# Empowering Village Community by Transfer Fund Scheme: Evidence from The Village Fund Implementation in Indonesia

By

**ABDUROHMAN, Syifa**

**THESIS**

Submitted to

KDI School of Public Policy and Management

In Partial Fulfillment of the Requirements

For the Degree of

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Committee in charge:

Professor Liu, Cheol, Supervisor

Professor Joo,Yu Min

Professor Kim, Taejong

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## Abstract

This research aims to determine the impact of Village Fund implementation in 2015 on urban-rural inequality that related to village empowerment, utilizing data from Ministry of Finance and Statistics Indonesia from 2010 to 2022. Using Difference in Difference methodology, this paper addresses the question of how the Village Fund policy affects the socioeconomic outcomes at district level. This study discovers that the socioeconomic outcomes are significantly affected by the policy. I find that years of schooling increases by 0.16 years, poverty rate decreases by 0.53 percentage points, life expectancy rises by 0.22 years, and log per capita spending increases by 0.76 percentage points. While plotting fund allocations and cost constructions index as a subsample criterion, the results tell dynamics findings. Increasing the VF fund allocations does not necessarily increase the impact of the socioeconomic outcomes. On the other hand, provinces with higher cost construction index will have more impact on years of schooling and poverty alleviation. These findings suggest that the government should improve its planning, mechanism, and management to increase the quality of the policy.

Keywords: *village funds, poverty alleviation, human development index, regional inequality, intergovernmental transfer*

## Acknowledgment

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# Introduction

In the past decade, many scholars have had a growing interest in how to define the disparity between urban and rural socioeconomic development which affects the living standard quality of the people in both regions (see Aritenang, 2019; Dabson, 2019; Dorelien & Xu, 2020; Lagakos, 2020; Tadjoeddin, 2019). In the developing world, there were leading differences in living standards between urban and rural regions, which can be measured by income, consumption, or another aspect of life (Lagakos, 2020). Practically, there will always be inequality between the two regions, especially in developing countries including Indonesia. Aritenang (2019) claims that eastern rural regions have asked for more equal development caused by severe disparities, demanded larger income transfers, and more authority to administrate their regions.

Several recent studies have examined regional disparity in Indonesia (see Aritenang, 2019; Laksono et al. 2019; Nugraha & Prayitno, 2020; Tadjoeddin, 2019). Many policies and programs from every level of government structure have been applied to tackle this matter by empowering the rural or village community, providing small and medium enterprises subsidies, and realizing some transfer schemes. Indonesia's Ministry of Finance (MoF) has implemented many intergovernmental transfer schemes with various goals and purposes. One of the prominent policies is the Village Fund (VF) that is utilized to finance the village's operations, infrastructure, and community empowerment. The Village Fund has been implemented since 2015 and has realized more than 300 trillion rupiahs or more than 20 billion USD (MOF Republic of Indonesia, 2022). In addition, many scholarships are constructed to find the impact of the VF on socioeconomic variables such as gross domestic regional product, poverty index, and human development index in certain regions in Indonesia (Tarmizi & Miksalmina, 2020 in

Aceh; Pertiwi & Arif, 2022 in Central Java; Rimawan, 2020 in West Nusa Tenggara; Ripandi, 2018 in South Kalimantan). However, few studies have investigated the impact of intergovernmental transfer schemes on reducing socioeconomic development inequality between households in Indonesia who live in urban compared to rural regions aggregated at the national level.

This research will cast light on examining the impact of the VF on reducing the socioeconomic development inequality between urban and rural regions that related to village empowerment. It was emphasized by Dabson (2019) that actions should be conducted at every governmental level to improve socioeconomic opportunity and health. This study will contribute to the research in the field of urban-rural development, Southeast Asian area studies, inclusive development policy, public policy impact evaluations, and development economics. In addition, the findings of this research will enable the government, international organizations, and non-governmental organizations to build and implement more valuable and potential regional development policies in the future.

