

EFFECTS OF FISCAL REDISTRIBUTION ON GENDER DEVELOPMENT IN INDONESIA: AN ANALYSIS OF THE CHARACTERISTICS OF FISCAL ACCEPTANCE

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Abstract

Indonesia is still ranked 104th in the world in terms of gender development and is below other ASEAN countries namely Singapore, Malaysia, Viet Nam, and the Philippines. The purpose of this study is to analyze how fiscal redistribution influences gender development through different characteristics in each fiscal revenue with the GMM method. The results show that Gross Regional Domestic Product is influenced by Locally-Generated Revenue, General Allocation Fund, and Tax Sharing. While Specific Allocation Fund and Natural Resources Revenue Sharing worsen Gross Regional Domestic Product. But in the long run, all the effects that worsen Gross Regional Domestic Product are corrected and have an impact on increasing Gross Regional Domestic Product in Indonesia. Then Gender Development Index is influenced by Gross Regional Domestic Product, Locally-Generated Revenue, and General Allocation Fund, while the role of Specific Allocation Fund and Tax Sharing worsens Gender Development Index but in the long run, will increase and increase Gender Development Index. The different types of fiscal revenues also influence the Gender Development Index response as a consequence of the unique characteristics of each fiscal revenue variable. Our suggestion is that local tax sources paid to the center allocated through the balance fund need to consider gender aspects.

Key words: fiscal redistribution, fiscal receipt, gender development, GMM

JEL: H2, J01

Abstrak

Indonesia masih menempati peringkat ke-104 di dunia dalam hal pembangunan gender dan berada di bawah negara-negara ASEAN lainnya, yaitu Singapura, Malaysia, Vietnam, dan Filipina. Tujuan dari penelitian ini adalah untuk menganalisis bagaimana redistribusi fiskal mempengaruhi pembangunan gender melalui karakteristik yang berbeda pada setiap pendapatan fiskal dengan metode GMM. Hasil penelitian menunjukkan bahwa Produk Domestik Regional Bruto (PDRB) dipengaruhi oleh Pendapatan Asli Daerah (PAD), Dana Alokasi Umum (DAU), dan Bagi Hasil Pajak. Sementara itu, Dana Alokasi Khusus (DAK) dan Bagi Hasil Penerimaan Sumber Daya Alam memperburuk Produk Domestik Regional Bruto (PDRB). Namun dalam jangka panjang, semua efek yang memperburuk Produk Domestik Regional Bruto (PDRB) dikoreksi dan berdampak pada peningkatan Produk Domestik Regional Bruto (PDRB) Provinsi di Indonesia. Kemudian Indeks Pembangunan Gender dipengaruhi oleh Produk Domestik Regional Bruto, Pendapatan Asli Daerah (PAD), dan Dana Alokasi Umum (DAU), sementara peran Dana Alokasi Khusus (DAK) dan Bagi Hasil Pajak memperburuk Indeks Pembangunan Gender tetapi dalam jangka panjang, akan meningkat dan meningkatkan Indeks Pembangunan Gender. Jenis pendapatan fiskal yang berbeda juga mempengaruhi respons Indeks Pembangunan Gender sebagai konsekuensi dari karakteristik unik setiap variabel pendapatan fiskal. Rekomendasi kami adalah sumber pajak daerah yang dibayarkan ke pusat yang dialokasikan melalui dana perimbangan perlu mempertimbangkan aspek gender.

Kata kunci: redistribusi fiskal, penerimaan fiskal, pembangunan gender, GMM

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1. INTRODUCTION

The Universal Declaration of Human Rights by the United Nations in 1948 has changed the general world paradigm of how the state should place men and women in equal portions in development efforts. In Indonesia, we have seen how the development of gender equality continues to increase from 89.42 percent in 2010 to 90.99 percent in 2018. In the world ranking, Indonesia is still ranked 104th for the Gender Inequality Index (GII) and 116th for the Human Development Index (HDI) from 189 countries (UNDP, 2022).

