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The Impact of Fiscal Balance Funds Toward Human Development in Riau Province

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Abstract: Fiscal decentralization is an effort by the central government to distribute regional development by providing fiscal balance funds to regional governments. The fund aims to promote regional self-sufficiency and community welfare throughout Indonesia. Riau is one of the provinces implementing fiscal balance funds and has high regional income in various sectors. However, the human development of some regions in Riau is unequal, even though the fiscal balance issued by the government continues to increase. This study aims to explore the fiscal balance funds, which consist of revenue sharing funds (DBH), general allocation funds (DAU), special physical allocation funds (DAK Physical), and special non-physical allocation funds (DAK Non-Physical), will affect human development in Riau Province from 2017 to 2022 in terms of health, education, and standard of living. This study used 72 observations from 12 cities/regencies in Riau obtained from Statistics Indonesia, and it was conducted by using a quantitative approach through panel data regression. This study produces three estimation models for each aspect of human development. REM is the model chosen to answer the three research models. The results in the first model showed that DAK Physical and DAK Non-Physical influenced human development in the health aspect. The second model was DAK Non-Physical, which significantly affected human development in education. Finally, DBH, DAU, and DAK Non-Physical significantly affected human development in aspects of decent living standards. Fiscal balance funds affect every aspect of human development in Riau. Fiscal planning and budgeting by local governments in Riau with targeted support are needed to further human development.

Keywords: fiscal balance funds; fiscal decentralization; human development; panel data regression.

1. Introduction

After the fall of the New Order Government in 1998, the people demanded an increase in community participation and the role of the regions in equitable development throughout Indonesia. In response to these circumstances, the central government enacted Law Number 22 of 1999 concerning the Regional Government. The government amended this regulation by enacting Law Number 32 of 2004 concerning the Regional Government. Local governments are the organizers of fiscal decentralization by the central government. Fiscal decentralization transfers fiscal authority from the central government to regional governments for regional development. The transfer of fiscal authority from the central government to regional governments aims to plan and realize regional programmes, raise the quality of public services, and improve people's welfare. Fiscal decentralization can impact economic growth and the human development index (HDI) (Hung & Thanh, 2022).

Fiscal decentralization increases regional self-reliance, manages the wheels of local government, and cultivates great potential in the regions. Fiscal decentralization is expected to increase government transparency and accountability, decreasing local government corruption (Saputra & Setiawan, 2021). However, fiscal decentralization affected inequality between regions because each region has different potential natural resources, character, culture, geography, and topography (Sembiring, 2020). By allocating fiscal balance funds, the central government has considered this condition. Fiscal balance funds cover regional fiscal gaps and fund regional needs in implementing decentralization. The funds come from revenues from the State Budget (APBN). Fiscal balance funds consist of revenue sharing, general allocation, special allocation, regional incentives, and village funds.

Riau is one of the provinces in Indonesia that has adopted a fiscal decentralization policy in the administration of its regional government and financial systems. Riau has abundant natural resources; Oil palm plantations are the leading sector yearly. Based on data from BPS - Statistics Indonesia (2022e), in 2022, palm oil production in Riau will reach 8.9 million tons or roughly 19.53% of Indonesia's total volume. Additionally, the largest contributions to the regional income in Riau are made by the mining, rubber plantation, and agricultural sectors. However, this condition differs from the HDI in cities and regencies in Riau Province. HDI is an indicator for measuring the level of success in developing the quality of human life (BPS - Statistics Indonesia, 2022a). HDI is measured through three aspects, namely health, education, and a decent standard of living. Figure 1 shows the condition of HDI in cities and regencies in Riau Province and Indonesia.

