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Title	:	Designing ecological fiscal transfer policy using the Regional Incentive Fund (DID), Specific Allocation Fund (DAK), and Village Fund (DD) to realize sustainable forest governance in Indonesia
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Designing Ecological Fiscal Transfer Policy Using the Regional Incentive Fund (DID), Specific Allocation Fund (DAK), and Village Fund (DD) to Realize Sustainable Forest Governance in Indonesia

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Abstract

Ecological fiscal transfers (EFTs) are useful tools to mitigate the potential trade-off between the economic costs and environmental conservation. If managed properly, they will reward regions for investing in conservation and incentivizing the expansion of ecological areas. In recent years, EFT has been discussed by the Government of Indonesia and has been developed by adding ecological aspects to existing fiscal transfers or specifically employed for environmental uses. This study offers scenarios and simulations for implementing EFT in three existing fiscal transfers: (1) Regional Incentive Funds (DID), (2) Specific Purpose Funds for environment and forestry sectors (DAK LHK), and (3) Village Funds (DD). We find that our simulations distribute the existing fiscal transfer more equitable to regions having better ecological indicators. Also, the EFT system only changes the fiscal transfer's formulation by adding ecological indicators thus not imposing additional burden on the fiscal budget. We believe EFT enhances the subnational governments' roles in preservation allowing for better biodiversity and environmental management due to having local knowledge. We suggest in order to support EFT, the collection of various data and information related to ecological aspect is vital.

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Abstract

Ecological fiscal transfers (EFTs) are useful tools to mitigate the potential trade-off between the economic costs and environmental conservation. If managed properly, they will reward regions for investing in conservation and incentivizing the expansion of ecological areas. In recent years, EFT has been discussed by the Government of Indonesia and has been developed by adding ecological aspects to existing fiscal transfers or specifically employed for environmental uses. This study offers scenarios and simulations for implementing EFT in three existing fiscal transfers: (1) Regional Incentive Funds (DID), (2) Specific Purpose Funds for environment and forestry sectors (DAK LHK), and (3) Village Funds (DD). We find that our simulations distribute the existing fiscal transfer more equitable to regions having better ecological indicators. Also, the EFT system only changes the fiscal transfer's formulation by adding ecological indicators thus not imposing additional burden on the fiscal budget. We believe EFT enhances the subnational governments' roles in preservation allowing for better biodiversity and environmental management due to having local knowledge. We suggest in order to support EFT, the collection of various data and information related to ecological aspect is vital.

Keywords: Ecological Fiscal Transfer, Forest Cover, Indonesia, Regional

Introduction

As a mega biodiversity, Indonesia has a challenge in conserving and preserving biodiversity resources, including its natural resources. The impact of quality degradation of biodiversity, depletion of natural resources, and the environment resulting from over exploitation in the economic sector would be a risk that can hamper sustainable development in Indonesia. Any cost incurred due to the damage of biodiversity and the environment is more significant than the economic benefit from the utilization of natural resources itself (Saputra, 2018). This may include food crisis (Mendelsohn, 2009), higher intensity of natural disaster (Ghazali et al., 2018; Phillips et al., 2015), and a high-risk threat to public health (Wirawan, 2010; Kurane, 2010; Mirski et al., 2012; Smith et al., 2015). While biodiversity and environment preservation provide benefits, the challenge lies in financing due to the adherence of the paradigm that any funding for preserving biodiversity and the environment is considered a cost. On the contrary, preservation is an investment as it creates direct and indirect economic benefits.

As per 2001, Indonesia has adopted a fiscal decentralization system, namely intergovernmental fiscal transfers (IFT) as a means to redistribute tax revenues to subnational governments, which better identify the needs of their

jurisdictions. While IFT have become an important source for the subnational governments, IFT have been used sparingly for ecological function. Moreover, Indonesia's fiscal policy has yet to provide a fair fiscal capacity for regions rich in ecological functions (Mumbunan et al. 2012). Thus, Ecological Fiscal Transfer (EFT) policy may cover financing for ecological functions and more equitable distribution. EFTs allow subnational governments to utilize funds earmarked for ecological activities. Moreover, EFTs promote forest protection while compensating districts for revenue that would have been produced had the forest been converted to industrial activities (Putra et al. 2019).