Tadjoeddin (2019) argues that in terms of the regional gross domestic product after the implementation of reindustrialization policies by the government, the Gini coefficient shows a decline over the years after the post-new order era in Java, the most populated island in Indonesia. This finding will become a basis for the research hypothesis, that the VF have an impact on reducing socioeconomic inequality between urban and rural regions. The following research questions will guide this paper:

1. Does the VF policy that has been implemented by the government change socioeconomic inequality between urban and rural regions in Indonesia?

2. In what directions does the VF policy affect the socioeconomic inequality in rural regions in Indonesia?

These concerns will become two major questions to address in this paper.

This research paper is organized into five sections. The first chapter presents the introduction which details the key issues that led to this study, the background of the study, the research question, and the study objectives. Chapter 2 is a review of relevant literature and introduces the theoretical framework. The third chapter will describe the research framework, hypothesis, data collection, methodology, and empirical strategy. Chapter 4 will examine the data and present the result from the empirical analysis as well as a descriptive interpretation of the data and discussion. Then the final chapter provides conclusions, policy implications, and limitation of the research.

# Literature review

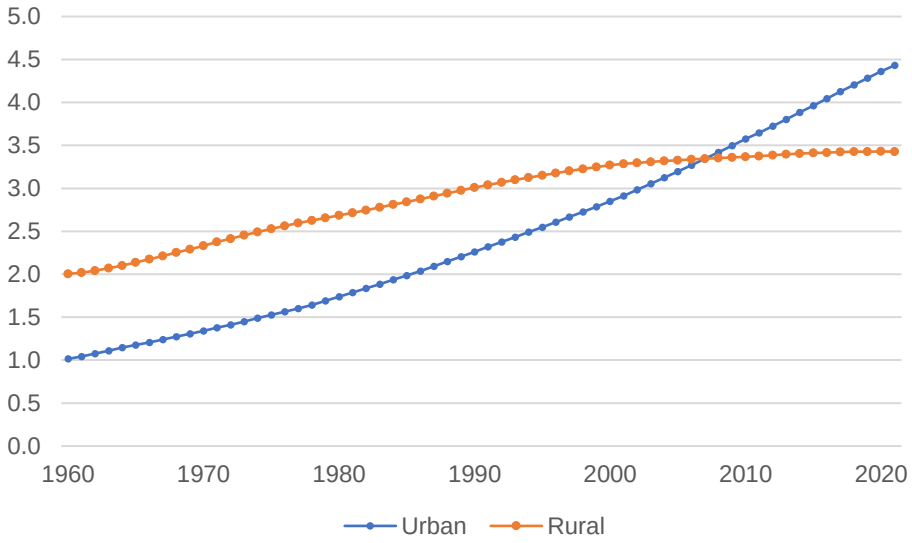
## 2.1. Regional Inequality

What is regional inequality? Many aspects can be measured to examine why this situation occurs. Bluedorn et al. (2019) simply argue that regional inequality is the differences in economic performance between regions within countries. Young (2013) argues that within a country inequality is related to the ownership of the factors of production. However, regional inequality will be too limited if only measured from the economic assessment. On the other perspective, Dunford (2007) argues and emphasizes that regional inequality is the difference in human welfare between those different places involving quality of life, wealth, and living standards which become major measured aspects.

Defining separate locations where most people are living will lead to the divergence between urban and rural inhabitation. Since 2017, more than 4 billion people (55%) have lived in urban areas (Our World in Data, 2018) and the difference keeps increasing, as shown in Figure 1. Furthermore, around 80% of the global gross domestic product was generated in urban areas (World Bank, 2023). These informations indicate regional inequality between urban and rural areas exists in terms of economic perspective.