Even though the Riau Province HDI is higher than Indonesia's HDI, there are still low HDIs in the cities and regencies of Riau Province. It indicates that there are still disparities in the levels of human development throughout Riau's regions. In 2022, the Meranti Islands Regency will have an HDI of 66.52, the lowest of other regions in Riau Province. Meanwhile, Pekanbaru City, with an HDI of 82.06, has the highest HDI of all the Riau regions. Human development has a very big role in reducing inequality in the distribution of income in the regions (Arkum & Amar, 2022), improving the quality of education (A. Wang & Arah, 2017), and increasing economic growth (Appiah et al., 2019). Therefore, the allocation of fiscal balance funds through fiscal decentralization is urgently needed to improve human development. H. Jin and Jakovljevic (2023) said fiscal decentralization positively impacts the HDI. More specifically, fiscal decentralization affects human development in the health sector (Dougherty et al., 2022; Rotulo et al., 2020; Xu & Lin, 2022), the education sector

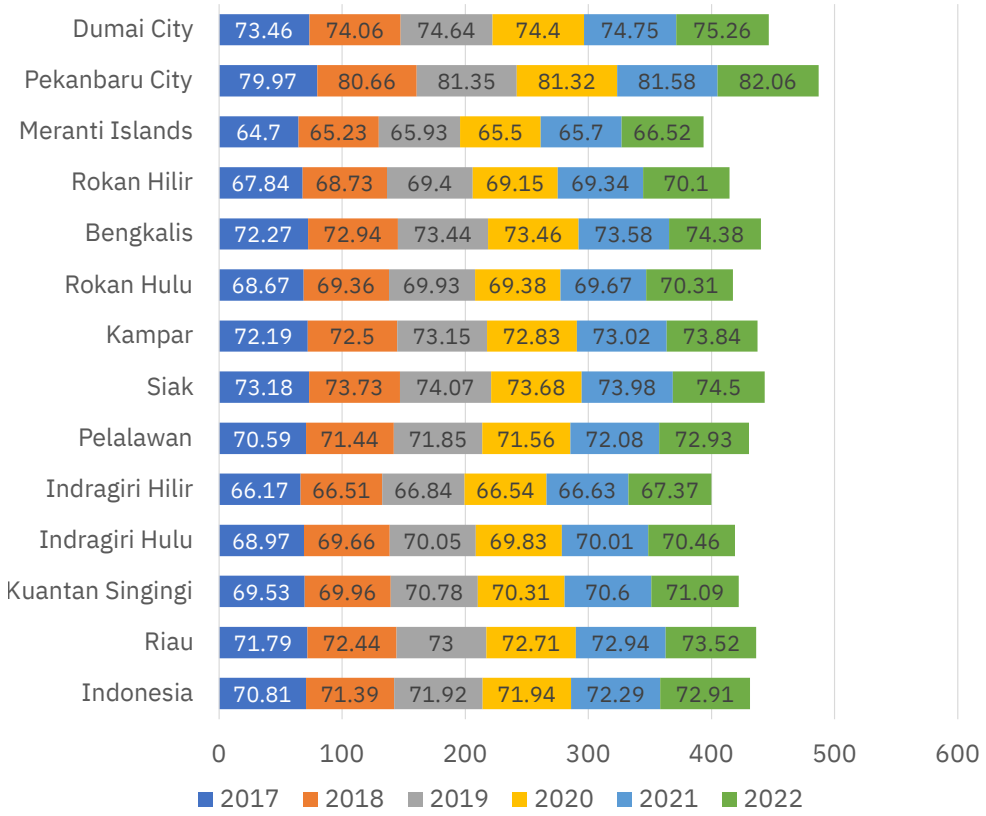

Figure 1. The HDI in Cities and Regencies of Riau Province and Indonesia (2017–2022)

Source: BPS - Statistics Indonesia (2022c)

(Letelier S & Ormeño C, 2018), and a decent standard of living (D. Wang et al., 2022). In addition, fiscal decentralization significantly affects economic growth (Hung & Thanh, 2022; Y. Jin & Rider, 2022; Martinez-Vazquez et al., 2017; Pradana & Mun'im, 2022; Setiawan & Aritenang, 2019) and reduces poverty rates (H. S. Putra, 2017; Sandjaja et al., 2020).