In recent years, EFT has been developed by the Government of Indonesia (GoI). The EFT either adds ecological aspects to existing fiscal transfers, such as the Regional Incentive Funds (DID), or is specifically employed for environmental uses, as in the case of the Specific Purpose Funds for environment and forestry sectors (DAK-LHK). In the case of DID, since 2019, 10 district governments with high performance in waste management were provided incentives. In the case of the DAK-LHK, district governments located in critical land or polluted areas are given the opportunity to submit proposals for environment or forestry improvement programs funded by the grant.

Therefore, our study would contribute into the design of Indonesia's ecological fiscal transfer policy's blueprint. We believe in the current conditions and regulations, EFT may more likely be integrated with certain IFTs that are already in place. Thus, our study would like to analyse and reformulate three fiscal transfer instruments, namely: (1) Regional Incentive Funds (DID), (2) Specific Purpose Funds for environment and forestry sectors (DAK LHK), and (3) Village Funds (DD). These three transfers differ on the method of its distribution as DID is allocated as a reward for regions that have reached certain achievements, DAK LHK is a grant which is proposed by subnational government, while DD is distributed to villages based on certain formulations. These different transfers may be integrated differently giving multiple options to develop Indonesia's EFT.

Methodology

Regarding DID we assess the current environmental indicator such as Environment Quality Index (IKLH) with the performance of the Regional Budget (APBD) independence in each region. APBD independence is calculated by totaling Own Source Revenue (PAD) and Sharing Revenue Fund (DBH) divided by total expenditure. The analysis utilizes APBD realization data and IKLH from all province from 2017 – 2018. Using the quadranization method, we will be able to indicate which regions are the priority for the DID EFT.

Regarding DAK-LHK as there is no explicit provision of distribution mechanism of the DAK-LHK for each province, we simulate two models. First, assuming forestry activity criteria as the basis of consideration (see Table 1). This utilizes critical land requirements, protected forest, conservation forest cover, number of KTH with Medium criteria, and KUPS with Gold/Silver rating. Second, assuming the Ministry of Finance still considers the fiscal capability and regional cost index in determining DAK allocation per province. For the second simulation, it is proposed to revise the formula 20% from Regional Fiscal Index, 60% from Technical Index (IT), and 20% from Construction Cost Index (IKK).

Table 1: Weighting Simulation on Activity Criteria Funded by DAK

Criteria	Weight (%)
Regions which have harshly critical and critical land/Wide Area of Forest and Land Rehabilitation (RHL):	
- **Less than 100.000 hectare**	10
- **100.000 – 500.000 hectare**	17
- **500.000 – 1.000.000 hectare**	20
- **More than 1.000.000 hectare**	23

Criteria	Weight (%)
Have conservation or protected area more than or equal to 30% of its regional area	30
TOTAL	100 %
Regions that have Forest Management Units and Forest Farmers Group institutional with medium criteria	0.1
Regions that have social forestry with silver and or gold rating.	0.1

Source: Authors' Illustration

In the case of village funds, we first estimate the impact of the village fund to poverty headcount at district level utilizing an Instrumental Variable Fixed effect using 2015 – 2019 district data. We use both the total village fund and disaggregated the village fund (basic allocation, formula allocation, and affirmation allocation) as the main independent variable. The model is as follows

***First Stage*:**

$$D_{i,t}^{k} = \delta_0 + \delta_1 IKK_{i,t} + v_{i,t}$$

***Second Stage*:**

$$P0_{i,t} = \alpha_0 + \alpha_1 \widehat{lnDD_{i,t}} + \sum_{g=1}^{n} \alpha_g X_{g,i,t} + \theta_i + e_{i,t}$$

$$P0_{i,t} = \beta_0 + \beta_1 lnAD_{i,t} + \beta_2 \widehat{lnAF_{i,t}} + \beta_3 lnAA_{i,t} + \sum_{g=1}^{4} \beta_g X_{g,i,t} + \theta_i + \varepsilon_{i,t}$$

After the regression, we utilize the estimated coefficients as the basis for our simulation. Using the 2019 poverty headcount as the base scenario, we estimate the poverty headcount based on a new allocation which adds forest area as part of the village fund formulation (see Table 2).