**Figure 1**

*World Population Living in Urban and Rural Areas*




*Note.* Customized from Our World in Data

A robust body of research has been conducted to determine the regional inequality between urban and rural areas measured by two major variables which consist of, firstly social aspects (see Burger et al., 2020; Dorelien & Xu, 2020 on health disparity; Van Phan & O'Brien, 2019 on health and education) and secondly economic aspects (see Lee & Choong, 2019; Nayyar, 2008; Nugraha & Prayitno, 2019 on infrastructure gaps; Tadjoeddin, 2019; Young, 2013). Burger et al. (2020) argue that "urban populations are, on average, happier than rural populations in that they return higher levels of happiness" (p. 86). In terms of economic aspects, Nayyar (2008) identifies per capita private investment, literacy rate, infant mortality rate, and per capita public investment as important determinants of the steady-state level of income which become a significant feature of regional disparities in India. In addition, many studies also combine these two variables in determining urban-rural disparities (see Dabson, 2019; Lagakos, 2020; Tuano & Cruz, 2019).

Knowing how urban-rural disparity can be assessed, we can analyze how to diminish regional inequality. Many approaches and strategies can be implemented by the public or private sector, or even citizens who live in those regions to give their suggestions or recommendations However, on many occasions, government-driven policies would best fit to become a catalyst addresing the issues (Tadjoeddin, 2019). As I mentioned in the previous section, Dabson (2019) argues that actions should be conducted at every governmental level to improve socioeconomic opportunity and health.

**2.2. Inter-Governmental Transfer (IGT)**

One of the emerging policies implemented by the government to reduce regional inequality is the Inter-Governmental Transfer (IGT). Many studies have strongly argued that IGT can reduce regional inequality (see Aritenang, 2019; Litschig & Morrison, 2013; Takahata, 2021). It was emphasized by Aritenang (2019) that IGT and specific allocation grants highly influence local capital and infrastructure spending. Litschig and Morrison (2013) state that raising the intergovernmental transfer in Brazil will increase the literacy rate by 4 percentage points and increase the per capita income which hand in hand with reducing the poverty rate by about 4 percentage points.

Conversely, there is still debate on the impact of the policies on reducing regional inequality (see Mutembei, 2022; Agegnehu & Dibu, 2016; Jiang & Zhao, 2012; Munoz et al., 2016). Mutembei (2022) claims that inter-governmental transfer increases the poverty incidence in Africa. Jiang and Zhao (2012) argue that increasing transfer payments to inland regions in China can increase regional inequality and decrease national welfare. Agegnehu and Dibu (2016) state that decentralization affects poverty reduction by a trivial change in Ethiopia. In Latin American Countries, Munoz et al. (2016) emphasize that the existing intergovernmental transfer

can reduce regional revenues, even though there is still a large fiscal disparity among subnational governments in 11 countries in this region. However, Munoz et al. (2016) claim that "the disparity was caused due to the role of revenue sharing schemes that typically incorporate some equalizing elements" (p. 57). This finding indicates that there will be some logical reason for the contrasting argument in the literature.

A special case was found by Lu (2015) when using fuzzy regression discontinuity design on a mixed intergovernmental transfer program in China, Lu (2015) finds no systematic evidence that the country would benefit from education, however, the program still has a positive impact on reducing poverty. This case indicates that even though the IGT has no effect on a particular outcome, it does not mean that IGT will not affect the other ones.