This study uses four fiscal balance funds, namely revenue sharing funds (DBH), general allocation funds (DAU), special physical allocation funds (DAK Physical), and special non-physical allocation funds (DAK Non- Physical). Various studies have examined the impact of fiscal balance funds on the HDI. However, this research has a novelty in analyzing the effect of fiscal balance funds on three aspects of human development, namely aspects of health, education, and decent living standards. Particularly, the fiscal balance funds influence human development in the health aspect (Arifin & Setiawati, 2023; Fitriya & Witono, 2023; Rocheleau & Warren, 1980; Sandjaja et al., 2020). Likewise, Fatria et al. (2020), Fitriya and Witono (2023), Letelier S & Ormeño C (2018), Nawawi et al. (2021), Pambudi et al. (2021), Whitman (1977), and Wulansari et al. (2021) state that the fiscal balance funds significantly affect human development in the education aspect. Additionally, the fiscal balance funds influence increasing human development in the aspect of a decent standard of living (Arifin & Setiawati, 2023; Azhari et al., 2021; Fitriya & Witono, 2023; Yusuf & Afendi, 2020).

However, the research's results described above differ from those of previous studies, namely that fiscal balance funds do not affect the HDI. This circumstance creates a research gap that must be studied in this research. In detail, the research gap is that fiscal balance funds do not affect human development in the health

aspect (Mutiha, 2018; Nugroho, 2016; Sembiring, 2020). Similarly, fiscal balance funds do not affect human development in the education aspect (Mutiha, 2018; Sembiring, 2020). Meanwhile, the fiscal balance fund does not affect human development in terms of the standard of living (Mutiha, 2018; Yusuf & Afendi, 2020). Based on the background description above, this study aims to re-examine the effect of fiscal balance funds on human development in the aspects of health, education, and living standards in Riau Province in 2017-2022. Examining these research variables' impact is expected to produce recommendations for optimizing fiscal balance funds to improve human development.

2. Methods

In order to answer research questions, this quantitative research used secondary data from the BPS - Statistics Indonesia (2022d, 2022b) and the Directorate General of Fiscal Balance of the Ministry of Finance of the Republic of Indonesia (2023). There are 12 (twelve) cities/regencies observed from the 2017–2022 period. This study conducted a panel data regression analysis to determine the effect of fiscal balance funds on human development in Riau. The analysis has several advantages: panel data provides complete, diverse information, higher degrees of freedom, is more efficient, studies cross-sectional data repeatedly, is suitable for dynamic data, can measure impacts that cannot be measured in cross-sectional data and time series data, and analyzes more complex (Mutiha, 2018; Pradana & Mun'im, 2022; Sembiring, 2020). Variable types, descriptions and hypotheses of research can be seen in Table 1.

Table 1. Variable, Description, and Hypothesis of Research

Variables	Description	Hypothesis		
Independent Variables		**UHH**	**HLS**	**PKP**
DBH	DBH in cities and regencies	+	+	+
DAU	DAU in cities and regencies	+	+	+
DAK-Physical	DAK-Physical in cities and regencies	+	+	+
DAK Non-Physical	DAK Non-Physical in cities and regencies	+	+	+
Dependent Variables				
UHH	Health aspects with life expectancy at birth in cities and regencies			
HLS	Educational aspects with expected years of schooling in cities and regencies			
PKP	Aspects of decent living standards with expenditure per capita in cities and regencies			

Information: (+) the independent variable has a significant effect on the dependent variable

Panel data regression was used to combine cross-sectional data from 2 cities and ten regencies in the Riau Province with time series data for the years 2017 to 2022. Panel data regression analysis can examine the effect of the independent variable (fiscal balance funds) on the dependent variable (human development) in an object during the study period, resulting in the best statistical estimation model (Baltagi, 2021; Gujarati & Porter, 2017). The research data was processed using software, namely E-Views 9.0 and MS Excel. In addition, we transform several research variables into the natural logarithm (ln). Based on the description above, there are three-panel data regression models in this research:

