The Effect of the Labor Force and Remittance towards Gross Regional Domestic Product in Pidie, Aceh

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Gross regional domestic product (GRDP) is an essential part of measuring the size of a regional economy. The primary purpose of this study is to analyze the effect of Acehnese labour force and remittance on GRDP in Pidie, Aceh. This area was selected as the research location because the number of labour forces that migrant outside of this area compared to others is currently decreasing. For achieving the research objective this study involved the number of migrant labour forces and the amount of remittance as the independent variable and gross regional domestic product (GRDP) is dependent variable. The data collected from `the central bureau of statistics Aceh, Indonesia from 2010 to 2019 and analyzed by using the least square estimation (ordinary least square) with assisting the statistical software, namely STATA 12. The results of this study generally show there is significant effect on the number of migrant workers and remittances on percapita Gross Regional Domestic Product. In specific, the amount of remittance has a positive and significant effect on GRDP per capita and the number of Indonesian migrant workers actually has a negative impact on per capita GRDP. It is allegedly due to the increasing wages of labour migrants per worker, so they have the capital to work at home causing the total number of migrant workers working abroad to be less. It expects that the Aceh provincial government and the Republic of Indonesia to continue pushing migrant workers to be more qualified thus increasing wages as well as opening more opportunities for work in the country.

Introduction

The prosperity of a country is strongly influenced by the stability of the economy. It is measured using the amount of national income of the region. Lots of inflows can increase the income of a country, one of which is through an increase in foreign exchange by Indonesian Workers (TKI) who work abroad. In addition to being one of the aspects contributing to the increase in foreign exchange reserves, TKI is also able to increase people's income by sending money from abroad to their home country.

The rapid economic growth in some countries in the world and some areas in Indonesia create desire for labour force work in other areas both nationally and internationally. The economic condition of Aceh after the conflict period and the 2004 earthquake and tsunami has brought Aceh into a disadvantaged area both from economic access, social and infrastructure. It causes the increased migration of Acehnese workers to various regions in Indonesia and even abroad. It is one of the indicators of international integration that has an impact on the macroeconomy primarily if the remittances obtained from working outside the city/country which is not only used for consumptive purposes but also productive and investment activities.

Remittances by Indonesian migrants' labourers are one of the most significant sources of cash flow, especially in developing countries like Indonesia, it plays a vital role in the development of a nation. As explained by Hoddinott (1994) that the migration can be seen as a process that helps the distribution of development work by way of fixing the unbalance of production factors between regions, therefore, the positive impact of labour migration is the remittances from migrants to their home area. Remittances are an important source of financial support that directly increases the income of migrant households. Remittances support household investment in health, education and small household business. Migration through remittances will ultimately affect the welfare of migrant families and the development of the origin area.

Using the data obtained from the Bank of Indonesia, around US$ 7.4 in 2013 were foreign exchange earnings from remittances of Indonesian citizens working in countries such as the Middle East, Australia, Asia, Europe, Africa and America. These were received through services banking, not to mention remittances from *Western Union, MoneyGram* and so on. Of course the amount can be greater because each year remittances in Indonesia are

increasing. This condition is certainly very instrumental in driving the wheels of the Indonesian economy in general and Aceh in particular.

The high opportunity to improve lives through the migration foster communities' interest in Aceh is to perform the movement. Figure 1 below shows the data obtained from the Central Statistics Agency of Aceh Province (2018) about the number of Acehnese working abroad in five years. It can be seen that Acehnese, who works outside the country, is still fluctuating; however, it continues to rise almost every year except in 2017 which declined. The decline that occurred in 2017 was influenced by various factors, one of the factors according to BNP2TKI was due to regional and global economic growth factors that experienced sluggishness or stagnation so that demand for labour would decrease, especially labour-intensive workers.

