

Analysis of Factors Affecting Regional Development Disparity in the Province of West Papua

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Abstract

Studies related to the regional development have been done, in both the developed and developing countries to reveal the factors that lead to lameness regions. The aims of this study focus on analyse about the regional development disparity and the factors that affecting the imbalance among regions in West Papua province for a period of 2005 to 2014. The result based on Williamson Index, it showed that a fluctuating trend of inequality in regional development in West Papua Province tends to increase of that period. At the same time, the result further suggested that an econometric model of panel data regression using GDP per capita (X1), population (X2), funding balance allocation (X3) and Human Development Index (X4) as independent variables as well as Williamson Index value as dependent variable, simultaneously, all vary significantly.

Keywords: regional disparity, Williamson index, panel data regression, west Papua province.

JEL Classification: O1, R1

I. Introduction

Developing countries have largely the same development objectives, particularly in reducing regional development disparities. Strategies to reduce disparities in regional development is done through the efforts of fighting poverty, addressing the unequal distribution of income, reduce unemployment, meet the standards of education of the citizens, the level of the provision of health, adequate housing and also for aims of social economic development. Related to the development objectives of developing countries, Todaro and Smith (2011) noted that the same problems and difficulties that are faced by developing countries in reducing development disparities exist, despite in different levels.

The tendency of regional disparities are high between developed countries and developing countries is influenced by several factors: the progress of economic development (Williamson, 1965; Yemtsov, 2005; Elbers *et al.*, 2005), the political situation and fiscal decentralization (Lessmann, 2011; Swastyardi, 2008), accessibility (Hu, 2002) as well as ethnic discrimination factors and market failures such as excessive migration (Mills and Ferranti, 1971; Boad way and Flatters, 1982; Ascani *et al.*, 2012).

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While Venables (2003) focus reveals that the disparities of development in developing countries triggered by the concentration of natural resources owned by some of the region than the others. Lessmann (2011) further says that the argument related to regional disparities is closely linked to economic development in which developing countries have higher levels of regional disparity than that of developed countries. Development programs in national scope that carried out so far in Indonesia have caused considerable complexity problems, this is happening because of the development approach that places great emphasis on macro economic growth tends to ignore the quite large gaps between regions where investment and resources absorbed and concentrated in urban and growth centers while its hinterland experiencing excessive resource depletion (Busega & Postoiu, 2015). These disparities eventually cause problems which in the macro context are very detrimental to the development process to be achieved in Indonesia.

Indonesia is a country that has a high level of development disparities among its regions sees **Table 1**.

Table 1 : Regional Inequalities in East Asia & Pasific based on The Regional Gross Domestic Product (RGDP) for a Period of 1980 to 2009

Country	Coefficient of Variation	Gini-Ratio
Australia	0.15	0.09
China	0.68	0.33
Indonesia	1.23	0.46
Japan	0.13	0.07
Korea, Rep. (South)	0.10	0.06
Mongolia	0.57	0.30
New Zealand	0.09	0.08
Philippines	0.51	0.29
Thailand	0.88	0.43
Average	0.48	0.23

Source: Lessmann (2011)

Lessmann (2011) in its researched using panel data from 1980 to 2009 to analyse the degree of inequality between regions in the developed and developing countries using the comparative value of Coefficient of Variation and the Gini-Ratio, where, it showed that in East Asia and the Pacific Region, Indonesia has a level of inequality higher area as compared to other countries, demonstrated through the value of the coefficient of variation of 1.23 and Gini-Ratio of 0.46. Meanwhile, countries such as Australia, Japan, and New Zealand showed the level of stability in its disparity during that period, so that, Lessmann (2011) further says that the disparity in regional development is always varied among countries over the time, therefore, it was very important to do investigate to the contributing factors that affecting regional imbalance.

Although there has been a lot of research on the regional development disparity, however, similar studies have not been done in the area of Papua (Papua Island). This study aims to examine empirically the factors that influence the degree of disparity in regional development in West Papua province.

1. Brief Overview Of West Papua Province And Regional Development Disparity

West Papua province is a province in 33 in Indonesia, originally called Irian Jaya Barat (West Irian Jaya) and an area division of Papua province before, standing on the basis of Law No. 45/1999 on the establishment of West Irian Jaya province and also has the support of the decree of local house representative (*DPRD Papua*) No. 10/1999 on the division of the Province of Papua into three provinces. West Papua province has an area of 143.185 km² and comprises of 12 regencies and 1 municipality, as in **Figure 1**.



