billion.

Table 2. Indirect Income Creation Effect

(unit: persons, KRW 1,000)

Division	University location area	Outside Jeonnam	Gwangju	Other areas	
Number of students	3,606	8,225	4,555	6,200	
Number of months of actual residence (annual)	11.0	9.1	8.8	9.0	
Monthly expenditure per person X	housing cost	82.4	131.9	176.3	236.9
	food cost	42.8	43.4	41.5	45.8
	cultural living expenses	54.2	52.3	45.6	49.4
	clothing and miscellaneous expenses	37.4	34.6	35.2	33.3
Value added rate	health care expenses	30.9	23.7	20.7	29.3
	transportation cost	36.2	32.1	27.7	31.9
	total	283.8	318.1	346.8	426.6
Sum	11,239,811	23,705,936	13,869,051	23,857,810	
Indirect income creation effect	72,672,607				

Third, the induced income effect refers to the amount of direct and indirect income generation that flows into the region and is created again as income in the process of consumption by residents.

$$Y_{KD} = Y_{DID} \left(\sum_{i=1}^m \frac{ER_i \cdot V_i}{1 - (ER_i \cdot V_i)} + \sum_{j=1}^m ER_j \cdot V_j \right) \quad (3)$$

Y_{KD} : induced income effect

Y_{DID} : $Y_D + Y_{ID}$,

i : Sectors that can be reinvested in the region

j : Industries that cannot be reinvested in the region,

$ER_{i,j}$: Expenditure rate by category

$V_{i,j}$: Value added rate by expenditure item

As a result of the analysis, the amount of direct and indirect income generated was 78 billion won, and the amount that flowed into the area where the university was located and was generated again as income in the process of consumption by residents was calculated. The amount of induced income was estimated by multiplying the sum of the multipliers for each expenditure item in the process of spending 78 billion won flowing into the area where the university is located, and multiplying the sum by 78 billion won. The amount of induced income generated in the Jeonnam region according to the consumption expenditure of college students was 33 billion won, which was estimated on the premise that the industrial sector related to consumption was located in the Jeonnam region.

Table 3. Elicited Income Effect

(Unit: persons, KRW 1,000)

Division	Sum of evoked multipliers	Amount of direct and indirect income generated	Amount of induced income	Total income effect
Possibility of reinvestment In all industrial areas	0.422	78,014,539	32,921,760	110,936,299
Impossibility of reinvestment In all industrial areas	0.405	78,014,539	31,591,050	109,605,589

4. Conclusion

Currently, local universities located in the Jeonnam region are closing due to a sharp decrease in the school-age population due to a sharp decline in the birth rate, and the closure of local universities is having a very negative impact on the local economy. Moreover, the outflow of local talent to the metropolitan area is intensifying, leading to a vicious cycle of extinction in the provinces. This study aims to present the maintenance and necessity of regional universities and the active role of regional universities through the effect of the economic activities of university students in the western region of Jeollanam-do on the local economy. To this end, this study analyzed the effect of local universities on the local economy with 357 students enrolled at four universities in the western Jeonnam region. First, a brief summary of the survey results is as follows. Compared to other regions, they answered that the price level of eating out, housing, transportation, and cultural living expenses in the western Jeonnam area was generally higher. Food and beverages accounted for the largest proportion of monthly average consumption expenditures by college students attending universities in the western Jeonnam region, followed by cultural living expenses, clothing and miscellaneous goods expenses, communication expenses, and transportation expenses. As for the housing type of college students attending universities in the western Jeonnam area, dormitories accounted for 37.3% of the total, and the average monthly housing cost was analyzed to be 350,000 won. As a factor impeding local consumption expenditure of university students attending universities in the western Jeonnam region, 'lack of product diversity' accounted for 39.8% of the total, followed by the hindrance to consumption expenditure in high-price university areas in the region. . 68.1% of college students attending universities in the western Jeollanam-do region earned less than 400,000 won (US\$400) per month on average through part-time jobs. Among college students attending universities in the western Jeonnam area, 20.2% of the students plan to move to other areas before graduation, and it was confirmed that the reason for these students' migration was 'insufficient cultural life conditions' and 'lack of jobs' in the university area. It became. It was confirmed that 82.6% of university students attending universities in the western Jeollanam-do area are considering employment after graduation, and tend to move to areas outside the university area for reasons such as lack of jobs in the university area and lack of conditions for job preparation.

The income generation effect of local universities on the local economy through the Daranee (1976) [5] model showed that the total amount of income generation was 110.9 billion won (direct and indirect income 78 billion won, induced income 32.9 billion won). Since regional universities play a role in preventing the outflow of local talent, the government needs active interest and efforts in fostering regional universities in terms of balanced regional development. The percentage of youth living in the metropolitan area continues to

grow rapidly every year, and as a result, the overcrowding phenomenon in the metropolitan area is gradually intensifying, and the imbalanced growth of the national territory is aggravating. This weakens the growth potential of the province, destroys the foundation for the existence of the area, and deepens the relocation of youth to the metropolitan area, resulting in a vicious cycle. To break this vicious cycle, the development of local universities is very important. Local universities should be able to revitalize the local economy, provide various services based on local universities' facilities and equipment to local residents, and freely use the intellectual property rights of universities to create added value for local businesses and local residents. In addition, local universities should create added value through collaboration with local companies, and finally develop lifelong education and specialized research education (CDP) in depth.

Through various preceding studies, it has been verified that local universities play the role of a minimum breakwater to prevent the outflow of local talent. The outflow of local talent is the main culprit that accelerates local disappearance, and if it is not mitigated or blocked, the government's policy frame of balanced national development will lose its place. This leads to the aging of the provinces, and the vitality of the local economy is declining day by day, creating a vicious circle that encourages the departure of young people from the provinces to the metropolitan area. This weakens the growth potential of the province and ultimately destroys the foundation for the existence of the local community. In order to break this vicious circle, it will be essential to foster local universities that support the local economy at a meaningful level. However, in reality, the development of local universities is close to neglect. Without the government's innovative support, it is impossible to revitalize the local economy based on local universities. In order to break this vicious circle, first, local universities must be able to provide economic benefits to local students through consulting, provision of university facilities and facilities-based services, intellectual property rights, and spin-offs. Second, 'industry-university cooperation research and commissioned research' should be conducted through collaboration with small and medium-sized enterprises and large corporations. Third, local universities should provide lifelong education and professional research education (CDP). Local universities will need bold financial support from the government to fulfill this role. In the case of OECD advanced countries, unconventional policies such as donation admission are being implemented for the financial independence of universities, and Korea is now discussing to solve problems that require national consensus, such as donation admission, etc. for the financial independence of local universities, which are the cornerstone of the local economy. The chairperson should be open.

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