Figure 1. The Number of Migrant Labour forces in the Last 5 Years
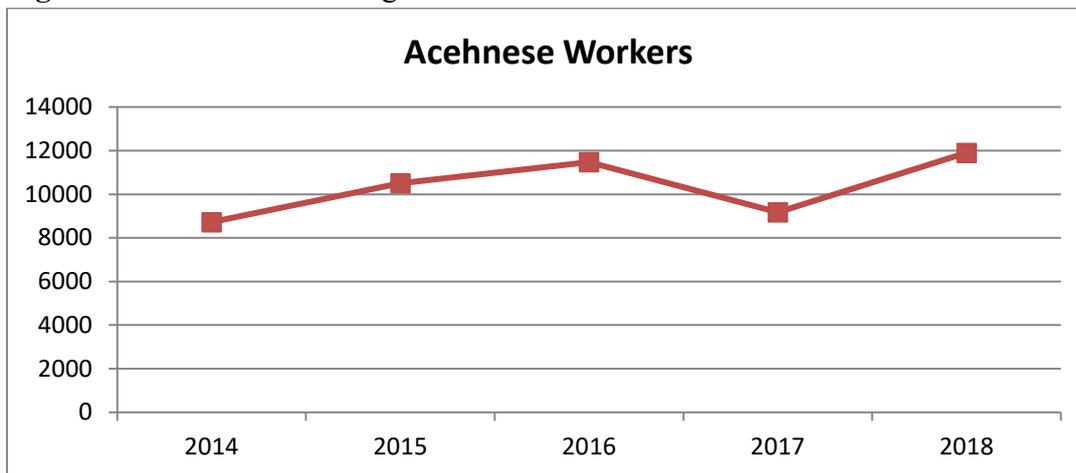
Source: Bureau of Statistic Indonesia (BPS, 2018)

Along with the urgency of Aceh workers working abroad, the remittances also increase each year. It can be seen in Figure 2 below which explains the development of remittances of Indonesian migrant workers in the last five years. Each year remittances made by workers are on average increase. Based on Figure 2, only 2017 remittances decreased due to the influence of the weak economies in some area in the world. Apart from that, the higher interest to work abroad can have a major impact on remittances. This is shown in graph that the number of Aceh workforce proportional to remittances (see Figure 1 and 2).

Figure 2. The Number of Remittances in Last five years (rupiah)
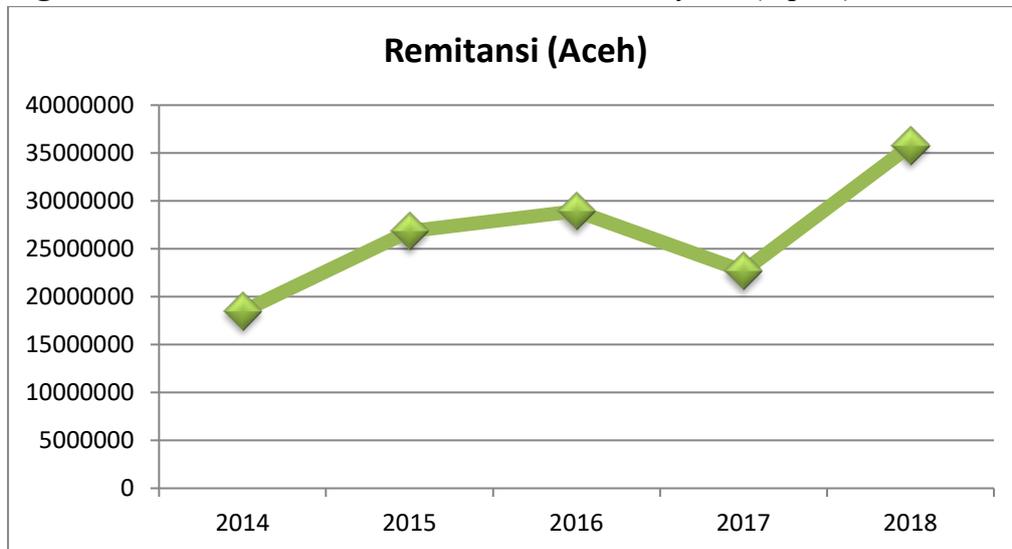
Source: Bureau of Statistic Indonesia (BPS,2018)

Based on a brief presentation above, it can be said that the purpose of this study was to analyse the amount of influence the Aceh migrant workers and remittance had on the income per capita in this case by GDP per capita approach in Pidie District, Aceh Province, Indonesia.