**2.3. IGT in Indonesia**

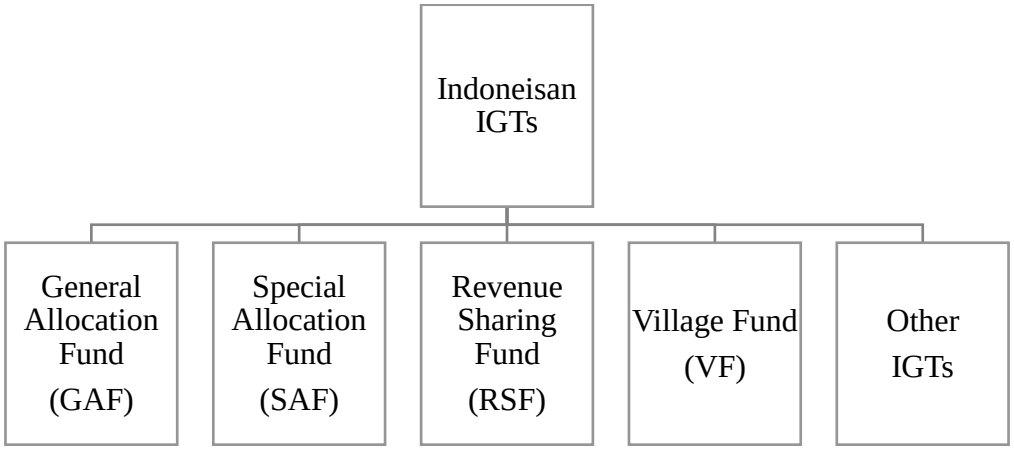
In 2022, the Indonesian government enacted the Central and Local Government Inter-Financial Affairs Laws which retracted the Local Tax and Retribution Law and Central-Local Government Financial Parity Law. It made a concise and adequate guideline to operate the local government finance. Through this regulation, the central government should allocate and distribute the IGT to finance the local governments in undertaking local affairs.

IGT in Indonesia consists of five major transfer schemes (Figure 2). First is the General Allocation Fund (GAF) allocated to reduce the regional fiscal imbalance. The mechanism of the GAF is calculating the fiscal gap in every sub-national government which is simply deducting operational spending on local revenue. The allocation will be varied among regions based on its fiscal gap. Second is the Special Allocation Fund (SAF), allocated to finance a particular program related to the national priority target and its transfer mechanism is formulated by particular concern on achieving its priority such as building infrastructure, providing good health

services, and making a better education. Third is the Revenue Sharing Fund (RSF), allocated based on the percentage of certain public revenue which is weightily distributed to national-revenue generated regions to reduce fiscal imbalance and as well as to other non-revenue generated regions to overcome the negative externalities.

**Figure 2**

*Structure of Indonesian IGTs*



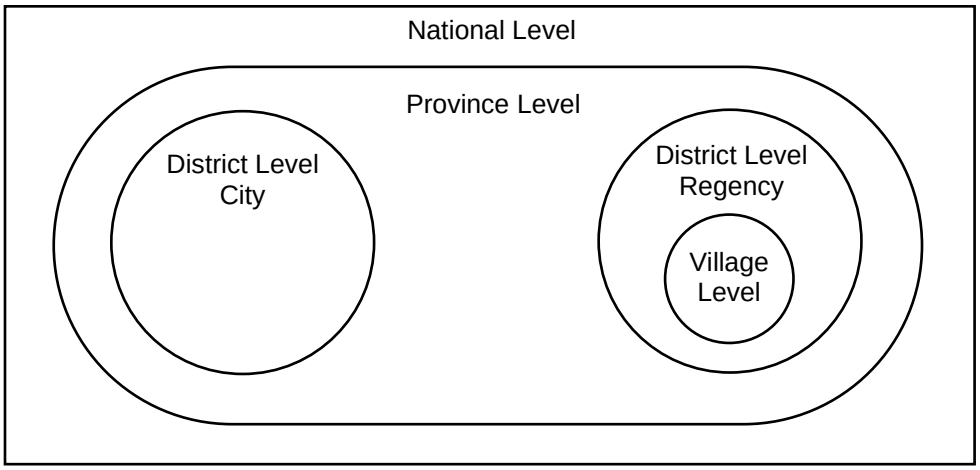

*Note.* Ministry of Finance

The GAF, SAF, and RSF are the IGTs allocated for any sub-national government regardless of their special characteristics. However, the Village Fund (VF) is provided specifically to village level government. Indonesian sub-national government consist of province level, district level, and village level (Figure 3) which led by officer through election process. Province level only consists of one type of government led by governor, while district level consists of two types of government which are city led by mayor and regency led by regent (head of regency). Village level government that is led by head of village is unique since it is located only in the regency area, despite there will be several villages which are in the city area. Based on this information, it commonly says that regency represents rural area since the village governments are located in. Due to this unique and special characteristic of the village

government, the VF became the main interest in this research. Lastly, other IGTs, which consist of Local Incentive Funds (LIF) that are allocated for certain regions that achieve a certain good governance performance, and Special Autonomous Funds, and Jogjakarta Privilege Funds that are only allocated to certain regions like Nanggroe Aceh Darussalam, Jogjakarta, and Papua.