Figure 1: Map of West Papua Province

In order to facilitate the development of service coverage (Arslan & Pulan, 2014) in the province of West Papua, the West Papua Regional Spatial Plan (*RTRW*) had divided West Papua into three development area (*WP*). *WP I* includes the regencies of Manokwari, Teluk Wondama, Teluk Bintuni, Manokwari Selatan, and Pegunungan Arfak. *WP II* includes regencies of Sorong, Sorong Selatan, Raja Ampat, Maybrat, Tamberauw and the municipality of Sorong. The last one, *WP III* includes the regencies of Fak-Fak and Kaimana. Since the passing of regional autonomy in Indonesia, moreover, special autonomy for the West Papua province, a new paradigm of development that directly or indirectly has brought considerable influence and significant in the governance of public life, both at regional and local levels, whereas the form of local autonomy is Law No. 34/2004 on the financial balance between the central and local government. Development programs in West Papua should be developed more intensively with emphasis on the utilization of local resources in the sectors of the economy that has the potential to provide a positive impact to the welfare of people in developing regions. The government's efforts in improving the quality of development in the province of West Papua have been intensively driven through Law No. 21/2001 on Special Autonomy for both Papua province and West Papua province as well as Presidential Instruction No. 5/2007 on accelerating the development of both. These efforts are motivated by the problems and challenges faced in the management of development in West Papua like abundant natural resources and almost uniformly in all regions, the rate of lame of progress between regions in West Papua, poverty is relatively evenly distributed throughout the region, low of human resources quality due to limited access to education and health services, infrastructure and facilities are limited resulting poor in optimal of quality and quantity of basic services of the local government.

In West Papua, most of accessibility between growth centers in the regency/municipality has been very less due to limited main road, lack of network of production centre, limited facilities and infrastructure of basic needs such as clean water, electricity and telecommunications has cause implications for the low investment in supporting economic development of the region eventually led to the emergence of the large gap among regencies/municipality in West Papua. The disparity in economic development has been done among the regency of Teluk Bintuni, the regency of Sorong, the municipality of Sorong, and the regency of Manokwari when compared with other regencies viewed from the aspect of contribution of income (GDP) to the total GDP composition in West Papua, see **Table 2**.

Table 2: Total Contribution of the Economic Development Sectors to the GDP Formation of West Papua Province.

Regency/Municipality	Total Contribution (million rupiahs)	Percent
Fak-Fak	749,013.12	5.62
Kaimana	474,810.03	3.56
Teluk Wondama	210,380.16	1.58
Teluk Bintuni	5,999,444.21	45.01
Manokwari	1,198,696.16	8.99
Sorong Selatan	207,004.42	1.55
Sorong	2,012,396.06	15.10
Raja Ampat	533,584.72	4.00
Maybrat	93,996.82	0.71
Tambrauw	35,816.13	0.27
Municipality of Sorong	1,814,738.30	13.61
<i>West Papua</i>	<i>13,329,880.13</i>	<i>100.00</i>

Source: Statistic of West Papua province, 2014 (data processed)

Spatially the four regencies mentioned above have relatively high accessibility because they are on the main transport route both by sea and by air, which is the entrance and exit to West Papua. Can be seen in Table 2 further that the regency of Teluk Bintuni has largest contribution of the total sectors⁵ of its economy to the Gross Regional Domestic Product (GDP) formation of West Papua by 5,999,444.21 (45%), followed by the regency of Sorong (15.09%), the municipality of Sorong at 13.61%, and the regency of Manokwari at 8.99%, while the lowest contribution to the GDP formation comes from the regency of Tambrauw at 0.27%.

1.1. Proportional Disparity in per capita GDP

Aspects of the absolute number of per capita GDP based on the development area (*WP*) in West Papua province showed up the existence of inequality in each *WP* that shown through the high gap between regions which have a high per capita GDP and areas that have low per capita GDP. The magnitude of the average value of the GDP per capita of the regency/municipality can be seen below, see **Table 3**.

Table 3: Average Value of per Capita GDP and Percentage of GDP Contribution to the Formation of Total GDP in West Papua Province for Period of 2005 to 2013.

WP	Regency/Municipality	Average Contribution to the Formation of Total GDP 2005 to 2013 (%)	Average Value of per capita GDP 2005 to 2013 (million rupiahs)
I	Manokwari	12.21	6.03
	Bintuni	28.12	44.19
	Wondama	1.93	6.61
II	Municipality of Sorong	16.64	7.82
	Sorong	20.80	21.41
	Sorong Selatan	2.26	3.97
	Raja Ampat	6.07	12.49
	Maybrat	0.56	1.48
	Tambrauw	0.16	1.73
III	Fak-Fak	6.97	8.90
	Kaimana	4.28	8.19
West Papua		100	11.32

Source: Statistic of West Papua province, various years (data processed)

⁵ The economic development in Indonesia had divided into nine sectors, namely, sector of agriculture, sector of mining & quarrying, sector of the manufacturing industry, sector of electricity & water supply, sector of construction, sector of trade, hotel and restaurant, sector of transport & communication, sector of finance, ownership & business services, sector of services.