Table 2: Ecological Based Village Fund Scenario Formulation

Scenario	AD (%)	AF (%)		AA (%)		DD (%)
		Non-Forest	Forest	Non-Forest	Forest	
Baseline	72	25	0	3	0	100
S1: Forest in AA	72	25	0	0	3	100
S2: Forest in AF, low proportion	72	22	3	3	0	100
S3: Forest in AF, high proportion	72	15	10	3	0	100
S4: Forest in AF, low proportion, from AD	69	25	3	3	0	100
S5: Forest in AF, high proportion, from AD	62	25	10	3	0	100

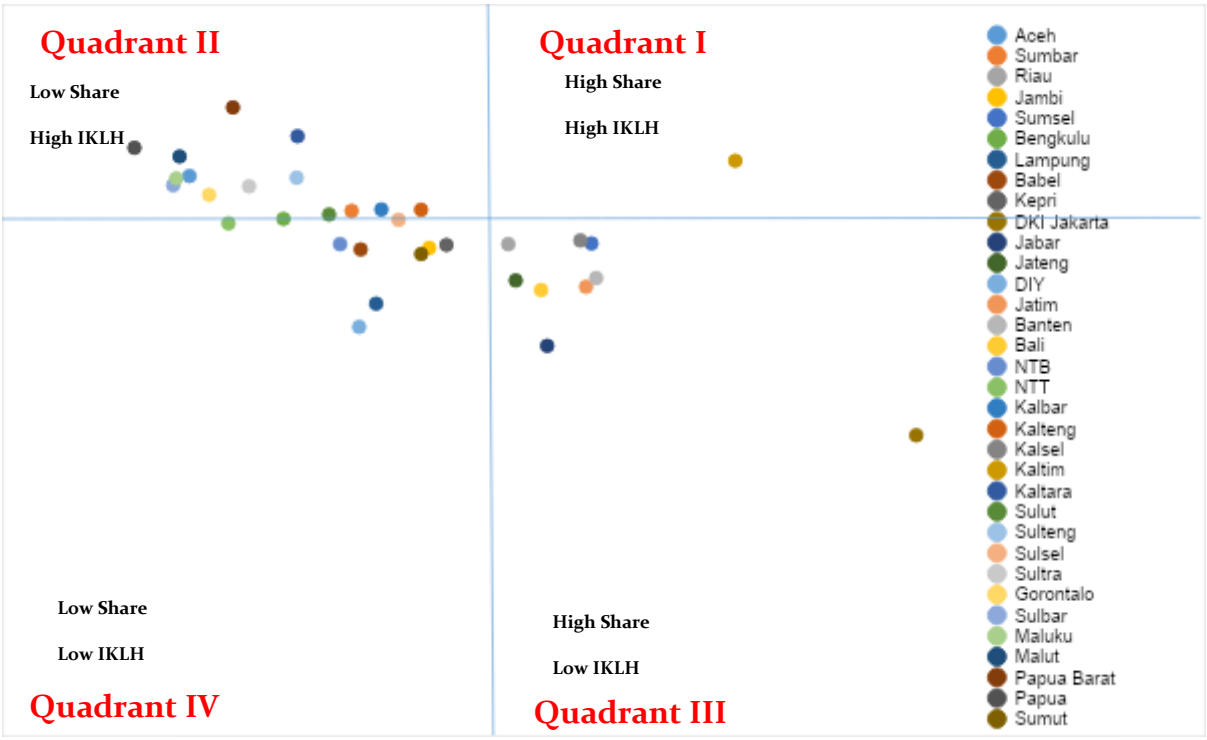
Table explanation: Forest=Forest Cover Area; AD=Basic Allocation; AF=Formula Allocation; AA=Affirmation Allocation; DD=Village Funds. S1,2, etc=Scenario 1, 2, etc.
Source: Authors' Illustration