A. The panel data regression equation model for UHH is modeled as follows:

$$UHH_{it} = \beta_0 + \beta_1 \ln(DB_{Hit}) + \beta_2 \ln(DAU_{it}) + \beta_3 \ln(DAK\ Physical_{it}) + \beta_4 \ln(DAK\ Non\text{-}Physical_{it}) + \varepsilon_{it} \quad \ldots\ldots(1)$$

B. The panel data regression equation model for HLS is modeled as follows:

$$HLS_{it} = \beta_0 + \beta_5 \ln(DB_{Hit}) + \beta_6 \ln(DAU_{it}) + \beta_7 \ln(DAK\ Physical_{it}) + \beta_8 \ln(DAK\ Non\text{-}Physical_{it}) + \varepsilon_{it} \quad (2)$$

C. The panel data regression equation model for PKP is modeled as follows:

$$\ln(PKP_{it}) = \beta_0 + \beta_9 \ln(DBH_{it}) + \beta_{10} \ln(DAU_{it}) + \beta_{11} \ln(DAK\ Physical_{it}) + \beta_{12} \ln(DAK\ Non\text{-}Physical_{it}) \varepsilon_{it} \quad (3)$$

where:

UHH	: Life expectancy at birth (year)
HLS	: Expected years of schooling (year)
PKP	: Expenditure per capita (thousand IDR/person/year)
β_0	: Constant
$\beta_1 - \beta_{12}$	: Regression coefficient
DBH	: Revenue sharing funds (billion IDR)
DAU	: General allocation funds (billion IDR)
DAK Physical	: Special physical allocation funds (billion IDR)
DAK Non- Physical	: Special non-physical allocation funds (billion IDR)
ε	: Error term
i	: City/Regency in Riau
t	: Year (2017 – 2022)
ln	: Natural logarithm

Panel data regression analysis has three models for estimating the econometric research model. The common effect model (CEM), fixed effect model (FEM), and random effect model (REM) were the panel data regression models. The three research models formed were selected for the best model by conducting several tests: the Chow Test, Hausman Test, and Lagrange Multiplier (LM) Test (Gujarati & Porter, 2017).

Referring to Baltagi (2021), the Chow test is for choosing two models between CEM and FEM. The model selection is seen from the probability value of the Chi-square Cross-section at a significance level of 5%. Hausman Test to choose a research model between FEM and REM by looking at the random cross-section probability value at a significance level of 5%. The LM Test chooses a model between CEM and REM by looking at the Breusch-Pagan probability value at a significance level of 5% (Baltagi, 2021).

The selected research model was tested using classical assumptions. This test sees if the research model meets the best linear unbiased criteria or if there is no deviation from the classical assumptions (Gujarati & Porter, 2017). In order to evaluate the research model's feasibility, the coefficient of determination (R2), F-statistical test, and t-statistical test are required (Gujarati & Porter, 2017). The coefficient of determination test measures the clarity of the independent variable's ability to describe the dependent variable, with a range of R2 values from 0 to 1. The F-statistic test determines the simultaneous effect of the independent variables on the dependent variable. Finally, the t-statistic test was used to determine the independent variables' partial effect on the research model's dependent variable.

3. Results and Discussion

3.1. Results

The results of the first model on the effect of the fiscal balance fund on human development in health aspects (UHH) were as follows. The Chow test obtained a probability value of 0.0000 (<5%), then H1 is accepted and continued with the second test. If the probability value on the Hausman Test is 0.3607 (> 5%), then H1

is accepted and continued with the LM Test. If the probability value in this test was 0.0000 (<0.05), then H1 is accepted. So, the REM model is the chosen estimation model to answer the first model hypothesis.

The second model is the effect of the fiscal balance fund on human development in education aspects (HLS) in Riau. In the Chow test, if a probability value of 0.0000 (<0.05) was obtained, then H1 is accepted. If the second test, the Hausman Test, obtains a probability value of 0.6390 (> 0.05), then H1 is accepted. Finally, if the LM test obtained a probability value of 0.0000 (<0.05), then H1 is accepted. REM is the chosen model to answer the second model hypothesis of this study.

