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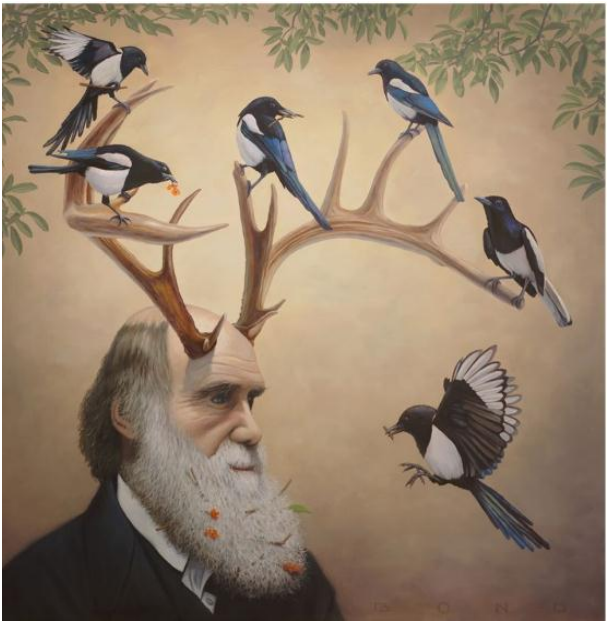
Revista de Antropología, Ciencias de la Comunicación y de la Información, Filosofía, Lingüística y Semiótica, Problemas del Desarrollo, la Ciencia y la Tecnología

Año 35, 2019, Especial N° 22

Revista de Ciencias Humanas y Sociales
ISSN 1012-1587/ ISSNe: 2477-9385
Depósito Legal pp 198402ZU45



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Opcion, Año 35, Nº Especial 22 (2019):*2899-2921*
ISSN 1012-1587/ISSNe: 2477-9385

The Spatial Dependence in Central Sulawesi Province

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Abstract
This study aims to analyze the role of spatial dependence on income convergence based on data from 13 regency/municipality in the province of Central Sulawesi in the period 2007-2017. The analysis used in this research is exploratory spatial data analysis and spatial durbin model. The results of the study did not find a positive spatial spillover on the income convergence of 13 regency / municipality in the province of Central Sulawesi and clusterization of PDRB per capita resulting in two spatial regimes. Local government as the policy maker needs to utilize the absence of spatial spillover on the regional economic growth shown by this study to consider their programs to increase the regional economic growth and reduce the income gap between regions.

Keywords: spatial dependency, income convergence, exploratory spatial data analysis, spatial durbin model

Modelo de desarrollo de la industria creativa como apoyo económico en Surabaya

RESUMEN

Este papel de la industria creativa para apoyar el desarrollo de la ciudad de Surabaya, Indonesia. Las industrias creativas provienen de las habilidades individuales con respecto a las habilidades y la creatividad con la exploración creativa, lo que abre oportunidades de empleo y bienestar. destinado a elaborar la existencia y explorar las formas de aprovechar. El documento concluye que la ciudad de Surabaya tiene considerables oportunidades para desarrollar industrias creativas, pero también tiene desafíos en su desarrollo. Además, existe la necesidad de una institución creativa de coordinación de la industria y un fuerte compromiso y consistencia en la colaboración y la implementación posterior.
Palabras clave: industria creativa, desarrollo, ciudad de Surabaya, gobierno local.

INTRODUCTION

One indicator used to measure the success of development is due to the escalating economic growth and reducing regional as well as sectoral income inequality. The rapid economic growth happens in Central Sulawesi province/municipality including in some regencies/cities, such as Palu, Morowali, North Morowali, and Banggai. On the other hand, some other regions like Banggai Laut, Banggai Kepulauan, and Tojo Una-una are suffering for slow economic growth Due to some influencing factors, such as resource differences, investors' tendency which prefers urban growth centers or areas with adequate public facilities, such as transportation infrastructure, skilled labors, electricity and communication networks.