Table 1. Country Ranking in ASEAN for Human Development Indicators (2021)

State	HDI	GII	Population with at least some secondary education (%)		Labour force participation rate (%)	
	Rank		Famale	Male	Famale	Male
Singapore	9	12	76.1	82.9	60.5	76.8
Malaysia	57	60	78.9	81.3	50.8	77.4
Philippines	113	97	76.6	72.4	49.6	75.1
Indoenesia	116	104	44.5	53.2	50.7	81.8
Viet Nam	117	67	66.2	77.7	73.2	83.5
Myanmar	148	106	28.7	22.3	51.3	79.9

Source : Human Development Report (2022)

Compared to other Association of Southeast Asian Nations (ASEAN) countries, Indonesia's GII rank is far lower than Singapore, Malaysia, Viet Nam, and the Philippines, but is also better than Myanmar. In terms of achieving high school, the Philippines and Myanmar are two countries in ASEAN that have succeeded in raising women far higher than men. In fact, Indonesia still needs strong efforts to improve development and gender equality in order to be able to catch up with other ASEAN countries (Asean, 2022).

In Asian countries, the implementation of a sustainable (fiscal) budget to address gender inequality has not been maximized, except for Australia and India which in recent years have begun to pay attention to this (Chakraborty, 2019). The biggest challenge of developing countries, especially Indonesia is to ensure that each policy is not biased towards certain gender groups. Although there have been many consensus and conventions that have become an ethical basis for gender equality such as the Convention on the Elimination of All Forms of Discrimination Against Women, then the fourth world women's convention in Beijing, Millennium Declaration in MDG's 2015, INPRES N0.9 of 2000 concerning priority priorities gender and others. This is still not enough to ensure that the distribution of justice is evenly distributed among gender groups. The government needs to pay attention to the technical aspects that will represent the interests of gender equality for progressive gender development. In Indonesia, one of the policies implemented by the government in influencing economic activity is fiscal policy. Through this worksheet, we try to detect how the role of fiscal redistribution inherent in aspects of fiscal revenue in Indonesia can respond to changes in gender development. Disabled that the growth of Locally-Generated Revenue (LGR) of all provinces in Indonesia per year amounted to Rp 1.102 trillion, general transfer funds such as the General Allocation Fund (GAF) from the center to the provincial government an average of Rp 356 trillion, tax revenue sharing funds of Rp 201 trillion, natural resource revenue-sharing funds amounting to Rp 128 trillion and special transfer funds such as the Special Allocation Fund (SAF) of Rp 253 trillion. Some of these fiscal revenues differ conceptually, so the fiscal redistribution of some of the regional fiscal revenue indicators will also

have different impacts on the welfare aspect, specifically gender development (Bird and Vaillancourt, 2000; Chakraborty, 2019).

We find room strong enough to deepen research related to the relationship of fiscal decentralization with gender development by looking at a number of previous studies. Chakraborty and Piyush (2019) suggest that some fiscal blocks in Indonesia have a tendency for poor spending quality, so the impact of the role of fiscal decentralization is biased only to certain groups. Barnat, et al (2019) from the results of a study in India found that the role of fiscal transfers was massive and normatively allocated specifically for equality of conditional fiscal transfers in India actually exacerbated gender inequality. Other findings suggest that the results of economic growth will benefit in increasing gender equality, such as education, employment and access to finance (Gabeza-Garcia, et al. 2018; Kim, et al, 2016). But not a few studies also show the opposite that economic growth actually widens gender inequality (Barnat, et al, 2019; Mukherjee, 2019; Sangaji, et al 2018). Most of the previous studies have shown that the importance of an appropriate budget for promoting gender development, or in other words the aspect of expenditure is very determining the progression of gender development. Therefore this research will try to look at it from a slightly different side, especially on the side of fiscal revenue which we assume is an indicator of fiscal redistribution, where each regional revenue has a unique characteristic in influencing gender development through the redistribution effect.