The third model is the effect of the fiscal balance fund on human development in aspects of decent living standards (PKP) in Riau. If the probability value on the Chow test is 0.0000 (< 5%), then H1 is accepted. In the Hausman test, if a probability value of 0.3391 (> 5%) is obtained, then H1 is accepted, and the LM test is continued. If this test has a probability value of 0.0000 (< 5%), then H1 is accepted. The estimation model chosen to answer the research hypothesis was REM. The results of the model selection tests were shown in Table 2.

Table 2. Results of Model Selection Test

Research Model	Probability			
	Chow Test	Hausman Test	LM Test	Decision
Model 1: Life expectancy at birth	0.0000	0.3607	0.0000	REM
Model 2: Expected years of schooling	0.0000	0.6390	0.0000	REM
Model 3: Expenditure per capita	0.0000	0.3391	0.0000	REM

The classical assumption test process carries out the three estimation models. The Jarque-Bera value is above 5% in the normality test for each selected research model. Accordingly, the three estimate models' data are normally distributed. The multicollinearity test shows the correlation value between the independent variables in the three estimation models below 0.85, so it is concluded that there is no violation of the multicollinearity assumption. The three selected estimation models, namely REM, are free from heteroscedasticity and autocorrelation deviations. REM uses cross-section weighting to overcome heteroscedasticity and autocorrelation problems (Baltagi, 2021).

According to Table 3, the first model's coefficient of determination (R2) is 58.08%. It suggests that a variation of the independent variables can express the variant of the dependent variable, specifically the health aspect (UHH), by up to 58.08%. In comparison, the remaining 41.92% is discussed by other variables outside the study variables. The variance of the education aspect variable (HLS) can be stated by the independent variable variance in the second model, which has a coefficient of determination of 41.48%. Other variables outside the research cause the remaining 58.52%. The last model is the aspect of standard of living, and the coefficient value obtained is 43.32%. The standard of living (PKP) variable was found to explain 43.32% of the variance of the dependent variable; the remaining 56.68% of the variation was explained by other variables not included in this study.

In the F-statistic test, the three models have the same probability value of 0.0000 or less than the significance level (5%). The three research models simultaneously have a relationship between the independent variables (fiscal balance funds) and their respective dependent variables, namely human development (UHH, HLS, and PKP). Table 3 presents the estimation results of the three research models.

Table 3. Results of Research Model Estimation

Variables	Coefficient	Std. Error	t-Statistic	Probability	Decision
Model 1: Life expectancy at birth (UHH)					
C	66.4893	3.2463	20.4818	0.0000	
lnDBH	-0.3710	0.0908	-4.0872	0.0001	rejected
lnDAU	-0.2569	0.5440	-0.4723	0.6383	rejected
lnDAK Physical	0.2699	0.1128	2.3938	0.0195*	accepted
lnDAK Non- Physical	1.2700	0.1410	9.0082	0.0000*	accepted
Adj. R2		0.5808			
F-statistic		25.5909			
Prob(F-statistic)		0.0000*			
Model 2: Expected years of schooling (HLS)					
C	11.0207	1.7362	6.3475	0.0000	
lnDBH	-0.1465	0.0479	-3.0558	0.0032	rejected
lnDAU	0.0846	0.2906	0.2910	0.7719	rejected
lnDAK Physical	0.0278	0.0597	0.4651	0.6433	rejected
lnDAK Non- Physical	0.4473	0.0744	6.0102	0.0000*	accepted
Adj. R2		0.4148			
F-statistic		13.5821			
Prob(F-statistic)		0.0000*			
Model 3: Expenditure per capita (PKP)					
C	7.9076	0.2638	29.9732	0.0000	
lnDBH	0.0160	0.0072	2.2115	0.0304*	accepted
lnDAU	0.1644	0.0441	3.7292	0.0004*	accepted
lnDAK Physical	-0.0007	0.0090	-0.0773	0.9386	rejected
lnDAK Non- Physical	0.0505	0.0112	4.5148	0.0000*	accepted
Adj. R2		0.4332			
F-statistic		14.5647			
Prob(F-statistic)		0.0000*			