This condition takes place in twelve regencies and one city in Central Sulawesi Province with their relatively different potential. Gini Ratio is a measurement used to view inequality between regions. In general, until 2017, Central Sulawesi Province has an average Gini Ratio of 0.355, indicating that income distribution in di Central Sulawesi Province is at moderate level of inequality. (Moderate inequality, if G is between 0.3 - 0.5: Oshima, in Rosyidi, 2006). The disparity level in Central Sulawesi is still below national average disparity level. The factors to cause economic gap

is low accessibility to economic facilities and infrastructure, particularly people in rural areas.

Spatial dependence pattern,from the perspective of spatial dependence, serves an important role since it may consider the economic activities concentration factor. This economic concentration results in a condition which supportsregional economic growth as a determinant of regional dependence and inequality. Observing the distribution of economic activities in-Central Sulawesi, the regencies/citiesare geographically separated by long distance between them and, still, by some islands areas. Besides distance, inadequate infrastructure, such as road, influences movement carrying capacity and increases travel time and may increase distribution of goods and services between regions, which eventually influence regional economy

Abrueet al. (2004) specifically states that only 92 percent of 50 studies on economic growth which use spatial econometric techniques includethe role of spatial dependency and has no basis on economic theory that results in model misspecification (Behrens and Thisse, 2007). Ertur and Koch (2007) have developed the Solow model by including interrelated regional technology variable, due to the existence of knowledge spillover stock from one to the other regions because technology is attached to the determinants of regional economic growth. Fischer (2011) also conducts a research on knowledge stock by developing the Mankiw Romer Weil (MRW) model. Dall'erba and Llamosas-Rosas (2014) as well as Alvarez' and Barbero (2016) also conduct an empirical research using spatial MRW models to analyzethe effect of spatial dependence on regional economic growth in the United States and Spain. Sun et al. (2017) initiates the economic growth model used by Ertur and Koch (2007) who also conduct as research on regional economic growth in China. Generally, the aforementioned studies reveal that the determination of economic growth in other regions affects that in one region. In other words, spatial dependence is highly important forthe economic growth of a region.Some studies in Indonesia which analyze the effect of spatial dependence on regional economic growth include those conducted by Takeda (2013) and Vidyattama (2014) stating that spatial dependence does no effect on regional economic growth in Indonesia. They argue that economic growth is influenced by some factors (characteristics) in the related region, economic growth in the other regions, and shock from the other regions. They also do not explicitly see the economic growth determination from the other regions. Ertur and Koch (2007) emphasize that factors like initial per capita income, physical capital investment, human capital based on educational level, and

sector-based workforce from the other regions are expected to positively affect the regional economic growth in Indonesia.
This study aims to analyze the effect of spatial dependence on regional income per capita convergence.

LITERATURE REVIEW

Spatial MRW Model

The Spatial MRW Model was developed by Fisher (2011) from the standard MRW model. It is assumed that each region has a production function in the Cobb-Douglas form. The N region is assumed to have a Cobb-Douglas production function along the T period:

$$Y_{it} = A_{it}K_{it}^{\alpha k}H_{it}^{\alpha H}L_{it}^{1-\alpha K-\alpha H} \quad (1)$$

Where Y_{it} is the output of region i period t, K_{it} ,H_{it} and Lit states the physical capital level, human capital and the total labor force of region i period t. A_{it} is the level of technological knowledge. In equation (1) it can be converted into a per capita output equation by dividing both sides with Lit:

$$Y_{it} = A_{it}K_{it}^{\alpha K}H_{it}^{\alpha H} \quad (2)$$

Where y_{it}, k_{it} and hit are output per worker, physical capital per worker and human capital per worker.

Quoting Alvarez and Barbero (2016), technological knowledge is a function of the total stock of knowledge, factors of production in one region and factors of production from other regions, it is stated by:

$$A_{it}=\Omega k_{it}^{\theta}h_{it}^{\gamma k}\prod_{j=1}^{N} kjt^{\theta pwij}h_{jt}^{\gamma pwij} \quad (3)$$

Where Ω reflects "the exogenous common knowledge", θ and γ show the technological parameters with $0 <\theta, \gamma <1$. Wij is the connectivity structure amongregions and p reflects the interdependence of technology among regions with $0 <p <1$.
By entering equations (2) and (3), we get;

$$y_{it}=\Omega k_{it}^{\alpha k+\theta}h_{it}^{\alpha H+\gamma}\prod_{j=1}^{N} kjt^{\theta pwij}h_{jt}^{\gamma pwij} \quad (4)$$

Equation (4) states that output of each worker in one region depends on factors of production in the region and from other regions.