2. METHOD AND DATA

We have been using the panel since 2010-2018 by considering 32 provinces in Indonesia without DKI Jakarta which are not autonomous regions and North Kalimantan because of the new division province since 2010-2022. We place two dependent variables, the first being the Gross Regional Domestic Product (GRDP) based on the 2010 constant prices between provinces which we assume as capital stock is determined by different dimensions of fiscal revenue. The long-term equilibrium of the capital stock that we proxy with the GRDP will further determine the increase in the gender development index. Another fundamental thing is that we see that the actual change in fiscal redistribution at each regional revenue is a fraction of t (years) of the desired change, so we use the Partial Adjustment Model (PAM) to illustrate the model assuming there is a desired equilibrium condition (Gujarati and Porter, 2015). Because this model uses panel data and considers dynamic characteristics, we accommodate the Generalized Method of Moment (GMM) approach with the consideration of Instrumental Variables used for two different equations.

Generalized Method of Moments (GMM) is one of the econometric methods frequently used to estimate dynamic panel data models. The primary function of GMM in the context of dynamic panels is to address the issue of endogeneity that often arises. In dynamic panel models, the lagged dependent variable is typically correlated with the error term, leading to biased and inconsistent estimates from conventional estimators such as Ordinary Least Squares (OLS). GMM can overcome this problem by using valid instruments to estimate the model parameters. In addition to addressing endogeneity, GMM also has the advantage of estimation efficiency. This method can produce efficient estimators by utilizing all available moment conditions. This becomes important, particularly when the model has many parameters to be estimated. Furthermore, GMM is more flexible compared to other methods, such as Maximum Likelihood, as it does not require strict assumptions about the distribution of the error term (Verbeek, 2012).

For this research, we follow the recommendations of Arellano and Bond (1991) and Blundell and Bond (1998) to use a two-period lag for the dependent variable (y_{it-2}) as instrumental variables that we symbolize with (z_1) in the level and first difference equations (Veebeck, 2012). Instrumental variables used include (z_1) dan (x_1) is an independent variable that

becomes an instrumental variable for itself so for each observation the instrumental variable used is $(\sum_{i=1}^n z_{1n}, \sum_{i=1}^n x_{in})$. Then the model specifications with the Generalized Method of Moment (GMM) approach that we derived from theoretical and empirical studies are as follows:

Short-run Model :

$$\begin{aligned} \Delta \ln grdp_{it-1} &= \delta \varphi_0 + \delta \varphi_1 \Delta \ln lgr_{it-1} + \delta \varphi_2 \Delta \ln ts_{it-1} + \delta \varphi_3 \Delta \ln nrrs_{it-1} + \delta \varphi_4 \Delta \ln gaf_{it-1} \\ &+ \delta \varphi_5 \Delta \ln saf_{it-1} + (1 - \delta) \Delta \ln grdp_{it-2} + \delta \Delta v_{it-1} \end{aligned} \quad (1)$$

$$\begin{aligned} l \Delta \ln gdi_{it-1} &= \delta \varphi_0 + \delta \varphi_1 \Delta \ln lgr_{it-1} + \delta \varphi_2 \Delta \ln ts_{it-1} + \delta \varphi_3 \Delta \ln nrrs_{it-1} + \delta \varphi_4 \Delta \ln gaf_{it-1} \\ &+ \delta \varphi_5 \Delta \ln saf_{it-1} + \delta \varphi_5 \Delta \ln gdi_{it-1} (1 - \delta) \Delta \ln gdi_{it-2} + \delta \Delta v_{it-1} \end{aligned} \quad (2)$$