Information: (*) significance levels at 95%

Source: *Data processed with E-Views 9.0*

3.2. Discussion

3.2.1. The Effect of Fiscal Balance Funds on Human Development From a Health Aspect

Fiscal decentralization consists of various fiscal balance funds. This study used fiscal balance funds consisting of DBH, DAU, DAK Physical, and DAK Non-Physical. This discussion examines the effect of fiscal balance funds on life expectancy at birth (UHH) in Riau. UHH is used as an indicator of human development in the health aspect. Based on Table 3, DBH has a coefficient value of -0.3710, then H1a is rejected. This condition explains that DBH does not affect human development from a Health Aspect in Riau. This study's results do not align with research from Rocheleau and Warren (1980), stating that DBH from the government influences improving health and that health budgeting and planning are involved in providing

health facilities. On the other hand, this study's results align with previous research, which stated that DBH does not affect human development (Mutiha, 2018; Sandjaja et al., 2020).

The DAU aims to increase regional independence by carrying out regional autonomy. The study's results reported that the coefficient on the DAU is -0.2569, so H1b is rejected. It was concluded that the DAU had no significant effect on human development from a health aspect (UHH) in Riau. This study's findings do not align with the results of previous studies, stating that DAU affected the HDI (Fitriya & Witono, 2023; Sandjaja et al., 2020). However, according to Mutiha (2018) and Sembiring (2020), DAU has an insignificant impact on human development, especially in the health sector. Government expenditure in the health sector does not affect the HDI (Nugroho, 2016). Sembiring (2020) adds that the management of DAU is off-target and is a block grant, allowing regions free to use DAU according to their interests.

In Table 3, DAK Physical has a coefficient value of 0.2699, meaning that an increase in DAK Physical of one unit will increase human development from a health aspect by 0.2699%, ceteris paribus. If the probability value on the DAK Physical is 0.0195, then H1c is accepted. It demonstrates that DAK Physical contributes positively and significantly to human development from a health perspective (UHH) in Riau. Research by Arifin and Setiawati (2023) and Sandjaja et al. (2020), which indicated that special allocation funds (DAK) affect the HDI, supports the conclusions of this study. Human development from a health aspect can be influenced by DAK Physical (Fatria et al., 2020; Nawawi et al., 2021).

The results showed that DAK Non-Physical has a coefficient value of 1.2700. It indicates that an increase in DAK Non-Physical of one unit will increase human development from a health aspect by 1.2700%, ceteris paribus. In the t-statistic test, if the probability value is 0.0000, then H1d is accepted. DAK Physical significantly affects human development from a health aspect in Riau. The findings of this study were consistent with those of earlier studies, also special allocation funds impacted human development (Fitriya & Witono, 2023). DAK in the health sector has an influence on health development in the long term (Apriliani & Khoirunurrofik, 2020).

Fiscal balance funds are one part of fiscal decentralization activities. If the performance of government institutions is good and democracy is good, then the quality of good utilization of fiscal decentralization will increase (Alexeev & Mamedov, 2017) and local government financial accountability (Bojanic, 2018; Fatoni, 2020). Fiscal decentralization in the balance fund can improve public health in the regions (Xu & Lin, 2022), improve the performance of the healthcare system (Dougherty et al., 2022), reduce infant mortality (Rotulo et al., 2020), reduce indications of corruption in the aspect of regional losses (Saputra & Setiawan, 2021), and have a positive impact on the HDI (Miranda-Lescano et al., 2023). According to Tan (2020), the accuracy of the implementation of fiscal decentralization and the effectiveness of regional tax management can indirectly increase regional fiscal autonomy.

3.2.2. The Effect of Fiscal Balance Funds on Human Development From an Educational Aspect

Based on Table 3, DBH has a coefficient value of -0.1465, then H2a is rejected. DBH does not influence increasing human development from an educational aspect in Riau. The results of this study contradict previous studies, stating that DBH

influences human development from an educational aspect (Whitman, 1977). In West Java, HDI is also impacted by DBH (Yusuf & Afendi, 2020). On the other hand, the results of this study are supported by Mutiha (2018), who explains that DBH does not affect HDI in Indonesia.