The Neoclassical economic growth model assumes that labor in region i grow as big as ni. Meanwhile, the share of income invested in physical capital and human capital is assumed to be a constant of equal to sik with siH at an exogenous rate of investment growth, while capital is

assumed to depreciate at the same level as δ. changes to physical capital per worker and human capital per worker can be stated as:

$$k_{it} = s_i^K y_{it} - (n_i + \delta)k_{it} \quad (5)$$

$$h_{it} = s_i^H y_{it} - (n_i + \delta)h_{it} \quad (6)$$

On the steady state conditions, physical capital per worker and human capital grow at a constant rate g:

$$\frac{kit}{kit} = g \quad (7)$$

$$\frac{hit}{hit} = g \quad (8)$$

By substituting equation (5) to (7) and equation (6) to equation (8), we get the capital ratio to output:

$$\frac{k_{it}^*}{y_{it}^*} = \frac{s_i^K}{n_i + g + \delta} \quad (9)$$

$$\frac{h_{it}^*}{y_{it}^*} = \frac{s_i^H}{n_i + g + \delta} \quad (10)$$

With a sign (*) indicating steady state. Equation (9) and equation (10) are included in the production function per
worker (Equation 4), to obtain:

$$y_i^* = \Omega^{\frac{1}{1-\eta}} \left(\frac{s_i^K}{n_i + g + \delta}\right)^{\frac{\alpha_K + \theta}{1-\eta}} \left(\frac{s_i^H}{n_i + g + \delta}\right)^{\frac{\alpha_H + \gamma}{1-\eta}} \prod_{j=1}^{N} \left(\frac{s_j^K}{n_j + g + \delta} y_j^*\right)^{\frac{\theta \rho w_{ij}}{1-\eta}} \left(\frac{s_j^H}{n_j + g + \delta} y_j^*\right)^{\frac{\gamma \rho w_{ij}}{1-\eta}} \quad (11)$$

With η = αK +αH + θ + γ, So equation 11 can also be written as:

$$y_i^* = \Omega^{\frac{1}{1-\eta}} \left(\frac{(s_i^K)^{\alpha_K + \theta} (s_i^H)^{\alpha_H + \gamma}}{(n_i + g + \delta)^{\eta}}\right)^{\frac{1}{1-\eta}} \prod_{j=1}^{N} \left(\frac{(s_j^K)^{\theta} (s_j^H)^{\gamma}}{(n_j + g + \delta)^{\theta+\gamma}} (y_j^*)^{\theta+\gamma}\right)^{\frac{\rho w_{ij}}{1-\eta}} \quad (12)$$

Equation (12) is made in Ln form:

$$\ln y_i^* = \frac{1}{1-\eta} \ln \Omega + \frac{\alpha_K + \theta}{1-\eta} \ln s_i^K + \frac{\alpha_H + \gamma}{1-\eta} \ln s_i^H - \frac{\eta}{1-\eta} \ln(n_i + g + \delta) + \frac{\theta}{1-\eta} \rho \sum_{j=1}^{N} w_{ij} \ln s_j^K + \frac{\gamma}{1-\eta} \rho \sum_{j=1}^{N} W_{ij} \ln s_j^H - \frac{\theta + \gamma}{1-\eta} \rho \sum_{j=1}^{N} w_{ij} \ln(n_j + g + \delta) + \frac{\theta + \gamma}{1-\eta} \rho \sum_{j=1}^{N} w_{ij} \ln y_j^* \quad (13)$$

As the characteristic of the conventional neoclassical growth model, it is predicted that output of each worker will converge towards a steady state.