Long-run model

$$\begin{aligned} \Delta \ln grdp_{it-1} &= \frac{\delta \varphi_1 \Delta \ln lgr_{it-1}}{[(1 - \delta) \Delta \ln grdp_{it-2}]} + \frac{\delta \varphi_2 \Delta \ln ts_{it-1}}{[(1 - \delta) \Delta \ln grdp_{it-2}]} \\ &+ \frac{\delta \varphi_3 \Delta \ln nrrs_{it-1}}{[(1 - \delta) \Delta \ln grdp_{it-2}]} + \frac{\delta \varphi_4 \Delta \ln gaf_{it-1}}{[(1 - \delta) \Delta \ln grdp_{it-2}]} \\ &+ \frac{\delta \varphi_5 \Delta \ln saf_{it-1}}{[(1 - \delta) \Delta \ln grdp_{it-2}]} \end{aligned} \quad (3)$$

$$\begin{aligned} l \Delta \ln gdi_{it-1} &= \frac{\delta \varphi_1 \Delta \ln lgr_{it-1}}{[(1 - \delta) \Delta \ln gdi_{it-2}]} + \frac{\delta \varphi_1 \Delta \ln lgr_{it-1}}{[(1 - \delta) \Delta \ln gdi_{it-2}]} \\ &+ \frac{\delta \varphi_2 \Delta \ln ts_{it-1}}{[(1 - \delta) \Delta \ln gdi_{it-2}]} + \frac{\delta \varphi_3 \Delta \ln nrrs_{it-1}}{[(1 - \delta) \Delta \ln gdi_{it-2}]} \\ &+ \frac{\delta \varphi_4 \Delta \ln gaf_{it-1}}{[(1 - \delta) \Delta \ln gdi_{it-2}]} + \frac{\delta \varphi_5 \Delta \ln saf_{it-1}}{[(1 - \delta) \Delta \ln gdi_{it-2}]} \end{aligned} \quad (4)$$

Description of Parameters:

$\Delta \ln grdp_{it-1}$:	Natural logarithm for partial adjustment Gross Regional Domestic Product first difference
$l \Delta \ln gdi_{it-1}$:	Natural logarithm for partial adjustment Gender Development Index first difference
$\delta \varphi_0$:	Constant
$\delta \varphi \Delta \ln lgr_{it-1}$:	Natural logarithm for partial adjustment Locally-Generated Revenue first difference
$\delta \varphi \Delta \ln ts_{it-1}$:	Natural logarithm for partial adjustment Tax Sharing first difference
$\delta \varphi \Delta \ln nrrs_{it-1}$:	Natural logarithm for partial adjustment Natural Resources Revenue Sharing first difference
$\delta \varphi \Delta \ln gaf_{it-1}$:	Natural logarithm for partial adjustment General Allocation Fund first difference
$\delta \varphi \Delta \ln saf_{it-1}$:	Natural logarithm for partial adjustment Specific Allocation Fund first difference
$(1 - \delta) \Delta \ln grdp_{it-2}$:	Natural logarithm for partial adjustment Gross Regional Domestic Product Second difference (instrumental variables)
$\delta \Delta v_{it-1}$:	Residual for partial adjustment model

3. DISCUSSION

a. Distribution of Economic and Fiscal Blocks on The Human Development Index

In Figure 3a-f we accommodate the scatterplots of 32 provinces in Indonesia in the 2010-2018 average of the economic bloc variable and fiscal revenue towards the Gender Development Index (GDI). Scatter plots indicate that there are only a few provinces in Indonesia that on average have Gross Regional Domestic Product (GRDP) values, Tax Sharing (TS), and Natural Resources Revenue Sharing (NRRS) followed by the value of the Gender Development Index (GDI) which tall too.