In Table 3, the coefficient value on DAU is 0.0846, which means that an increase in DAU of one unit means that human development from an educational aspect will increase by 0.0846%, ceteris paribus. If the probability value obtained from the t-statistic test is 0.7719, then H2b is rejected. These results indicate that the DAU does not improve human development from an educational aspect (HLS) in Riau. The results of this study are not strengthened by previous research that explains that DAU affects human development (Fitriya & Witono, 2023; Sandjaja et al., 2020). However, Sembiring (2020), who found that DAU has no impact on human development from an educational aspect, supports the conclusions of this study.

The coefficient for DAK Physical in the second model is 0.0278, meaning that an increase in DAK Physical of one unit will increase human development from an educational aspect by 0.0278%, ceteris paribus. In the t-statistic test, if a probability value of 0.6433 is obtained, then H2c is rejected. It indicates that DAK Physical in Riau positively affects human development from an educational aspect (HLS) but not significantly. This result does not align with previous research stating that DAK Physical influences human development through the education sector (Wulansari et al., 2021). DAK Physical in education will affect the increase in HDI, especially in education (Nawawi et al., 2021; Pambudi et al., 2021). On the other hand, the findings of this study are strengthened by previous research, which explains that DAK Physical does not affect human development in the education sector (Sembiring, 2020).

This study's fourth fiscal balance fund, DAK Non-Physical, obtained a coefficient of 0.4473. It means that if an increase in DAK Non-Physical is worth one unit, then human development from the education sector will increase by 0.4473%, ceteris paribus. In Table 3, if the probability value was 0.0000, H2d is accepted. It was determined that DAK non-physical contributed to human development from an education sector (HLS) in Riau. The results of this study were consistent with previous research by Fatria et al. (2020), which demonstrated that DAK Non-Physical in the education field will impact the HDI, particularly education. Letelier S and Ormeño C (2018) added that fiscal decentralization will influence improving the quality of education.

Fiscal decentralization increases the HDI (Daud & Soleman, 2020; H. Jin & Jakovljevic, 2023). Education spending by the central and local governments should positively affect the HDI (Miranda-Lescano et al., 2023). Increasing HDI can be done by providing institutional strengthening and increasing the capacity of the State Civil Apparatus in local government administration (I. Putra, 2015). Regional governments in Riau are expected to be able to formulate DBH, DAU, and DAK Physical policies that are right on target for human development from an educational aspect. Fiscal balance funds can improve the quality of educational facilities and infrastructure, the quality of teachers and educational staff, and the quality of students in the regions, which is increasing to produce human resources that can compete in the globalization era.

3.2.3. The Effect of Fiscal Balance Funds on Human Development From the Aspect of a Decent Standard of Living

Expenditure per capita (PKP) indicates human development from a standard of living aspect. Based on Table 3, DBH has a coefficient of 0.0160, meaning that an increase in DBH by one unit will increase human development from the Aspect of a Decent Standard of Living by 0.0160%, ceteris paribus. In the t-statistic test, a probability value 0.0304 is obtained, and H3a is accepted. This condition indicates that DBH significantly impacts human development from a standard of living aspect in Riau. The findings of this study were consistent with earlier research that claims DBH impacts human development in the region (Azhari et al., 2021; Yusuf & Afendi, 2020). The higher the DBH, the higher the human development from the aspect of a decent standard of living.

In the DAU condition of this study's results, the coefficient value obtained was 0.1644. It explains that an increase in the DAU by one unit will increase human development from a standard of living aspect by 0.1644%, ceteris paribus. If the probability value is 0.0004, then H3b is accepted. It was concluded that the DAU significantly impacted increasing human development from a standard of living aspect in Riau. This result was consistent with an earlier study, demonstrating that the DAU affects the HDI (Fitriya & Witono, 2023; Sandjaja et al., 2020). DAU can provide an increase in the standard of living for the community through per capita spending.