If y * i is a steady state condition and yit is the actual value of output of each worker in year t, then:

$$\frac{d \ln yit}{dt} = - \lambda [\ln y_{it} - \ln y^*i] \quad (14)$$

Where λ is the convergence speed. By solving equation (14) and subtracting side by output per worker at the beginning of the ln y_{it}-T period, then:

$$\frac{\ln y_{it} - \ln y_{it-T}}{T} = -\frac{1-e^{-\lambda\tau}}{T} \ln y_{it-T} + \frac{1-e^{-\lambda\tau}}{T} \ln y_i^* \quad (15)$$

By substituting per capita production on steady-state conditions, equation (15) can be written:

$$\begin{aligned}\frac{\ln y_{it} - \ln y_{it-T}}{T} &= -\frac{(1-e^{-\lambda\tau})}{T} \ln y_{it-T} + \frac{(1-e^{-\lambda\tau})}{T} \frac{1}{1-\eta} \ln \Omega + \frac{(1-e^{-\lambda\tau})}{T} \frac{\alpha_K + \theta}{1-\eta} \ln s_i^K \\ &+ \frac{(1-e^{-\lambda\tau})}{T} \frac{\alpha_H + \gamma}{1-\eta} \ln s_i^H - \frac{(1-e^{-\lambda\tau})}{T} \frac{\eta}{1-\eta} \ln(n_i + g + \delta) + \frac{(1-e^{-\lambda\tau})}{T} \frac{\theta + \gamma}{1-\eta} \rho \sum_{j=1}^{N} w_{ij} \ln y_{it-T} \\ &+ \frac{(1-e^{-\lambda\tau})}{T} \frac{\theta}{1-\eta} \rho \sum_{j=1}^{N} w_{ij} \ln s_j^K + \frac{(1-e^{-\lambda\tau})}{T} \frac{\gamma}{1-\eta} \rho \sum_{j=1}^{N} w_{ij} \ln s_j^H \\ &- \frac{(1-e^{-\lambda\tau})}{T} \frac{\theta + \gamma}{1-\eta} \rho \sum_{j=1}^{N} w_{ij} \ln(n_j + g + \delta) + \frac{\theta + \gamma}{1-\eta} \rho \sum_{j=1}^{N} w_{ij} \ln y_{it} - \ln y_{it-T} T \end{aligned} \quad (16)$$

In an economy, the total output produced by an area can be approached with Gross Regional Domestic Product (GRDP) data whose value is same as the amount of income in that region (Mankiw, 2012). From Equation (16) it can be concluded that the economic growth of an area is not only influenced by initial per capita income, physical capital investment and human capital, population growth in the region, but also influenced by initial per capita income from other regions, physical capital investment and human capital in other regions, as well as population growth from other regions and economic growth in other regions.

Analysis of per capita economic growth convergence is the implication of neoclassical economic

growth analysis. To analyze neoclassical economic growth, it must involve aspects of spatial dependence. Arbia et.al (2008) suggested that the researches included spatial autocorrelation in the convergence model are initiated by Vaya et.al (2004), Lopez-Bazo et.al (2004) and Ertur and Koch (2007).

MODEL SPECIFICATION

1. Research Approach

This research uses a quantitative approach with exploratory spatial data analysis (ESDA) and spatial durbin model (SDM) analysis teqhniques.

2. Research Location

This research was conducted in Central Sulawesi,which consisted of 12 regenciesand 1 municipalityfor an observation period of 2007-2017.

3. Exploratory Spatial Data Analysis (ESDA)

a. Moran Index

The structure of Moran index is similar to Durbin Watson's autocorrelation test with the following formula:

$$I = \frac{n \sum_{ij}^{n} Wij\, Zi\, Zj}{\sum_{i} \sum_{j} Wij \sum_{i=1}^{n} Zi^{2}} \; i \neq j$$

Where Zi = Xi - μ and Zj= Xj - μ are the observation in variable (X) for i and j areas which are a deviation of the mean (μ), Wij is the spatial weights matrix. The value of Wij = 1, if the i and j areas reach the limit, and Wij = 0, if other wise, X is the growth level of per capita income and n is the number of observations.

b. Moran Scatterplot

Mapping using Moran scatterplot will present four quadrans which illustrate four types of relationship between a region and others around it as neighbors, as can be seen in Table1.