Figure 3a. Gros Regional Demestic Product

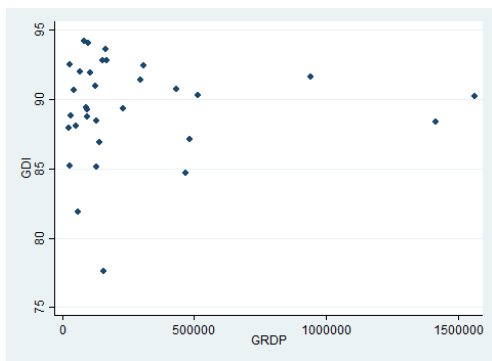


Figure 3b. Locally-Generated Revenue

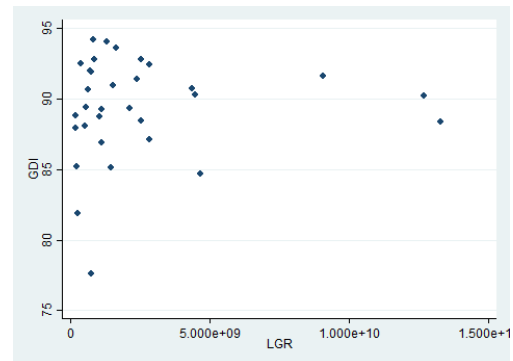


Figure 3c. Tax Sharing

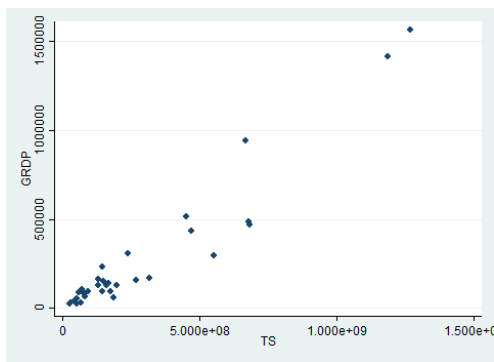


Figure 3d. Natural Resources Revenue Sharing

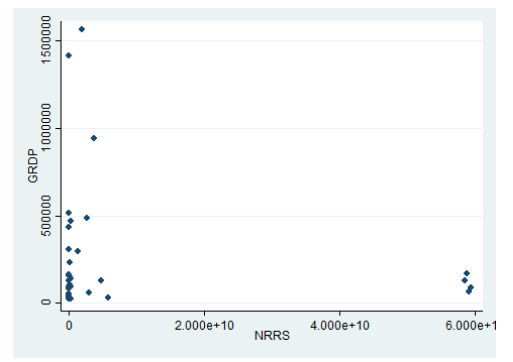


Figure 3e. General Allocation Fund

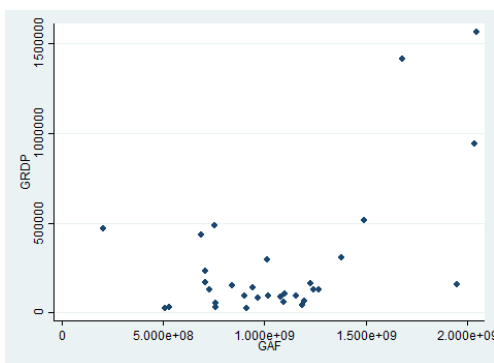
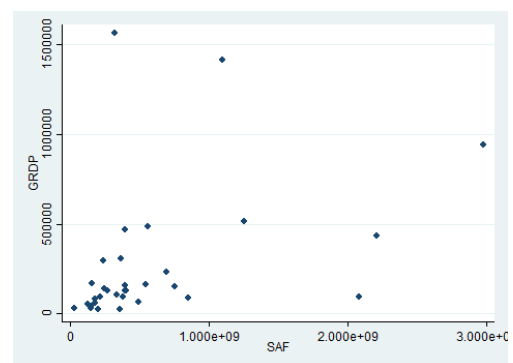


Figure 3f. Specific Allocation Fund



The Natural Resource Revenue Sharing (NRRS) variable shows that there is a wide disparity between the four provinces with the highest value and the other provinces. Meanwhile, if we look at the distribution of the General Allocation Fund (GAF) and the Specific Allocation Fund (SAF) it tends to be evenly distributed when compared to other fiscal revenue variables, specifically the GAF. This is closely related to the function of GAF which functions as a horizontal imbalance between provinces in Indonesia. Descriptively we see that there are differences in the effects of redistribution that result in inequality between men and women due to differences in the characteristics of fiscal revenue variables.