**Figure 3**

*Illustration of Indonesian Government Level*

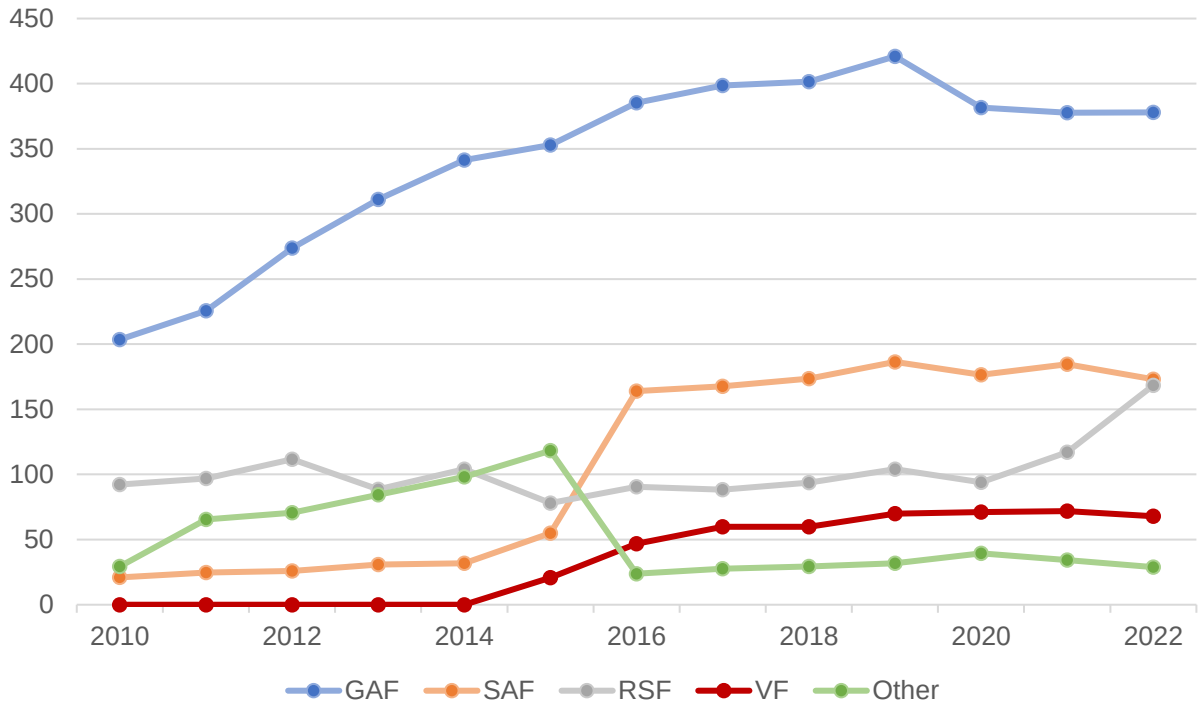



*Note.* Government of Indonesia

The realization of IGTs in Indonesia has been increasing nearly 136% from 2010 to 2022. More than half of the proportion is contributed by the GAF whose yearly average realization is 342.45 trillion rupiah, followed by SAF and RSF with 108.85 and 102.08 trillion rupiah on average. In Figure 4, other IGTs have been falling since 2016 due to the restructuring of their components. Three major components, which are the School Operational Assistance (SOA), the Teacher Professional Allowance Fund (TPAF), and Health Operational Assistance (HOA) were relocated under the SAF classifications. The VF is one of the emerging IGTs in Indonesia and its realizations in 2022 are more than 3 folds from 2015, the initial year when it was implemented.