The results of the analysis showed by Table 3 noted that during the period of 2005 to 2013 the lowest average contribution of regencies to the formation of total GDP is given by regencies of Tambrauw (12.16%), regency of Maybrat (0.56%), regency of Wondama (1.93%), regency of Sorong Selatan (2.26%), regency of Kaimana (4.28%), regency of Raja Ampat (6.07%) and the regency of Fak - Fak (6.97%), while the most average contributed to the total GDP formation are Bintuni regency (28.12%), Sorong regency (20.80%), Sorong municipality (16.64%) and Manokwari regency (12.21%).

When viewed from the aspect of the value of GDP per capita mention above, then Wondama regency, despite one of the regencies that has been giving the lowest contribution to the total GDP, but its average income per capita during 2005 to 2013 is much greater (6.61 million) while comparing with Manokwari regency (6.03 million). Raja Ampat regency it is in thirdly position (12.49 million) after the regency of Bintuni (44.19 million), and the regency of Sorong (21.41 million). This condition quoted that the divergence of GDP per capita occurred in the province of West Papua during the period of 2005 to 2013, in which the largest contribution to the total GDP formation and the value of GDP per capita is dominated by the regencies located in *WP I* and *WP II*, where it is caused by the difference concentration of people who live and work in both *WP I* and *WP II*. With high income per capita, it constitutes an economic attraction for labour outside to settle and work, and at last will enlarge the market or increase the market demand for the products of each business unit.

1.2. Population

The mobility of the population is an integral part of the overall development process, it has been the cause, and recipient of the impact of changes in the social and economic structure of a region (Renard *et al.*, 2007). Therefore, it is not very appropriate to judge only purely positive and negative aspects of the mobility of the population against the existing development without taking into account the influence of it kindness. The development process will not happen without the mobility of the population, but also it will not happen to the distribution of the population, which means the absence of development itself (Tjiptoherijanto, 2000).

The population welfare is a main target of the development progress, as written out in the medium-term of the development plan of West Papua, this goal may not be achieved if the government cannot solve the population problem such as the large population and also its distribution that unevenly. Some efforts have been done by the government in overcoming these problems; namely, the Family Planning (*KB*) for the young couple, and transmigration as well as with the adoption of a regional autonomy is expected to reduce the movement of people from rural to urban areas.

The population of the province of West Papua has continued to increase since the year 2005 to 2013 while the population growth rate of West Papua in 2000 to 2010 amounted to 3.71% with a concentration more are in Manokwari regency and Sorong municipality, most of people live and settle both in Manokwari regency because of it is a capital (Kumari, 2014) of West Papua province and at Sorong municipality because of the economy sectors growing rapidly so that the mobility of the population in both the region is quite high. See **Table 4**.

Table 4: Trend of Population in West Papua Province for a Period of 2005 to 2013.

WP	Regency/ Municipality	Trend of Population				
		2005	2007	2009	2011	2013
I	Manokwari	164648	171486	176847	194948	150179
	Bintuni	51263	53665	55805	54194	56597
	Wondama	22069	22936	23569	27233	28534
	Manokwari Selatan	-	-	-	-	20916
	Pegunungan Arfak	-	-	-	-	26729
II	Municipality of Sorong	161136	167589	172558	199630	211840
	Sorong	94105	97510	99712	73088	76669
	Sorong Selatan	58663	60934	62583	39297	41085
	Raja Ampat	39470	40912	41860	43435	44568
	Maybrat	-	-	25061	34287	35798
	Tambrau	-	-	15116	6146	13376
III	Fak-Fak	63732	66255	68116	68503	70902
	Kaimana	40142	41696	42810	48251	51100
West Papua		695228	722983	784037	789013	828293

Source: Statistic of West Papua province, various years (data processed)

1.3. Funding Balance Allocation

Indonesia Law No. 33/2000 section 5, explained that local revenue sources for the implementation of decentralization include Original Local Revenue, Funding Balance Allocation which consist of funds for the tax and fund non-tax revenue sharing (*DBH*), General Allocation Fund (*DAU*), the Special Allocation Fund (*DAK*) as well as other revenue. The allocation of funds from the centre to the local government mainly determined by two factors: fiscal capacity and fiscal need, whereas local revenue is one factor that has contributed in implementing the right and authority of local government. The implication is, the *DAU* is allocated to each area in order to run the authority of local governments in providing public services to the community. The *DAK* is a transfer from central government to the local government to be "block grant" which means, the region has discretion in its use in accordance with the priorities and needs of the regions with the aim of reducing regional disparities between developed and undeveloped areas.

The *DAK* aims to help fund special activities of regional authority and in accordance with national priorities, in addition to the purpose of the *DAK* is to reduce inter - jurisdictional spillover and improving the provision of public goods in the local area. When viewed in the perspective of improvement of income distribution, the role of the *DAK* is very important to speed up the convergence among regions for the funds granted in accordance with national priorities, for example, to help poor families.