Table1
Types of Relationship between a Region and its Neighboring Regions

Type	Note
HH	rich region surrounded by rich neighboring regions
HL	rich region surrounded by poor neighboring regions
LH	poor region surrounded by rich neighboring regions
LL	poor region surrounded by poor neighboring regions

Note:
H = High
L = Low

c. Lagrange Multiplier (LM)

As a development of Moran index to measure the spatial autocorrelation in residual regression, Lagrange Multiplier (LM) testwas used. LM test was

done to distinguish spatial error model and spatial lag model by inserting pooled model. LM test is asymptotic and follows X2 distribution,with the following hypothesis test:
Ho : there is no spatial dependence
H1 : there is spatial dependence

4. Spatial Durbin Model

Spatial Durbin Model (SDM) is an extension of the Spatial Autoregressive (SAR) model by adding spatial lag to independent variables. In a simple production function, Fingleto and Bazo (2005) reveal that technology in a region presumably depends on the technological levels in the surrounding areas. In the case of positive spatial externalities and particular level of technology used in the production process, the steady state position in a region is positively dependent on physical and human capital in its surrounding areas. Therefore, the model equation is formulated as follows:

$$\ln\left(\frac{yi0+\tau}{yi0}\right) = \alpha + \rho\left[\text{w}.\ln\frac{yi0+\tau}{yi0}\right)]_i + \beta \ln(y_{0i}) + \tau\, ln\, Wyoi + \delta X + \mathcal{E}i$$

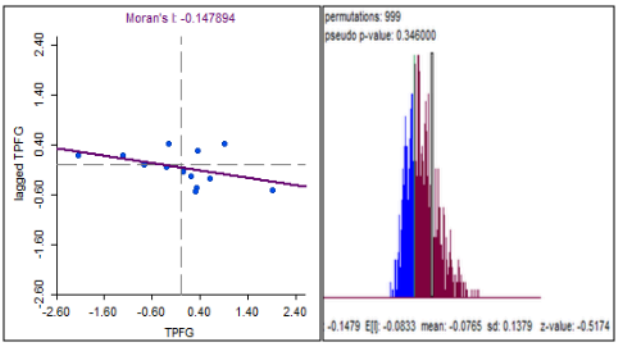
Spatial weighting matrix elaborates the spatial effect on a model. This research defines spatial weighting matrix (W) based on contiguity information using the regional mapping and workforce movement information through sea or air transportation. The determination of spatial weighting matrix uses a combination of queen contiguity method and sea or air transportation routes with the same spatial weight (W1 =W2=W).
The determination of spatial weighting matrix is based on the research conducted by Baltagi et al. (2010) who utilizes the transportation route weight to describe the workforce migration flow. The concept of neighbor related to the territorial regions bordered by astrait is accomodated by the sea and air transportation routes. If the sea and air transportation are not available, there will be no workforce migration flow between regions bordered by a strait that unemployment between those neighboring regions does not affect each other. the queen contiguty spatial weight occurs when a regency or city iis borderedby regency or city jboth in the form of land and strait that the value of wij=1. Banggai Laut and Banggai kepulauan regency is bordered by the strait,yet there is no sea or air transportation routes between those regencies thatits spatial weight is 0. Meanwhile, Palu and Toli-Toli, Buol regency have sea or air transportation routes although they are notbordered by a strait that their spatial weight value is 1.

DISCUSSION

The spatial relationship between municipalities/regency can be seen from LISA MAP in figure 1.

Figure. 1 : LISA Map of Total Factor Productivity Growth (TFPG) in Central Sulawesi Province

The LISA Map in figure 2 shows no spatial linkage of TPFG between regencies/municipality in Central Sulawesi at the end of the research period (2017). Based on the information in figure 2, it can be seen that all regencies/ municipality in Central Sulawesi do not have spatial links in TPFG at the end of the research period. The test of spatial dependence of per capita income in regencies/municipality in Central Sulawesi can be seen from the Moran's I value in Moran's Scatterplot and its significance value.



(a) (b)

Figure 3. (a) Moran's Iin Moran's Scatterplotof TFPG of regencies/municipalityin Central Sulawesi; (b) Pseudo p-valueof Moran's Ivalue of regencies/municipalityin Central Sulawesi at the End of the Period (2017)

The measurement of global spatial autocorrelation was based on Moran's I value which was used to determine the existence of spatial clustering. At the end of TFPG period, the absence of spatial autocorrelation is significant in the growth distribution. The per capita incomein Central Sulawesi is shown by Moran's I value at -0.147894 with a Pseudo p-value of 0.346,which is greater than the error rate α (0.05), hence it is stated that there is no significant spatial dependence in the overall TPFG of regencies/ municipality in Central Sulawesi at the end of the period (2017).