Results

Regional Incentive Funds (DID)

Regarding the DID EFT, we propose two options: (1) an indicator of environment and forestry to be integrated into the performance criteria, namely the IKLH or (2) adding sustainable criteria as the seventh criteria in the process categories. IKLH consists of three environment indicators: quality of river water, quality of air, and forest coverage (KLHK, 2016). IKLH combines indicators regarding land coverage/management and environmental pollution issues.

Figure 1: Mapping of Regional Share and IKLH Quadranization



Source: Author's Calculation

Based on this analysis, regions that have lower shares (dependent on transfers) are more likely to change policies if the design of the transfers' change. This includes regions in Sulawesi, Papua, Kalimantan, and Nusa Tenggara. The DID EFT will incentivize these regions to improve environmental conditions to increase their revenues. This is a win-win solution as the more the environment is preserved or improved, the more revenue is received by subnational governments. Thus, the subnational government does not face trade-offs between environmental preservation with economic gains.

Specific Purpose Funds for environment and forestry sectors (DAK LHK)

Our simulation shows that all provinces with a high percentage of protected forest and conservation forest coverage received higher allocation compared to the 2019 allocation (see Table 3). Conversely, the distribution of DAK-LHK allocation was concentrated in Java Island with broad critical land areas. DAK-LHK allocation for West Java, Central Java, and East Java that received the largest DAK-LHK in the fiscal year of 2019 were allocated better considering that they did not have any forest management units (KPH). Moreover, the second formula also allocates higher transfers for protected-forest and conservation forest coverage provinces. These simulations had also resulted in increased elasticity between the number of Forestry Physical DAK and protected forest coverage

areas compared to the 2019 DAK-LHK allocation where Simulation 2 had a higher elasticity compared to Simulation 1.

Table 3: Comparison of Forestry Physical DAK Allocation Year 2019 and Simulation Results

Provinces	Forestry Physical DAK Allocation (IDR Billion)		Simulation 1		Simulation 2	
		% HL & HK coverage with the total area (%)	Allocations (IDR Billion)	Changes (+/- IDR Billion)	Allocations (IDR Billion)	Changes (+/- IDR Billion)
Aceh	6.20	49.31	15.77	9.57	13.40	7.20
North Sumatera	2.12	16.23	8.41	6.29	9.47	7.35
West Sumatera	12.50	35.13	16.99	4.49	13.96	1.46
Riau	5.50	7.55	7.09	1.59	8.47	2.97
Jambi	5.30	14.98	6.10	0.80	6.53	1.23
Bengkulu	2.70	30.12	15.87	13.17	12.95	10.25
South Sumatera	1.70	8.58	7.22	5.52	8.21	6.51
Lampung	10.90	9.18	9.43	-1.47	9.14	-1.76
Riau Islands	0.60	13.22	3.56	2.96	5.54	4.94
Bangka Belitung Islands	3.40	7.4	3.63	0.23	4.83	1.43
Banten	1.40	18.77	5.61	4.21	7.88	6.48
Special Capital Region of Jakarta	0.00	0.75	0.00	0.00	0.00	0.00
West Java	20.30	12.3	7.02	-13.28	13.24	-7.06
Central Java	18.00	19.18	5.87	-12.13	9.84	-8.16
Special Region of Yogyakarta	2.00	7.76	3.43	1.43	4.84	2.84
East Java	11.70	15.46	6.53	-5.17	11.70	0.00
Bali	2.40	16.89	3.49	1.09	5.80	3.40
NTB	8.60	27.88	4.09	-4.51	5.37	-3.23
NTT	15.30	39.00	17.32	2.02	13.90	-1.40
West Kalimantan	8.90	24.50	8.38	-0.52	8.57	-0.33
Central Kalimantan	6.10	14.60	0.00	-6.10	0.00	-6.10
South Kalimantan	3.90	14.40	7.65	3.75	8.65	4.75
East Kalimantan	1.20	27.40	0.00	-1.20	0.00	-1.20
North Kalimantan	3,20		0.00	-3.20	0.00	-3.20
North Kalimantan	15.70	31.64	15.77	0.07	13.20	-2.50
Central Sulawesi	11.50	41.11	16.03	4.53	12.97	1.47
South Sulawesi	17.60	35.95	18.67	1.07	15.64	-1.96
West Sulawesi	9.30	31.99	13.69	4.39	11.18	1.88
South East Sulawesi	20.70	72.44	16.53	-4.17	13.44	-7.26
Gorontalo	14.30	37.19	15.87	1.57	12.69	-1.61
Maluku	5.90	19.95	5.97	0.07	6.90	1.00
North Maluku	14.30	25.18	6.07	-8.23	6.75	-7.55
Papua	9.00	43.18	17.02	8.02	15.71	6.71
West Papua	13.20	45.90	15.77	2.57	14.08	0.88