The *DAK* is one form of financial relationship between the central and local governments where funds are sourced from The State Revenue and Expenditure Budget (*APBN*) that transferred to the regions to finance the special activities of regional authority and is a national priority, thereby helping to reduce the burden of the cost of specific activities that must be borne by local governments, or in other words, the *DAK* is allocated to achieve a minimum service in nationwide at one of the fields in the local government who receiving it.

While the Sharing Fund (*DBH*) is a fund sourced from The State Revenue and Expenditure Budget (*APBN*) and allocated to areas with regard to the potential producing regions by numbers specific presentation for financing the needs of the region in the implementation of decentralization in another sense that Sharing Fund allocated to reduce disparities vertically between central and local.

The total fund allocation during the period 2005 to 2014 from the central government is expected to give change/convergence (Vu *et al.* 2015) for regional development in the province of West Papua, despite Hamid (2002) and Zodik (2007) has shown that the use of funding balance allocation of local governments in Indonesia more intended for personnel expenses due to the absence of clear instruments and socialization of the central government regarding the use of a matching funds.

1.4. Human Development Index

It has been widely revealed that human capital is one important factor in the process of economic growth (Walke *et al.*, 2015), in which the quality of human capital led to its economic performance will also be better. The quality of human capital can be seen from the level of education, health, or other indicators, as can be known in a variety of human development report published by the United Nations Development Programme (UNDP).

HDI is composed of three fundamental aspects of human development, despite these three aspects is doubtful accuracy in measuring the HDI (Ranis *et al.*, 2006; Wolff *et al.*, 2009). First, Health aspects which imply the longevity is represented by the indicator of life expectancy, second, educational aspects is represented by the indicator of literacy rate, and third, the average length of the school as well as a significant economic dimension decent life depicted with purchasing power. These three aspects are considered to be able to represent human development. Based on the three HDI indicators, defined three main components of the region that constitute the composite index of the HDI (Noorbakhsh, 1998), namely:

1. Areas with low levels of human development when the value of the HDI ranges from 0-50, the area that fall into this category have less attention to human development (lower category).
2. Areas with medium levels of human development when the value of the HDI ranges between 51-79, the area that fall into this category began to pay attention to human resource development (medium category).
3. Areas with high levels of human development with the establishment when the HDI value ranges from 80-100, the area that fall into this category are very concerned about the development of human resources (highest category).

The rise up of HDI value in West Papua is strongly influenced by its components, which vary in each regency/municipality, where explain below the trend of HDI value of West Papua province for a period of 2005 to 2013, see **Table 5**.

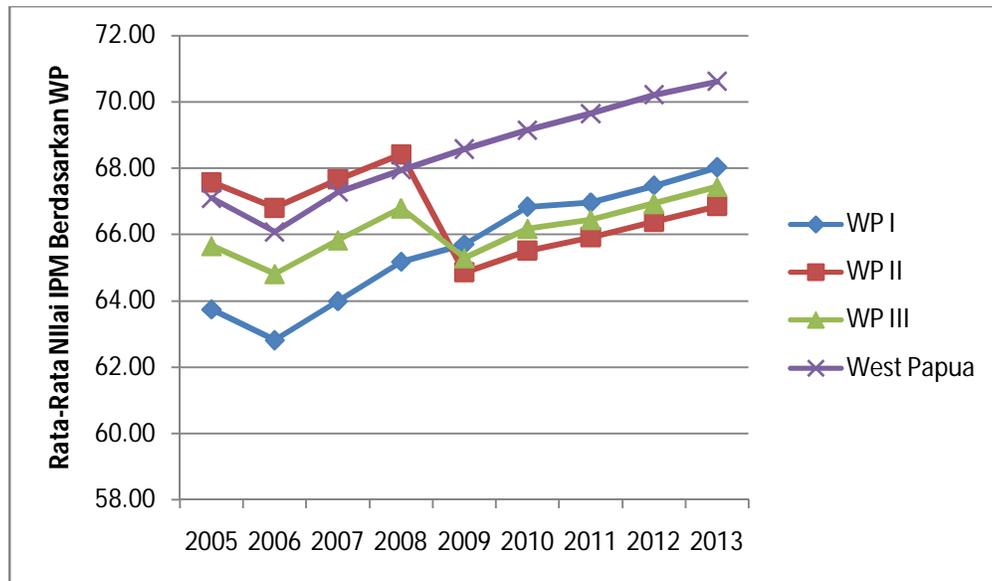
Table 5: The Trend of HDI in Each Regency/Municipality of West Papua Province for Period of 2005 to 2013.