In Table 2. For testing the estimator bias shows that the endogenous lag value for both equations in the GMM estimation is much smaller than the lag in the Ordinary Least Square (OLS) estimation and is greater than the estimated lag in the Fixed Effect model (FE). So the decision taken is a model for each unbiased equation. Second, for both equations it was found that in the m1 specification the prob value $< \alpha$ 5 percent and fall in the rejection region H_0 , while for m2 the value of $prb > \alpha$ 5 percent and fall in the H_0 reception region, so the decision taken for each equation is that the model is consistent. Third, the prob chi2 value of the sargan test falls in the H_0 reception area, so it can be concluded that the instrument variables used by the two equations are valid. Finally, we saw a positive serial autocorrelation effect so we transformed the data with an inverse so that the DH test values for equations I and II were eligible to be free from autocorrelation.

b. Generalized Method of Moment Estimation Results

Estimation results using SYS-GMM in equation one for the short-run model shown in Table 3 show that the Gross Regional Domestic Product (GRDP) is significant with $0 < \delta < 1$, where the coefficient value is 9.6 percent, meaning that in the short term GRDP will increase by the value of the short-term coefficient. Meanwhile, the increase in GRDP was supported by Local-Generally Revenue (LGR), General Allocation Fund (GAF) and Tax Share (TS). These results are similar to the findings of Sangaji et al (2018); Ali et al (2023). While the role of the Specific Allocation Fund (SAF) and Natural Resources Revenue Sharing (NRRS) have a negative impact on economic growth.

Table 2. Testing the Generalized Method of Moment Assumptions

Variable	Bias estimator test			Arellano Bond test		Sargan test	Durbin H test $1/DH$
	OLS ^a	GMM ^b	FE ^c	m1	m2	Prob Chi2	Prob Chi2
Equation (I)	0.971	0.732	0.704	0.044	0.155	0.876	0.12 < 1.96
Equation (II)	1.005	0.959	0.897	0.000	0.224	0.356	0.06 < 1.96
Decision	Unbias			Consistent		Valid	No autocorrelation

Note :

a>b>c

Prob m1 reject H_0 at alpha 5 percent

Prob m2 accepts H_0 at alpha 5 percent

Prob chi2 accepts H_0 at alpha 5 percent

Source: Stata output, processed

Table 3. Short Term Estimates

Variabel	SYS-GMM		AB-GMM	
	Ln_GRDP (I)		Ln_GDI (II)	
	Coefficient	z-statistics	Coefficient	z-statistics
Ln_GDI-1			0.732*	50.43
Ln_GRDP-1	0.959*	509.58		
Ln_GRDP			0.009*	3.54
Ln_LGR	0.014*	19.78	0.001*	2.26
Ln_GAF	0.0002*	1.07	0.0001*	0.99

Ln_SAF	-0.001*	-15.30	-0.0008*	-6.20
Ln_TS	0.013*	26.05	-0.0005*	-1.43
Ln_NRRS	-0.003*	-13.32	-0.00009	-0.11
Prob Wald chi2		0.000		0.000

Note :

GMM type for SYS GMM uses LnGRDP-2 and AB-GMM uses LnGDI-2.

The sign (*) indicates significant that the calculated z-static value is greater than the z-table, where the z-table value is:

Positif 0.5199

Negatif -0.4801

Source: Stata output, processed

Table 4 Long-term Multiplier

Variabel	SYS-GMM	AB-GMM
	Ln_GRDP (I) Coefficient	Ln_GDI (II) Coefficient
Ln_GRDP	-	0.738
Ln_LGR	0.972	0.732
Ln_GAF	0.048	0.0003
Ln_SAF	0.958	0.731
Ln_TS	0.971	-0.001
Ln_NRRS	0.956	-

Note :

For technical matters, we do not involve insignificant variables

Source: Excel, processed

In equation two, we find the fact that investment in the previous period of the Gender Development Index (GDI) is significant with $0 < \delta < 1$, where the coefficient value is 7.4 percent, meaning that in the short term GDI will increase by the value of the short-term coefficient. The short-term estimates presented in Table 3 highlight several important findings. First, the positive and significant coefficients for the lagged values of GRDP and GDI indicate a strong inertia or persistence in these variables over time. This suggests that the current levels of economic and gender development are heavily influenced by their respective past values, underscoring the dynamic and path-dependent nature of these processes.