Source: Authors' Calculation

This simulation proves that the ecological indicator included in the DAK-LHK formulation gives an incentive to the region that is rich in environmental functions in building capacity in regional fiscal. Furthermore, its distribution allocation is more equitable as it does not accumulate to areas on Java Island. Still, it is impartially distributed

between the regions by following ecological function owned by the regions. Thus, in principle, the governance of ecological fiscal transfer can be implemented in the mechanism of DAK-LHK.

Village Funds (DD)

Our regression results show that the village fund decreases the poverty headcount (see Appendix 1). In Models 1, 2, and 3, the coefficient on the village fund is negative, meaning that the higher the transfer to the district, the lower the poverty headcount in the region. Whereas, models 4 and 5 show that the higher the formula allocation and affirmation allocation, the lower the poverty headcount, while the basic allocation has a positive impact on the poverty headcount. These results can be explained by increased economic development due to the village fund (Aslan et al. 2019; Rachma et al. 2019).

From the simulation results, the study finds that simulations 4 and 5 are the best scenarios, with Scenario 5 being the most effective. By including ecological indicators in the simulation, the objectives of the village fund to reduce poverty can still be achieved. The ideal scenario embeds the ecological indicators into the allocation formula by using a reallocation from the basic allocation. Using the ecological village fund, all districts experience a decrease in their poverty rate (see Table 4).

Table 4: Compilation Results of the Ecological Based Village Funds Scenarios

Scenario	Scenario Ranking	Change of Poverty Rate Descriptive Statistics			Number of Districts experiencing	
		Min	Median	Max	Higher Poverty Rates	Lower Poverty Rates
1	irrelevant	0,876 (-)	0,13 (+)	0,024 (+)	208	226
2	irrelevant	0,048 (+)	0,02 (+)	0,016 (-)	285	149
3	irrelevant	0,188 (+)	0,15 (+)	0,054 (-)	285	149
4	Second	0,0003 (-)	0,03 (-)	0,057 (-)	64	370
5	First	0,004 (-)	0,04 (-)	0,168 (-)	0	434

Note: the rank becomes irrelevant if it does not decrease the poverty rate median
Source: Authors' Estimation

Discussion

Fiscal decentralization in Indonesia has provided the opportunity to assign the fiscal function to the lowest level of the government, improving the accuracy of service provision at the community level (Ring and Schröter-Schlaack,2011; Shah 2007). Moreover, as IFT are major contributors to subnational government's revenues, the inclusion of ecological indicators will incentivize subnational governments to maintain ecological indicators to sustain their revenue. EFTs based on protected area indicators have been found to increase protected areas (Loft et al. 2016).