WP	Regency/ Municipality	HDI									
		2005	2006	2007	2008	2009	2010	2011	2012	2013	
I	Manokwari	64.05	63.04	64.17	65.46	66.20	67.19	67.67	68.07	68.61	
	Bintuni	63.81	62.93	64.40	65.29	65.65	66.58	67.17	67.58	67.95	
	Wondama	63.36	62.48	63.40	64.79	65.27	66.76	66.06	66.80	67.54	
II	Municipality of Sorong	75.73	74.89	75.59	76.52	76.84	77.18	77.72	78.36	78.92	
	Sorong	67.20	66.20	67.21	67.82	68.16	68.50	68.93	69.23	69.74	
	Sorong Selatan	64.97	63.88	65.38	65.77	66.09	66.31	66.59	66.83	67.28	
	Raja Ampat	62.40	62.27	62.47	63.57	64.08	64.58	65.06	65.49	66.08	
	Maybrat	-	-	-	-	64.89	66.00	66.43	67.26	67.60	
III	Tambrau	-	-	-	-	49.12	50.51	50.81	51.18	51.54	
	Fak-Fak	69.14	68.31	69.58	70.24	70.80	71.46	72.13	72.64	73.33	
	Kaimana	68.11	67.11	68.80	69.27	69.80	70.13	70.71	71.22	71.87	
Papua Barat		67.10	66.08	67.28	67.95	68.58	69.15	69.65	70.22	70.62	

Source: Statistic of West Papua Province, various years (data processed)

The processed data shown in Table 5 above explain that, on average, the highest trend of HDI value of regency/municipality during the period 2005 to 2013 is owned by the municipality of Sorong (76.86) and Fak-Fak regency (70.85), and the lowest average is owned by Tambrau regency (50.63) and Raja Ampat regency (64.00). The distribution of the average value of the HDI by WP during the period 2005 to 2013 can be seen below which shows that the average WP with the highest HDI value in a row is located on the first WP, WP II and WP III, as **Figure 2**.

During this period, the total value of the HDI in West Papua continues to increase with the HDI value in 2013 amounted to 70.62.



Source: Statistic of West Papua province, various years (data processed)

Figure 2: The Average Trend of HDI Value based On *WP* in West Papua Province for A Period of 2005 to 2013

Human development has a positive influence on the regional economic development and reverse the economic development of the region is also given a positive influence on human development. Generally, the HDI situation in West Papua is various among regencies/municipality, this indicate that the components forming the HDI also vary among the regencies/municipality. The average length of school is still low in West Papua (8.53 years) in 2013 indicate that, in general, in West Papua elementary school graduation rates and Junior High School are still low so the need for handling the implementation of programs of primary and secondary education leads to the handling of the number of students who drop out for various reasons. Efforts can be made by mentoring/educational counseling to students and parents, scholarships, recruitment and placement of assisting teachers that should be accordance with the needs of each region. The literacy rate of the productive age of population in general is influenced by the ability to read and write the Latin alphabet, Indonesian and basic knowledge capabilities. The average percentage of literacy rate in West Papua during the period 2005 to 2013 continues to experience a significant increase in the year 2013 where the literacy rate in West Papua amounted to 94.14%, this shows that the activities related to functional literacy, informal education and learning centre which leads to the eradication of illiteracy has prompted an increase in the literacy rate.

The average life expectancy in West Papua Province remains low during the period 2005 to 2013 in which the value of life expectancy in West Papua in 2013 was 69.14 years, the condition of the lowest life expectancy is largely determined by health services, especially to infants through immunization programs because it provides resistance body against various diseases. Besides that, aiding the delivery of health personnel to pregnant women who included high risk will determine the life chances of a baby. Various programs that lead to immunization, maternal and child health services, revitalization to the local health centre service, the need for health workers, midwives and doctors will affect the higher achievement of life expectancy. Component purchasing power of people showed that the average purchasing power over the period 2005 to 2013 continued to increase in the amount of 604,820 rupiah (about US\$ 46.5) in 2013. However, one factor that affects the purchasing power is the number of poor people whose presence is strongly correlated with the lowest income levels so that the purchasing power is also low.

2. Materials And Research Methods

The study is based on secondary data issued by the Statistics of West Papua province and Ministry of Tax and Financial Republic of Indonesia.

Data collected for a period of 2005 to 2014. Because the scarcity of secondary statistical data, several new regencies that just split away from the territory of origin (Manokwari Selatan regency, Pegunungan Arfak regency, Tambrauw regency and Maybrat regency) were excluded from analysis.