DAK Physical funds special infrastructure activities in the regions according to national priorities. Based on Table 3, DAK Physical has a coefficient value of -0.0007, and H3c is rejected. This finding explains that DAK Physical does not influence human development from a standard of living aspect. This study contradicts other studies' findings that DAK Physical affects human development (Fitriya & Witono, 2023; Sandjaja et al., 2020). On the other hand, the results of this study were consistent with Sembiring's research (2020), which explains that DAK Physical does not affect PKP in human development. Mutiha (2018) and Yusuf and Afendi (2020) claim that DAK Physical has no impact on the HDI.

Finally, DAK Non-Physical has a coefficient value of 0.0505, meaning that an increase in DAK Non-Physical by one unit means that human development from a standard of living aspect will increase by 0.0505%, ceteris paribus. In the t-statistic test, if a probability value of 0.0000 is obtained, then H3d is accepted. This condition explains that the DAK Non-Physical significantly affects human development from a standard of living aspect in Riau. This study's results are consistent with studies by Arifin and Setiawati (2023), demonstrating the impact of special allocation funds on human development. The higher the DAK Non- Physical budgeted by the government, the more human development from the aspect of a decent standard of living will increase.

According to D. Wang et al. (2022), fiscal decentralization affects people's living standards, such as increasing preferences for spending on health, security work, social security, etc. The regional government in Riau is expected to be able to develop a fiscal decentralization policy formula that directly and indirectly improves human development, especially a decent standard of living for the people. Delen et al. (2019) said that the local government must reanalyze the allocation of funds and realize priority regional spending for public service spending so that economic growth is achieved and of good quality. The effectiveness of democratic and highly qualified governmental institutions allows for effective fiscal decentralization (Alexeev & Mamedov, 2017) and alignment between the policy of delegation of

authority and the policy of handing over sources of income to autonomous regions (Khairi, 2021).

4. Conclusion

Three-panel data regression models were obtained from the description of the analysis results and discussion of this study in Riau Province. Statistically, the REM model is used in the three research models to answer the research hypothesis. The research findings in the first model show that DAK Physical and DAK Non-Physical influence increasing human development from a health aspect (UHH) in Riau. Meanwhile, DBH and DAU do not affect human development from a health aspect.

In the second model, the research results explain that DAK Non-Physical significantly affected human development from an educational aspect (HLS) in Riau. On the other hand, DBH, DAU, and DAK Physical do not affect human development from an educational aspect. The third model's research findings also indicate that DBH, DAU, and DAK Non-Physical significantly affected human development regarding a decent standard of living (PKP) aspect in Riau. However, DAK Physical has no influence on human development from the aspect of decent living standards.

With the conditions of this study, it is hoped that the regional government in Riau can optimize the receipt of fiscal balance funds to improve human development for its people. Increasing human development can equalize regional development and improve people's welfare. Local governments need to increase their fiscal capacity by maximizing their regional potential. The central government is also reviewing the strategy for optimizing DBH and DAU. DBH and DAU allocations are not centralized for government operational activities and spending, personnel spending, and service spending but can be used to help improve public services in the form of infrastructure and human resources.

Infrastructure development must be planned and compiled in a regional government work plan (RKPD) when utilizing the DAK Physical allocation and the National Priorities framework. Coordination and synergy between the central government, regional governments, related ministries, institutions, and state-owned and private companies in Riau, in achieving regional infrastructure development. So, the purpose of DAK Physical can be felt to increase human development. At the same time, DAK Non-Physical allocation did not focus on funding government operational activities. However, DAK Non-Physical aims to improve the quality of human resources in various sectors, particularly human development in the health, education, and standard of living sectors. This research is limited to cities/regencies in Riau, period, and research methods, so it does not reflect the condition of the fiscal balance fund on human development in Indonesia. Researchers and academics can conduct studies on this research theme in other provinces and add research periods and methods to provide other relevant study results.

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