The current EFT proposed does not alter the basic principle of the fiscal transfer system but only changes its formulation by adding ecological indicators, which means that the EFT does not impose a burden on the fiscal budget, such as the ICMS-E (Ring 2008; Vogel 1997). It is merely a reallocation of existing funds. The EFT proposed mostly utilizes the forest cover in its formulation and redistributes funds based on environmental indicators. Incentive-based transfers help incentivize regions to improve their environmental performance compared to program-based transfers, which only enhance the regions' capabilities (Richards 2000; Weingast 2009). This strategy will also mitigate issues arising from the small size of the EFT (Schröter-Schlaack et al. 2014). The

magnitude of the transfer, combined with its incentive-based nature, creates a potential fiscal tool to improve ecological conditions.

Conclusions

Currently, Indonesia's development depends on natural resources exploitation, which has been proven to harm the balance of development and ecology. High rates of economic growth from natural resources exploitation are unsustainable, and their foundations are fragile. Therefore, we need a change in our development paradigm, which balances economic, social, and ecological aspects. Hence, EFT policy become one of the breakthroughs as it achieves sustainable development by addressing environmental issues while providing financing and achieving economic and social benefits of biodiversity and environment preservation. Moreover, EFT enhances the subnational governments' roles in preservation allowing for better biodiversity and environmental management due to having local knowledge. EFT increases regional capacity in preservation of ecological functions and strengthens development and financial relations between the central government and the subnational government in achieving national priority targets and programs, such as poverty alleviation, food security and disaster.

In addition, EFT increases the government capacity as well in managing various data and information related to ecological aspect, which so far, we have had minimum data and information. The use of ecological indicator in the formulation of ecological fiscal transfer, has urged each subnational government and central government to provide ecological data, since this data become the basis of calculation for transferring fund allocation to the region. The well-managed data and information will become the useful big data in preparing development plan and preparing program. This collection of data may also give alternative indicators that may be used for EFT allocation as Indonesia's natural resource is diverse among regions. Hence, the government should take initiative to encourage this policy becomes a framework in fiscal decentralization policy in Indonesia. Without those actions, we will continue to be trapped in exploitative development paradigm, failing to establish the balance and sustainable development.

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References

Aslan, Darma, D.C., Wijaya, A., 2019. Have village funds impact growth economy and poverty rate? Int. J. Sci.

Technol. Res.

Ghazali, D.A., Guericolas, M., Thys, F., Sarasin, F., Arcos González, P., Casalino, E., 2018. Climate change impacts on disaster and emergency medicine focusing on mitigation disruptive effects: An international perspective. Int. J. Environ. Res. Public Health. https://doi.org/10.3390/ijerph15071379

Kurane, I., 2010. The Effect of Global Warming on Infectious Diseases. Osong Public Heal. Res. Perspect. https://doi.org/10.1016/j.phrp.2010.12.004

Loft, L., Gebara, M.F., Wong, G.Y., 2016. The experience of ecological fiscal transfers: Lessons for REDD+ benefit sharing, The experience of ecological fiscal transfers: Lessons for REDD+ benefit sharing. https://doi.org/10.17528/cifor/006168

Mirski, T., Bartoszcze, M., Bielawska-Drózd, A., 2012. Impact of climate change on infectious diseases. Polish J. Environ. Stud.

Mumbunan, S., Ring, I., Lenk, T., 2012. Ecological fiscal transfers at the provincial level in Indonesia, UFZ Discussion Papers. https://doi.org/10.1111/j.1548-1433.2010.01225.x

Phillips, M.C.K., Cinderich, A.B., Burrell, J.L., Ruper, J.L., Will, R.G., Sheridan, S.C., 2015. The effect of climate change on natural disasters: A college student perspective. Weather. Clim. Soc. https://doi.org/10.1175/WCAS-D-13-00038.1

Putra, R. alam surya, Muluk, S., Salam, R., Untung, B., Rahman, E., 2019. Mengenalkan Skema Insentif Fiskal Berbasis Ekologi di Indonesia: TAKE, TAPE, dan TANE.

Rachma, D.D., Somaji, R.P., Kustono, A.S., 2019. Government expenditure, poverty and income inequality in Indonesia: New evidence from village funds. Int. J. Sci. Technol. Res.