2.1. Regional Disparity

The analysis of the degree of regional disparity in the West Papua province is calculated by comparing the Williamson Index (Williamson, 1965; Bendavid-Val, 1991; Amos Jr., 2014) in Equation (1) below:

$$V_w = \frac{\sqrt{\sum(Y_i - Y_s)^2 - P_i/P_s}}{Y_s} \quad (1)$$

The data used in this analysis are the data of West Papua GRDP from 2005 to 2014 at a constant prices, so that Equation (1) become Equation (2) as follow:

$$V_{wit} = \frac{\sqrt{\sum(Y_{it} - Y_{sit})^2 - P_{it}/P_{sit}}}{Y_{sit}} \quad (2)$$

where V_w = the weighted variation of regional disparity, Y_i = per capita GRDP in regency/municipality i of West Papua Province, Y_s = the average of per capita GRDP in regency/municipality i of West Papua Province, P_i = sum of population in regency/municipality i , P_s = total population in West Papua province, subscript i denoted regencies (Manokwari, Bintuni, Wondama, Sorong, Sorong Selatan, Raja Ampat, Fak-Fak and Kaimana), and Sorong municipality, subscript t denoted year for period 2005 to 2014.

2.2. Factors Affecting Regional Disparities

We used panel data (cross section, time series) were collected to determine the source of regional disparity by using multiple regression model which assume that the dependent variable (Y) is a linear function of some independent variables (X_1, X_2, \dots, X_k) and error (ϵ). To execute the model, we use general models of multiple regression by Rawlings *et al.* (1998) become Equation (3) as showed as below.

$$Y_i = \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki} + \epsilon_i \quad (3)$$

Subscript i denote the observational unit from 1 to N for data population or to n for sample data. X_{ki} designates unit i of independent variable X_k . β_1 coefficient is an intercept of regression model, hence, the formula of Equation (3) become:

$$Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki} + \epsilon_i \quad (4)$$

Thus, to analyze the sources of disparities in regional development of West Papua is done by developing a model in Equation (4) become:

$$Y_{it} = \alpha + b_1 X_{1it} + b_2 X_{2it} + b_3 X_{3it} + b_4 X_{4it} + \epsilon_{it} \quad (5)$$

Where Y_{it} = Williamson Index of regency/municipality i for 2005 to 2014, X_{1it} = GDP per capita of regency/municipality i for 2005-2013, X_{2it} = Population of regency/municipality i for 2005 to 2014, X_{3it} = Funding Balance Allocation of regency/municipality i for 2005 to 2014, X_{4it} = Human Development Index of regency/municipality i for 2005 to 2014, α = Intercept/estimate parameter of coefficient α ; is the average value of Y_i , if $X_1 = X_2 = X_3 = X_4 = 0$, b_1 = estimate parameter of coefficient β_1 ; is the average of different value of Y if X_1 differ 1 unit, with the assumption that X_2, X_3 and X_4 are constant, b_2 = estimate parameter of coefficient β_2 ; is the average of different value of Y_i if X_2 differ 1 unit, with the assumption that X_1, X_3 and X_4 are constant, b_3 = estimate parameter of coefficient β_3 ; is the average of different value of Y_i if X_3 differ 1 unit, with the assumption that X_1, X_2 and X_4 are constant, b_4 = estimate parameter of coefficient β_4 ; is the average of different value of Y_i if X_4 differ 1 unit, with the assumption that X_1, X_2 and X_3 are constant, ϵ_{it} = standard error, with estimating value is $\epsilon_{it} = Y_{it} - (\alpha + b_1 X_{1it} + b_2 X_{2it} + b_3 X_{3it} + b_4 X_{4it})$. Econometric model allows the Equation (5) to be re-expressed as shown in Equation (6):

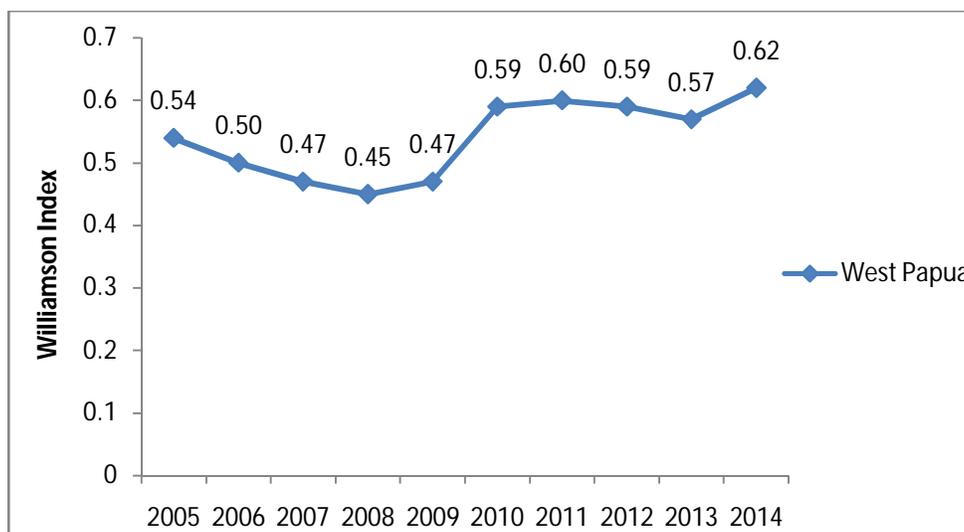
$$\hat{Y}_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \epsilon_{it} \quad (6)$$

Furthermore, to determine whether the model can explain the problem of regional development disparity in West Papua, we have done a classical assumption test to the regression model, involved multicollinearity, heteroscedasticity, autocorrelation, F-test, t-test, and coefficient of determination.