**Figure 4**

*Yearly Indonesian IGTs Realizations 2010-2022 (Trillion Rupiah)*




*Note.* Ministry of Finance

### *2.3.1 The Village Fund*

Despite the various findings in the literature, I cannot deny the positive output of the IGT on reducing regional inequality. One of the emerging IGT policies implemented by the Indonesian government is the Village Fund (VF). As I mentioned earlier in the introduction, VF is one of the IGTs provided by the Indonesian central to village government on financing the village's operations, infrastructure, and community empowerment (Indonesian Law No 1, 2022).

To achieve the purpose of the VF policy, which is bringing a better village community, the government set yearly priority of fund utilization which is simultaneously aligned with its major aims of funding village operations, building infrastructure, and empowering the village community. From the implementation in 2015 until 2020, the priority guided all the village

government to focus on village development and empowerment. Village development focuses on several priorities: first is building the basic level of physical infrastructure for food sustainability, village settlement, basic health facilities, education, and culture; second is building the basic infrastructure for economic and distribution; last is building the sustainable and renewable energy infrastructure and green environment preservation activities.

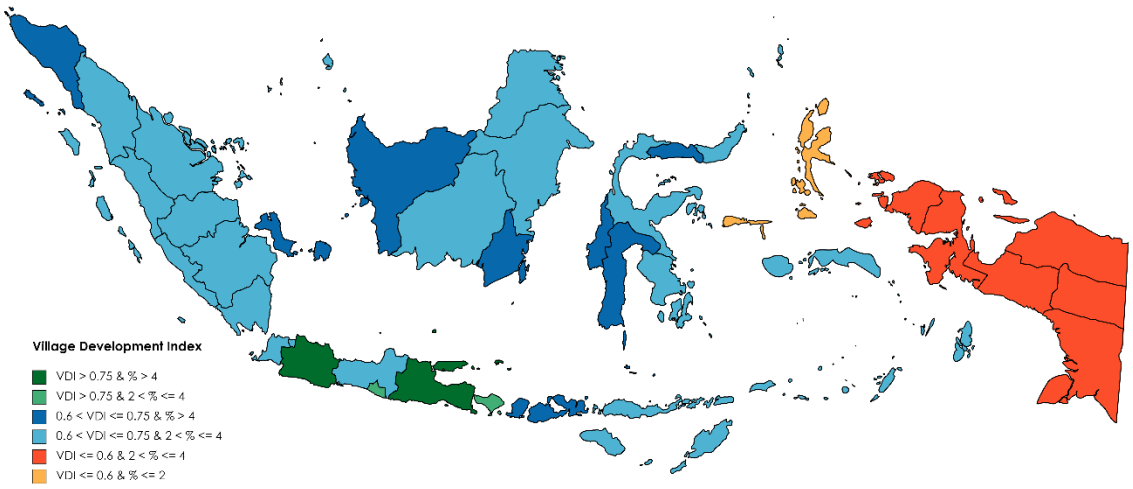
While village development is mostly focused on building infrastructures, village empowerment mainly focuses on: (1) increasing citizen's participation in arranging the village development planning, execution, and evaluation; (2) building the village capacity by providing education, capacity building, training skill on village empowerment; (3) economic and financing support for micro and small enterprises in the village; and lastly, giving support for green environment preservation activities and natural disaster preventions. However, due to covid-19 outbreak, the government has promoted other priorities that focus on economic recovery to achieve village sustainability development goals. Two major additional priorities are the Village Cash Transfer Assistance (VCTA) and stunting prevention.

The Ministry of Villages, Development of Disadvantaged Regions, and Transmigration (MoVDDRT), as a line ministry responsible for supervising VF utilizations, has formulated the weighted index called the Village Development Index (VDI) to measure the development progress since 2016. The weighted index consists of three sub-major indices which are the Social Sustainability Index (SSI), the Economic Sustainability Index (ECSI), and the Environmental Sustainability Index (EVSI). All the indices are measured by Village Potential Data which issued by Statistics Indonesia. SSI will be measured by education, health, social capital, and settlement variables. ECSI consists of production, regional openness, trade, logistics, and financing access measurements. EVSI will be assessed by its environmental quality and natural disaster responses.