Mapping Spatial Relations between Regencies / cities in Central Sulawesi: Quadrant I shows that Banggai Regency, Morowali Regency and North Morowali Regency has high tendency of geographical concentration. Banggai Regency is one with natural resources potential. There are mega projects of Oil and Gas management in 2 blocks: Senoro block and Matindok block. orowali Regency has natural resources potential in the form of featured commodities from plantation sector, namely oil palm and nickel shed renowned for its first class quality in Southeast Asia as well as oil potential of Tomori block, Sulawesi of Tiaka field. North Morowali Regency, besides itspotential in cropagriculture, forestry, plantation and maritime sectors, also has nickel and oil and gas mining potential under management of JOB Pertamina and PT. Tomori Sulawesi.

Quadrant II shows that Toli-Toli Regency is the only one surrounded by regencies/cities with high economy rate, which are Parigi Moutong City and Palu City.

Quadrant III shows regencies which geographically lack of advantage, in which Banggai Islands Regency, Banggai Laut and Tojo Una-Una are islands areas consisting of small islands separated by sea, of which their access toeconomic activities is thus affected, with regard to constraints in transportation services.

In quadrant IV, Banggai Regency has potential resources and adequate infrastructure and is surrounded by Banggai Islands and Banggai Laut Regencies with their limited regional potential development and Tojo Una-Una Regency

The initial Per Capita Income from theother regencies/citiesdono effect the convergence of Per Capita Income of a region in Central Sulawesi province as shown by the spatial lag presented in Table 1.

Table 1
Result of Conditional and Absolute Convergence Model Estimation with All Control Variable (Full Model)

Conditional Convergence Model	SDM	
	Coefficient	***P-Value***
Constant	283.6612	0.0001717
Initial Per Capita Income (2007)	2.1893	0.1725424
TFPG	10.7223	0.0124155
Spatial Lag (ρ)	0.40426	0.18081
Spatial Initial Income (τ)	-21.0343	0.0000168
Absolute convergence model	**Coefficient**	***p-value***
Constant	-0.491675	0.04940
Initial Per Capita Income (2007)	7.59576	0.00083
Moran's I	-0.8908	0.37304
LM Error	1.4992	0.22079
LM Lag	0.6355	0.42534

By using spatial durbin model (SDM), it isshown that Total Factor Productivity Growth (TPFG) has positive and significant effect on the per capitaincome of regency/city in Central Sulawesi. This can be viewed in the coefficient effect of 10.7223 TPFG, with a p-value of 0.0124155 smaller than the degree of error (α) of 5% (0.05). Positive sign on β TFPG showed the positive influence of TFPG on theper capita income of regency/city in Central Sulawesi.

Table 1 showed that the coefficient β (initial income) on the Human Resources model is 2.1893, smaller than the absolute β value, with a p-value of 0.1725424 which is not significant at the 5% error level. Coefficient values smaller than absolute β indicate that by including variables that can control economic growth, the convergence process of per capitaincome of regency/city in Central Sulawesi from 2007 to 2017 becomes faster if the initial per capita income variable is the only variable which affects per capita income of regency/ city in Central Sulawesi.

Based on Table 1 (Estimated Results of Conditional Convergence Model with All Control Variables (Full Model) shows that spatial lag coefficient (ρ), amounting to 0.40426 with a p-value of 0.18081 is greater when compared to the degree of error (α) of 5% (0.05), which means there is no spatial dependence of per capita income between regencies/ cities in Central Sulawesi, but the Spatial Initial Income coefficient (τ) value is -21.0343 with a p-value of 0.0000168 smaller when compared with the degree error (α) 5% (0.05), which states that there is a significant spatial dependence on initial per capita income of regency/ city in Central Sulawesi Spatial Initial Income Coefficient (τ) of -21.0343 has a negative sign meaning that every time there is an increase the average initial per capita income of the

regions around a regency/ city in Central Sulawesi will potentially reduce the current period's per capita income in the regency/ city.