3. Result and Discussion

The existing condition of the economy in West Papua shows that the economic structure of the society in the province of West Papua does not shift during the period 2010-2014, the largest donation in 2014 to the provincial GDP generated by the manufacturing sector; mining and quarrying; the construction sector and the agricultural sector. In terms of economic growth, the economy of West Papua in 2014 was slowed if compared it towards growth in 2013, whereas the GDP growth rate in 2014 reached 5.38%, while the year 2013 amounted to 7.39%. The highest economic growth achieved by the sector of transport and communication amounted to 12.96%. Nationally, in 2014 the GDP contribution of West Papua only 0.5% to the GNP Indonesia amounted to 10,699,877,000,000 Rupiahs (about US\$ 1,069,987,700) and is ranked 27th out of 33 provinces in Indonesia, far below DKI Jaya province at 16.46%, East Java province at 14.40%, amounting to 12.95% of West Java province and Papua province with his contribution to the GNP at 1.15%.

Analysis of the level of regional development disparities among regions that occurred in the province of West Papua by using Equation (2) as noted above, as in **Figure 3**, that since 2005 to 2014 trend of development disparities in West Papua province tend to fluctuate where Williamson Index has a distribution of values between 0-1 which is getting closer to a value of 1, the more happening inequality, and vice versa when approaching to a value of 0 then the diminishing of imbalance is going on.



Source: Statistic of West Papua Province, various years (data processed)

Figure 3: Trend of Williamson Index In West Papua Province

This shows that economic development horizontally among regencies/municipality continued even though not in diversification evenly, means more construction activity actually increase regional development disparities. However, these graphs prove neo-classical hypothesis that at the beginning of the development process, the development of inter-regional disparities will tend to increase. This process will occur until the disparity, it reached its peak (0.60) and after that when the development process continues then gradually disparities between regions is declining or in other words the disparity of development among regions form the letter "U" inverted (reverse U-shape curve).

Because the shape of the observed data in the form of pooled data that is a combination of unit cross section (regency/municipality) and time series (observation period), the analytical technique used to estimate the econometric model is panel data regression analysis. Estimating the model is done by using statistical software E-Views 6. The results of the regression equation model estimation see **Table 6**.

Table 6: Pooled Cross Section-Time Series Results Estimation for Variables Influencing Regional Disparities.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP Per Capita (X1)	0.001327	0.000190	6.992758	0.0000
Population (X2)	0.008156	0.001337	6.101558	0.0000
Funding Balance Allocation (X3)	0.002641	0.000872	3.030620	0.0033
HDI (X4)	-0.000978	0.000341	-2.865630	0.0054
C	0.462240	0.018254	25.32310	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
R-squared	0.599605	Mean dependent var	6.101563	
Adjusted R-squared	0.537206	S.D. dependent var	7.661451	
S.E. of regression	0.731301	Sum squared resid	41.17973	
F-statistic	9.609192	Durbin-Watson stat	1.410945	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.200669	Mean dependent var	0.540000	
Sum squared resid	0.254667	Durbin-Watson stat	0.749298	

* Significant on $\alpha=0.05$

Based on estimate regression model above, the value of the coefficient of determination (R^2) for a model of development disparities by 0.599605. Values can be interpreted that a 60% change in the level of disparity of development in West Papua as measured by Williamson Index caused by imbalances disproportionately on the GDP per capita (X1), population (X2), the funding balance allocation (X3) and the human development index (X4). The remaining 40% is caused by other variables outside the model.

The coefficient value of X1 variable is 0.001327 means that the increase of 1% would result in a disparity in development in West Papua province increased by 0.001327%. This is due to the high mobility of the population have come from outside the province of West Papua who have the better skills to be able to compete to find adequate employment or create jobs through businesses that they do so to support the increase in per capita income and economic growth region in the province of West Papua. Total population variable (X2) with a coefficient of 0.008156 means that any population increase of 1%, will increase the disparity in regional development in West Papua by 0.008156%. The trend of concentration of economic activities in West Papua, especially in the district of Manokwari and Sorong city has led the process of rapid urbanization in the region. Migration from regency to regency and or vice versa to the capital of West Papua occurs on an ongoing basis so that these areas increased rapidly, both in terms of population growth and economic development. The frequency of the number of people both inside and outside of West Papua due to an attempt to seek a better livelihood feasible (Jaffe *et al.*, 2012) given by the province of West Papua who is the new provincial divide themselves from Papua province, leaving more available new jobs and require more human resources for development territory.