Literature Review

Regional Gross Domestic Product (GRDP) is the income of a region that refers to economic growth (Kuncoro, 2000). There are three approaches to the calculation of RGDP (Tarigan, 2008) through the production, income and expenditure approaches. Also, Simanjuntak (2001) defines the workforce as the population that have been or are looking for work and do other activities such as going to school and taking care of the household even though he is not working but physically capable and at times will work. While according to Indonesia's Statistic Bureau (2008), the workforce is a resident who is included in labour force or entering the labour force at the age of 15 years and over and participates in economic activities. United Nations (1962) defines workforce as residents in the category of economically active workforce or people who are unemployed but are willing to work. Sukono et al., (2019) studied about Gross Regional Domestic Product (GRDP) and the variables that influence it. They used a genetic algorithm approach and Cobb-Douglas model. This study found that the prediction value of errors from a genetic algorithms approach is smaller when compared to the OLS approach. Of these, they stated that the genetic algorithm is the best approach for estimating the model of GRDP based expenditure. Besides that, this study also found that the variables of government consumption expenditure, gross domestic fixed capital formation and net export and determined inventory changes affecting the GRDP.

According to Koser (2007), remittance defines as the flow of money sent by workers abroad to families who live in the origin area. Meanwhile, according to Adams (2010), remittances are money that is sent by workers abroad and deposited to their dependents in their countries so they can meet their needs. Ratha (2013) argues that remittances can increase a country's household consumption, both rural and urban and can even have a substantial *multiplier effect* because they are more inclined to spend domestic goods production. Whereas Guilano (2005) explains that remittances can increase the capital allocation, increase financial development and accelerate economic growth. Other research made by Akay (2012) reveals that remittances constitute big cash for the entire world when the workers in these countries have high mobility; the remittances are also abundant.

Methods

This study will explain about how the influence of the number of Acehnese workers abroad and remittance on RGDP per capita in Pidie regency. The data is secondary data from 2010 to 2018 obtained from the Central Statistics Agency (BPS) in Aceh. The method is the multiple linear regression analysis that is *ordinary least squares (OLS)* in which the use of this method to estimate a regression line by minimizing the number of squares of errors of each observation of the line (Kuncoro, 2003). The multiple linear regression equation in general as follows (Gujarati, 2006):

$$Y_t = \alpha + \beta_1 X_{1t} + \beta_2 X_{2t} + \ldots + \beta_n X_{nt} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where, Y is Dependent variable, X_1 dan X_2 is Independent Variables, α is Constant and β is Regression coefficient. Furthermore, equation (1) above, can be transformed into econometric model specification to be:

$$PDRB_t = \alpha + \beta_1 TKI_t + \beta_2 REM_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where, PDRB symbolized as Regional Gross Domestic Product Per Capita, TKI noted as Indonesian workers abroad and REM denoted as Remittance

Results and Discussion

Applying the method of ordinary least square (OLS), this study has examined the relationship of Indonesia labour force and remittance towards regional gross domestic product percapita. Table 1 below shows the variable of the Indonesian labour force has significant negative effect on gross regional domestic product. The partial effect from the analysis can be seen at the value of *t-stats*. The value of regression coefficient from the effect of Indonesia labour force is – 0.016507 with the t value is - 5.866 and significant at the level less than 1 percent (<1%). This is allegedly because the number of migrant workers working abroad is getting smaller. Regression results obtained are in line with various previous studies by other researchers such as research by Meer (2016) examining the 6 highest recipient remittance

countries: Albania, Bulgaria, Macedonia, Moldova, Romania and Bosnia. The research uses panel data from 1999-2003 which shows remittances can contribute positively and significantly to economic growth.

Further, the variable of remittance has significant positive effect on gross regional domestic product. The value of regression coefficient from the effect of Indonesia labour force is 0.000681 with the t value is 5.914 and significant at the level less than 1 percent (<1%) which can be seen in Table 1 below. Another study conducted in Central and Eastern Europe by Goschin (2014) explains the role of the remittances and the positive impact on economic activity and investment in the country of origin. With the estimation model using panel data, the results are positive and significant effect of sending money and increasing development in the long run as well as a positive and significant effect on increasing long-term GDP. Furthermore, research by Shera (2016) found that the remittance variable had a statistically and significantly positive effect on GDP per capita. The similar condition also explained by Adenuitsi (2011) that the remittances made by migrants have more positive effect on economic growth. Other studies are also in line based on theory and prediction variables.