The estimation results showed the p-value on LM Test Error p-value obtained for 0.22079 while the LM Test Lag obtained p-value of 0.42534 both LM Test values are greater than degree of error (α) 5% (0, 05) which shows that the most suitable model to use for estimating this convergence is the classic model in accordance with the provisions suggested by Anselin (2004). Estimation results show the value of Moran's I Spatial Autocorrelation Test of -0.8908 with a p-value of 0.37304 indicating a value greater than degree of error (α) 5% (0.05), which means that there is no spatial autocorrelation in per capita income in the absolute convergence model in regency/city in Central Sulawesi for from 2007 to 2017. The coefficient β (initial income) in OLS model is 7.59576, significant in the degree of error (α) 5% (0.05). The positive coefficient β indicates the divergence of regency/ city income divergence, Central Sulawesi in the period 2007 to 2017. It can be concluded that there was no absolute convergence process in the regency/city, Central Sulawesi from 2007 to 2017 conversely what happens is the absolute divergence of per capita income between regencies/ cities in Central Sulawesi.

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The unaffected initial Per Capita Income from the other regencies/cities shows that there is no spatial spillover of Per Capita Income on the economic growth of a regency/cityin Central Sulawesi province. The result of this research is in accordance with that conducted by Ertur and Koch (2007) stating that there is no spillover from the physical capital investments made in the other regions to the economic growth ofa certain region within various countries in the world. No spatial spillover within the

physical capital investment in Central Sulawesi provinceis caused by the limited capital goods provided by the regencies/cities in Central Sulawesi province, yet only few regencies/cities provides capital goods traded in the other regions. The Increasing demand for capital goods resulted by the escalating physical capital investment ofa region may encourage the import of capital goods when the capital goods are unable to provide by a region. As emphasized by Capello (2009), the other regions may only get the benefits from the demand for capital goods whenthey are able to provide the required capital goods. Thus, the chances to earn benfits from thephysical capital investment made in the regencies/cities of Central Sulawesi regions become smaller. The human capital investment made by a regency/city in Central Sulawesi does not have a significant impact on the other regions'income convergence. Since there is no spatial spillover from the human capital investment on a region'seconomic growth since the human capital investment made by a regency/city is only enjoyed its own regency/city with its increasing economic growth. Nelson and Phelps (1966) state that work force with higher educational level may easily absorb new ideas, science, and technology to increase higher economic growth. However, the increasing human capital may not only enjoyed by the other regions since the resulted human capital investment (educated-workforce) does not migrate to the other regions (Olejnik, 2008).

It can be substantively said that there is no spatial dependency in supporting the convergence of regencies/citiesin Central Sulawesi province. Those with less advanced technologies are unable to catch up theother regions with more advanced technologies, yet those with more advanced technologies have recently had slower economic growth (Barro and Sala-l-Martin, 1992; Ertur and Koch, 2007; Alvarez' and Barbero, 2016). Thus, the government has an importantrole to provide the supporting infrastructure for inter-regional connectivity to reduce the transportation costs in reaching the production inputs, markets, and production factor mobility (Easterly and Levine, 1998; Puga, 2002; Alcidi et al., 2015).

CONCLUSION

This research analyzes the role of spatial dependence on the convergence of Per Capita Income of regencies/cities in Central Sulawesi province. The researchis conducted based on the MRW spatial theoretical model with the following findings: (a) spatial dependence has no impact on the convergence of Per Capita Income in the regencies/cities of Central Sulawesi province; (b) Clusterization of convergence per capita resulting in two spa-

tial regimes in the regencies/cities of Central Sulawesi province.
Referring to the findings of this research, the authors propose two recommendations: (a) local government as the policy maker needs to utilize the absence of spatial spillover on the regional economic growth shown by this study to consider their programs to increase the regional economic growth and reduce the income gap between regions. Regional development is prioritized more to regencies/cities in quadrant III which are regencies/cities with low economic growth rate through strengthening economy and enhancing productivity of primary sectors and enhancing the quality of human resources.

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opción

Revista de Ciencias Humanas y Sociales

Año 35, Especial No. 22 (2019)

Esta revista fue editada en formato digital por el personal de la Oficina de Publicaciones Científicas de la Facultad Experimental de Ciencias, Universidad del Zulia.
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