Population mobility is also influenced by the level of education, the higher the person's level of education the more extensive insight and knowledge to find a more decent livelihood. The concentration of the total population, especially in the regency of Manokwari and Sorong municipality because in both of these areas more available jobs, according to education level of job seekers who are migrating from their respective areas. Here we can see that backwash effect phenomena happen in the area of origin of migrants (brain drain) both local and regional, but exactly it gives a spread effect for regional development in the province of West Papua. Although the results of the analysis showed that the population increase of 1% would cause a disparity of 0.008156%, but the results of research conducted by Tjiptoherijanto (2000) showed that there are interrelations between population mobility and the development process, due to the terms of regional development cannot be done prohibition on in-migration from other regions of Indonesia in the territory of West Papua.

The variable of funding balance allocation (X3) with a coefficient of 0.002641 indicates that the increase in the funding balance allocation amounting to 1% would cause the disparity of development in the West Papua region increased by 0.002641%. This is because during the study period there is likely to be more widely used for personal expenditure, government infrastructure and operations for the new district bloomed, this condition indicates that the funding balance, although the numbers continue to increase during the study period, but has not maximum invested in the economy to spur regional economic growth (Sodik, 2007) due to lack of clarity and dissemination instrument of the central government regarding the use of a matching funds portion (Hamid, 2002). Another issue is, during the period of 2005 to 2008, some regencies and the province of West Papua as well as the local house representative (DPRD) has not yet definitively established so that there is no monitoring of the use of funds by the parliament (DPRD).

Coefficient variable of HDI (X4) of 0.000978 and in a negative value means that the HDI value increase of 1% would reduce the level of disparity in West Papua by 0.000978%. This is consistent with the hypothesis that the value of the HDI is one factor that influenced the regional development disparity in West Papua province. Increased in HDI affect development disparities when regencies/municipality that experienced an increase in HDI is having a high level while the others are less spur increased their HDI thereby expanding regional development disparities. The effect of high levels of education in West Papua will spur citizens in the regencies/municipality of origin to migrate to the capital of the province in order to seek a livelihood more viable, so that despite an increase in the level of education in the area of origin would tend to increase the disparity of development territory (brain drain phenomena), this situation synergies with empirically done by Brata (2002) that there is a bidirectional relationship between human development and regional economic development in Indonesia, where the quality of human development to support economic development and vice versa good economic performance support human development.

4. Conclusions and Recommendations

The disparity in regional economic development among regencies/municipality in the province of West Papua is a common phenomenon that occurs in the process of regional economic development. Differences in regional GDP per capita, population size and funding balance are the main factors causing the disparity, despite outside the model, geographical conditions, resource potential of regional economic, mobility of goods and services, concentration of economic activities and aspects of history played a role in the formation of regional development disparities.

Based on the analysis, it can be concluded that the degree of disparity in regional development in West Papua as measured by the Williamson Index over the period 2005 to 2014 showed a fluctuating trend and tend to increase. Efforts to be made by local authorities in order to convergence development among regencies/municipality through increased diversification by encouraging investment in the sectors of the economy in West Papua. Simultaneously, inequality proportional to the GDP per capita (X1), population (X2), the allocation of equalization funds (X3) and HDI (X4) significantly affects the disparity in regional development. Proportional Inequality of per capita GRDP shows imbalance, the high productivity of the working people who come from outside the territory of West Papua with better skills have contributed significantly to the growth of the regional economy. Similarly, the population that is not balanced between regency/municipality, especially the concentration of population in the regency of Manokwari as the capital of West Papua province and the municipality of Sorong as a service centre has caused disparity.

Local government policy in anticipation of the concentration of population of the regency of Manokwari and Sorong municipality by creating a conducive investment climate in each regency/municipality so as to stimulate the influx of investors into the area and affect the increase of population mobility both inside and outside the regency/municipality, besides that, evenly spread of concentrations of population can be made through local transmigration inter or intra regions in the province of West Papua. Public access to health services and public education needs to be improved with the provision of educational facilities and health more adequate and accessible by the community.

This study is a more to macro strategic, so lacking many details substance to discuss. Things that can be suggested as policy recommendations to the provincial government of West Papua in accordance with the results of this study include: (1) the policies of regional development must do as affirmative to local residents and non-discriminatory in order to spur productivity residents in creating a balance in regional development and to minimize geographic disparities among regencies/municipality in West Papua, (2) the utilization of local resources, especially human resources in each regency/municipality to avoid any backwash effect (brain drain) to the others that can affect regional development disparities.

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