

ABSTRACT

The effect of spatial dependence can be interpreted as if one region receives beneficial spatial spillovers through the economic development of the surrounding areas. This study aims to investigate the convergence phenomenon in Maluku Province during 2012-2019 by considering the effect of spatial dependence. The importance of involving the effect of spatial dependence is due to the geographical characteristics of this region which is generally bordered by the ocean. The data used in this study are secondary data sourced from the Central Statistics Agency (BPS), Indonesian Bank (BI), the Directorate General of Fiscal Balance (DJPB) and the Regional Development Planning Agency (Bappeda) with a research year span of 2012-2019. The analysis tool in this study uses Stata 17 software. Considering that this study uses a spatial approach, the formation of a spatial weight matrix is very important because it will be used in further analysis of spatial. To answer the research objectives, the analysis method used in this study is Moran's I with a Global and Local approach and an econometric spatial model using the Spatial Durbin Model (SDM) approach.

The results of the analysis obtained a spatial weight form with an 11x11 matrix which is the dimension of the number of districts/cities in Maluku Province in transportation cost connectivity. Furthermore, the spatial weight matrix is applied in the Moran's I Index to obtain the Moran's statistical value. The Moran's I results show that there is a relationship between districts/cities that is getting stronger with a positive and increasing Moran's value. The observation period spans from 2012 - 2019 using a p-value (probability) of 0.05. In the period 2012 - 2014, the Moran's I index was obtained successively of 0.015; 0.055; 0.106 with a p-value greater than 0.05 meaning that the spatial relationship is not strong enough between districts/cities in Maluku Province. While in the period 2015 - 2019, the Moran's I index was obtained successively of 0.147; 0.175; 0.181; 0.205; 0.388 with a p-value less than 0.05 means that there is a spatial relationship between districts/cities, indicating that districts/cities with high gross regional domestic product per capita tend to be close to each other, and vice versa, there is a similar tendency in districts/cities with low gross regional domestic product per capita. The test uses Moran's scatterplot to determine whether there is a spatial relationship between observation units (districts/cities). Moran's scatterplot is a local measure to see whether or not there is a spatial relationship between districts/cities in Maluku

Province. Moran's scatterplot in 2012 where Southwest Maluku Regency is in quadrant II and East Seram Regency is in quadrant IV. Furthermore, the map of Maluku Province based on Moran's scatterplot in 2019 in Figure 4.20 shows that Southwest Maluku Regency has moved to quadrant I and East Seram Regency to quadrant III.

To answer the second research objective regarding the spatial dependence of one district/city with other districts/cities in Maluku Province. Furthermore, analyzing the effects of spatial dependence on gross regional domestic product per capita in Maluku Province. The results of the estimation of the effects of spatial dependence between one district/city and another district/city. There are four variables that have a positive effect on the gross regional domestic product per capita of the region itself, namely education function expenditure, health function expenditure, labor and sea transportation. The influence with a positive direction indicates that if education function expenditure, health function expenditure, labor and transportation increase, then the gross regional domestic product per capita will also increase.

The estimation results obtained the coefficient value of the spatial spillovers effect of gross domestic product per capita of 0.5574, which means that the relationship between gross regional domestic product per capita contributes to the gross regional domestic product per capita of neighboring areas by 0.5574. It can be said that if there is an increase in gross regional domestic product per capita in a district/city by 1 percent, it will encourage an increase in gross regional domestic product per capita in other districts/cities by 0.5574 percent. These empirical results are in line with research conducted by Rey and Montouri. (1999), Breandan and Lesli (2005), Reis (2014) found a positive impact of per capita income in one region on other spatially adjacent regions.

To answer the third research objective, this study uses a conditional convergence model framework to analyze the convergence of gross regional domestic product growth per capita of regencies/cities in Maluku Province. Using the spatial durbin model (SDM) approach with fixed effects. The convergence coefficient (β_{it-T}) shows a negative value, where the results obtained indicate that there is conformity with the convergence theory which states that there is a negative relationship between initial income and income growth. This condition means that regencies/cities with low initial income levels will grow faster than regencies/cities with higher initial incomes. In 2019, there were 3 regencies/cities in quadrant I whose regional

economic growth was above the average economic growth rate of Maluku Province, namely Southeast Maluku Regency, Aru Islands Regency and Southwest Maluku Regency.

The initial income coefficient (b) shows the speed at which an economy's output can reach a steady state. Table 4.4 shows that the coefficient value b is -0.2054, meaning that 20.54 percent of the initial gap will be covered in one year with a convergence speed of 0.0287. Meanwhile, the time needed to cover half of the initial gap (The half-life of convergence) is around 24 years. The speed of convergence of districts/cities in Maluku Province is not only determined by the lag of gross regional domestic product per capita or gross regional domestic product per capita in the previous year, but the speed of this convergence is also determined by educational function expenditure, health function expenditure, labor, road infrastructure, sea transportation and also telecommunications accessibility.

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The central role of human capital productivity through education and health can contribute to increasing sustainable economic growth. Increasing government spending according to education and health functions contributes to improving the quality of human resources. This is because government spending according to education functions is not focused on ministries or educational institutions in particular, but this function includes all ministries or other institutions that seek to improve the quality of their human resources.

Sea transportation has a positive effect on regional economic growth. This condition makes sea transportation facilities and infrastructure need to get more attention as one of the main glues for realizing regional connectivity. The area in Maluku has been served by Pelni ships, private ships, pioneer and local ships operating on short and long routes. The general obstacles faced are natural factors, sea wave conditions in the Maluku waters tend to vary and even be extreme so that small ships cannot sail. This can be overcome by operating large ships (generally Pelni ships) but for some areas in Maluku they cannot be served because the size of the port or dock is small or even there is no port. The government's program to reach more areas through sea transportation routes is the construction of ferry ports, namely 4 ferry ports, including: Southeast Maluku Regency in 2019, Southwest Maluku Regency, Moa Island (2019); Letti Island (2020) and Sermata Island (2023). The availability of transportation facilities and infrastructure is expected to encourage better regional economic growth.

Keywords: Spatial dependence, spatial convergence, Moran's I, and spatial durbin model (SDM).