Richards, M., 2000. Can sustainable tropical forestry be made profitable? The potential and limitations of innovative incentive mechanisms. World Dev. https://doi.org/10.1016/S0305-750X(00)00003-6

Ring, I., 2008. Integrating local ecological services into intergovernmental fiscal transfers: The case of the ecological ICMS in Brazil. Land use policy. https://doi.org/10.1016/j.landusepol.2007.11.001

Ring, I., Schröter-Schlaack, C., 2011. POLICYMIX - Assessing the role of economic instruments in policy mixes for biodiversity conservation and ecosystem services provision. Instrument Mixes for Biodiversity Policies. Instrum. Mix. Biodivers. Policies. POLICYMIX Rep. 2/2011.

Saputra, W., 2018. Efektivitas kebijakan fiskal dalam pengelolaan komoditas kelapa sawit untuk upaya perlindungan lingkungan hidup.

Schröter-Schlaack, C., Ring, I., Koellner, T., Santos, R., Antunes, P., Clemente, P., Mathevet, R., Borie, M., Grodzińska-Jurczak, M., 2014. Intergovernmental fiscal transfers to support local conservation action in Europe. Z. Wirtschgeogr. https://doi.org/10.1515/zfw.2014.0007

Shah, A., 2007. Participatory budgeting, PUBLIC SECTOR GOVERNANCE AND ACCOUNTABILITY SERIES. https://doi.org/10.4018/ijpada.2015040103

Smith, K.R., Woodward, A., Campbell-Lendrum, D., Chadee, D.D., Honda, Y., Liu, Q., Olwoch, J.M., Revich, B., Sauerborn, R., Confalonieri, U., Haines, A., Chafe, Z., Rocklov, J., 2015. Human health: Impacts, adaptation, and co-benefits, in: Climate Change 2014 Impacts, Adaptation and Vulnerability: Part A: Global and Sectoral Aspects. https://doi.org/10.1017/CBO9781107415379.016

Vogel, D., 1997. Trading up and governing across: Transnational governance and environmental protection. J. Eur. Public Policy. https://doi.org/10.1080/135017697344064

Weingast, B.R., 2009. Second generation fiscal federalism: The implications of fiscal incentives. J. Urban Econ. https://doi.org/10.1016/j.jue.2008.12.005

Wirawan, I.M.A., 2010. Public health responses to climate change health impacts in Indonesia. Asia-Pacific J. Public Heal. https://doi.org/10.1177/1010539509350912

Appendix

Appendix 1: Estimation Results of Village Fund Impact on Poverty Headcount

Dependent Variable: P0 (Poverty Headcount)					
Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Village Funds (Ln)	-0.639***	-0.654***	-0.514***		
	(0.213)	(0.211)	(0.185)		
Allocation Village Funds (Ln)		-0.0508***	-0.0295**	-0.0167	-0.0121
		(0.0186)	(0.0147)	(0.0183)	(0.0162)
Basic Allocation Village Funds (Ln)				0.0274***	0.0254***
				(0.00640)	(0.00599)
Formula Allocation Village Funds (Ln)				-0.375**	-0.371**
				(0.178)	(0.172)
Affirmation Allocation Village Funds (Ln)				-0.0603***	-0.0505***
				(0.00306)	(0.00305)
Secondary Education NER (%)			-0.0124*		-0.00482
			(0.00691)		(0.00614)
Proportion of Formal Workers (%)			-0.0963***		-0.0461***
			(0.00706)		(0.00596)
Rural Population (Ln)			1.339***		0.720**
			(0.490)		(0.285)
Constant	15.96***	17.38***	1.312	11.22***	5.279***
	(0.106)	(0.497)	(1.143)	(0.491)	(1.146)
Observations	2,167	2,167	2,163	2,167	2,163
R-squared	0.011	0.014	0.250	0.413	0.463
Number of id_sus15	434	434	434	434	434
F-Stat	9.021	7.687	47.42	136.9	82.33

Robust standard errors in parenthesis, *** p<0.01, ** p<0.05, * p<0.1
Source: Authors' Estimation