Table 1: The Result of Regression Estimations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	18.25114	1.448022	12.60419	0.0000
TKI	-0.016507	0.002814	-5.866401	0.0011
REM	0.000681	0.000115	5.914059	0.0010
R-squared	0.888687	Mean dependent var		17.89080
Adjusted R-squared	0.851582	S.D. dependent var		2.967127
S.E. of regression	1.143087	Akaike info criterion		3.366543
Sum squared resid	7.839886	Schwarz criterion		3.432285
Log likelihood	-12.14945	Hannan-Quinn criter.		3.224673
F-statistic	23.95093	Durbin-Watson stat		1.779438
Prob(F-statistic)	0.001379			

Based on the results from Table 1, the regression equations obtained in this study are as follows:

$PDRB_t = 18.25114 - 0.016507TKI_t + 0.000681REM_t$

Referring the Table 1 above, this study also found that the variable migrant of the Indonesian labour force and remittance could be explained by its relationship to the gross regional domestic product is 88.86 percent. The remaining of these i.e. 11.14 is explained by other factors which are not included in this study. After obtaining the result of regression estimation, we proceed to test the consistency and identify the results are fulfilling the threshold of regression analysis namely classical assumptions test.

Autocorrelation

Table 1 above shows that autocorrelation did not occur either positively or negatively. Autocorrelation can be seen from a comparison of Durbine Watson calculate value with the value of Durbine Watson table. It is known that the samples of this study were 9 with 3 variable so we get lower limit of Durbine Watson (dL) of 0.62910 and the Upper limit Durbine Watson (dU) of 1.69926. The value of Durbine Watson regression results is 1.779438. Therefore, the DW regression value is greater than dL and dU which means there is no positive autocorrelation between variables. Meanwhile, to detect negative autocorrelation can be seen from the rules (4-d) <dL which indicates negative autocorrelation. Additionally, (4-d)>dU indicates no negative autocorrelation. In this research, the DW regression value to see the negative autocorrelation (d-4) is 1.775 > dU (1.69926) which means there is no negative autocorrelation.

Table 2: Correlation Serial Test

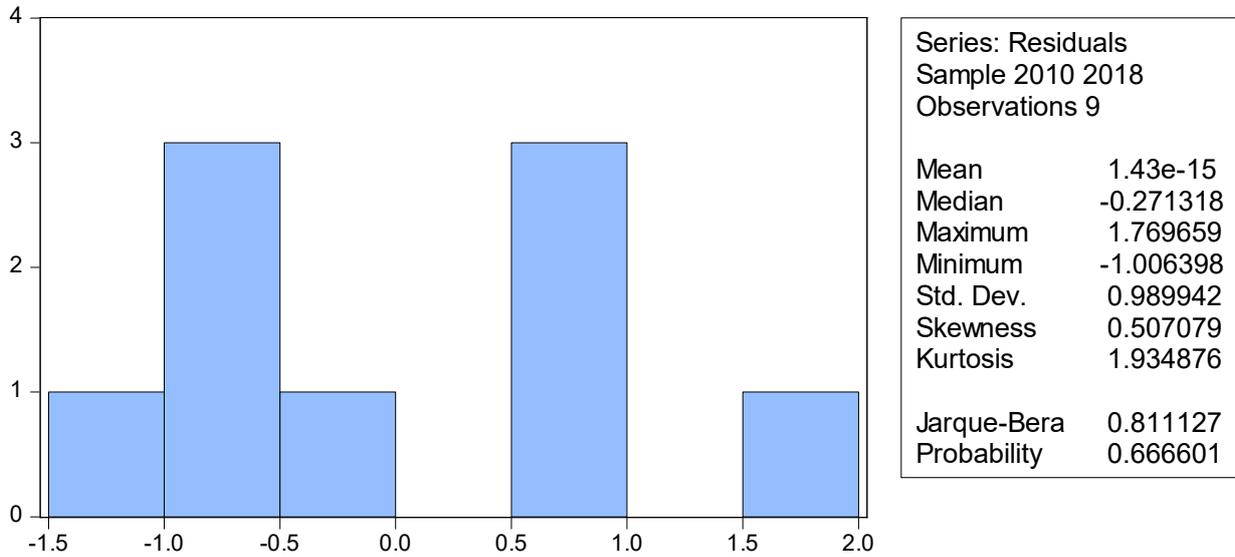| Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.772762	Prob. F(2,4)	0.5203
Obs*R-squared	2.508277	Prob. Chi-Square(2)	0.2853