Regarding the fiscal variables, the results show that Locally-Generated Revenue (LGR) and General Allocation Fund (GAF) have a positive and significant impact on both GRDP and GDI in the short term. This implies that when provinces are able to generate more revenue locally or receive larger transfers from the central government through the GAF, it can lead to improvements in economic output and gender development outcomes. This is in line with the theoretical expectations that greater fiscal resources at the local level can support investments and initiatives that drive economic growth and enhance gender equality. These results are similar to the findings of Anderson and Hans (2015); Kim, et al (2016); Gabeza-Garcia, et al (2018); Chakraborty and Piyush (2019).

In contrast, the Specific Allocation Fund (SAF) and Tax Sharing (TS) variables exhibit negative coefficients in relation to GDI. This suggests that the current structure and distribution of these fiscal instruments may not be effectively promoting gender development in the provinces. The authors hypothesize that the fiscal redistribution mechanisms, with a greater emphasis on centralized tax sharing and allocation of resources through the SAF, may not be adequately

addressing the gender-specific needs and inequalities within the provinces. These results are similar to findings of Chakraborty and Piyush's research (2019).

The long-term multiplier estimates presented in Table 4 provide further insights into the dynamics of these relationships. The positive long-term impact of GRDP on GDI aligns with the theoretical expectation that economic development and growth can contribute to improvements in gender equality and human development. However, the negative long-term effect of TS on GDI reinforces the notion that the current fiscal redistribution system, particularly the tax sharing arrangements between the central and local governments, may be hindering the progress of gender development. Additionally, the limited role of Natural Resources Revenue Sharing (NRRS) in influencing both GRDP and GDI suggests that the distribution of resource-based revenue may not be effectively translating into broader-based economic and social development outcomes. This finding highlights the need to revisit the allocation and utilization of natural resource revenues to ensure more inclusive and sustainable development across the provinces. These insights underscore the importance of a more balanced and efficient fiscal redistribution system that can better address the specific needs and challenges faced by different provinces, particularly in terms of promoting gender equality and human development. Policymakers should consider reforming the fiscal framework to enhance the alignment between resource allocation, economic growth, and the advancement of gender equality across the provinces.

4. CONCLUSION AND RECOMMENDATION

We are trying to detect how Gender Development (GDI) can increase through the redistribution effect from different sources of fiscal revenue. We assume that the interests of men and women are expected to converge, so it is strong for us to use the grand theory of equality derived from the Kuznets curve. Our model divides the results into short-term and long-term estimates for two equations. The results show that GRDP is influenced by LGR, GAF, and TS. While SAF and NRRS worsen GRDP. But in the long run, all the effects that worsen GRDP are corrected and have an impact on increasing GRDP in Indonesia. This shows that the macro stability of the redistribution policy depends on the time effect or the accumulation of fiscal revenue variables, in the long run, will increase GRDP. We find the same thing in the GDI variable, where GDI is influenced by GRDP, LGR, and GAF, while the role of SAF and TS worsens GDI but in the long run, will increase and increase GDI. In contrast to NRRS which is not significant to GDI. Finally, we conclude that the different types of fiscal revenues also influence their effect on GDI as a consequence of the characteristic characteristics of each fiscal revenue variable.

There is a time role to correct the poor fiscal redistribution through the effect of regional income on economic growth and gender development in the short term. We suggest that local tax sources paid to the center allocated through balancing funds such as GAF, SAF, TS, and NRRS need to consider gender aspects as well. The hope, fiscal redistribution through the role of regional revenue can converge the interests of men and women.

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