Source :EViews regression results (processed, 2019).

Table 2 displays the value *Prob . Chi Square* (2) is a *p- value* test *Breusch-Godfrey Serial Correlation LM* which is equal to 0.2853 > 0.05 accept H_0 which means there is no serial correlation problem.

Test of Normality

The results of the residual normality test is the value of *Jarque Bera* of 0.811127 with *p - value* of 0.666601> 0.05, so accepting H_0 and rejecting H_1. It means that data is normally distributed. This is shown in Figure 3 below:

Figure 3. Data Normality Test

Series: Residuals	
Sample 2010 2018	
Observations 9	
Mean	1.43e-15
Median	-0.271318
Maximum	1.769659
Minimum	-1.006398
Std. Dev.	0.989942
Skewness	0.507079
Kurtosis	1.934876
Jarque-Bera	0.811127
Probability	0.666601

Source: EViews regression results (processed, 2019)

Multicollinearity Test

Multicollinearity test aims to assess whether there is a correlation or intercorrelation between independent variables in the regression model. Table 3 shows that the value of *centered VIF* both X_1 and X_2 is equal to 1.252002. This value is less than 10 therefore it can be stated that there is no multicollinearity problem in the prediction model of this study.

Table 3: multicollinearity Test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	2.096767	14.44223	NA
X1	7.92E-06	14.08606	1.252002
X2	1.32E-08	12.76913	1.252002

Source: EViews regression results (processed, 2019)

Heteroscedasticity Test

Table 4: Heteroscedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.999915	Prob. F(2,6)	0.4219
Obs*R-squared	2.249856	Prob. Chi-Square(2)	0.3247
Scaled explained SS	0.467408	Prob. Chi-Square(2)	0.7916

Source : EViews regression result (processed, 2019).

There are many ways to identify the issue of heteroscedasticities, one of them is Breusch-Pagan-Godfrey test, Harvey test, Glejser test, ARCH and White Test. The result of the heteroskedasticity test using the Breusch-Pagan-Godfrey found that the *p- value* is indicated by the *Prob. Chi-Square* (2) value in *Obs*R-Squared* that is 0.3247. Because the *p- value* is 0,3247 >0.05, we accept H_0 which means the regression model is homoscedasticity or in other words there is no problem of assumption of non-heteroscedasticity.

Conclusion

The results of the study showed that the independent variables (migrant of labour forces of Aceh and remittance) simultaneously and partially affected the GRDP per capita. Based on the regression results it was found that the number of TKI Aceh had a negative and significant effect on GRDP per capita while Remittance had a positive and significant effect on GRDP per capita. This study also tested the classical assumptions related to the use of *ordinary least square* models in which found that the regression results obtained are as expected. After testing the classical assumption, it was found that there is no autocorrelation either positive or negative on the data normally distributed and there is no problem with the heteroscedastic test. It means that this study does not violate the classical assumptions or the regression coefficient categorized as *Best Linear Unbiased Estimator - BLUE.* Overall, the results obtained are in line with theories and hypotheses although variable X_2 (TKI Aceh) has a negative but significant effect. Many factors influence the reversed outcome between TKI Aceh with the GDP per capita, one for overall number of workers who work abroad getting less and less due to the expiration of the work permit. The work availability in the area of origin, return to their hometown because of family factors, business capital is enough to work in the home area and other reasons. There is a hope that the Aceh provincial government and the Republic of Indonesia will continue to encourage migrant workers to become more qualified to increase the wages they receive as well as expand employment and business opportunities at home.

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