By utilizing VDI, we can understand which province has better development and vice versa. However, due to the limited data, I calculate the combination between province-level VDI in 2022 and its growth compared to the previous year, as shown in Figure 5. The eastern part of Indonesia, Papua Island and North Maluku Islands, has a severe result due to their VDI in 2022 being below 0.6 (orange-colored) while West Java, East Java, Yogyakarta, and Bali Island have a better VDI above 0.75 (green-colored). The rest provinces have VDI between 0.6 to 0.75 (blue-colored). The darker color represents a higher VDI percentage change which becomes a concern because 3 provinces in far-east Indonesia have a growth below 4%. Ideally, regions that have lower VDI should grow faster to chase after other provinces' developments.

**Figures 5**

*Village Development Index 2022*




*Note.* MoVDDRT

To calculate how much allocation should be distributed to every village, the government designed the VF Allocation formula that mainly relies on five major variables which are population, wide area, poverty, cost construction index (CCI), and geographic difficulty index (GDI) as shown on the formula 1 and 2.

$$A_j = N\_Village_j \cdot \left\{ \frac{\sum_{j=1}^{n} \left( VF\_Budget_l \cdot \left[ 30\% \cdot \frac{Pop_j}{Pop_l} + 20\% \cdot \frac{Area_j}{Area_l} + 50\% \cdot \frac{P0_j}{P0_l} \right] . CCI_j \right)}{N\_Villages_k} \right\} \quad (1)$$

$$B_i = A_j \cdot \left\{ \left( 30\% \cdot \frac{Pop_i}{Pop_j} + 20\% \cdot \frac{Area_i}{Area_j} + 50\% \cdot \frac{HH.P0_i}{HH.P0_j} \right) . GDI_i \right\} \quad (2)$$

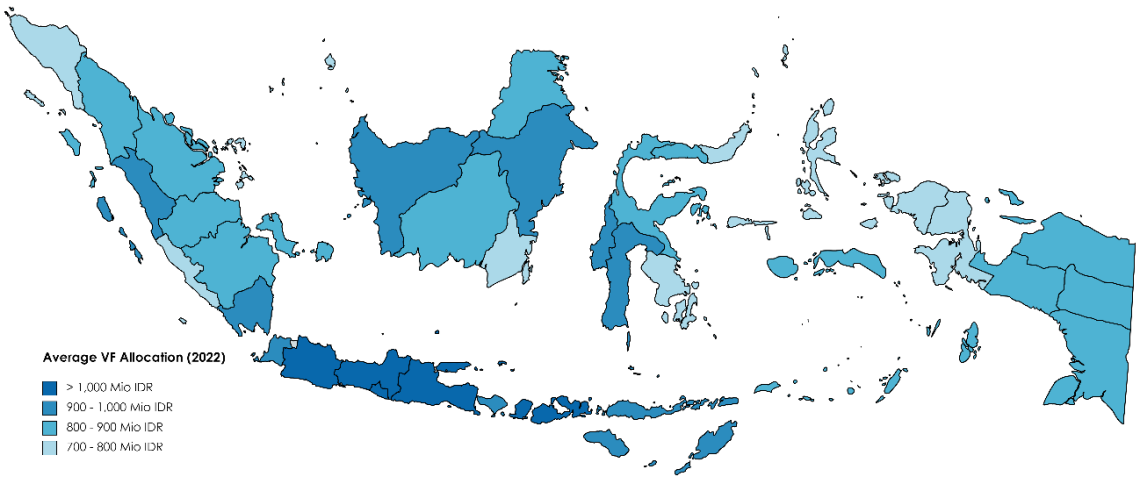
Letters *i*, *j*, *k*, and *l* represent village-level, district-level, province-level, and national-level respectively. $A_j$ is the district-level VF allocation, $B_i$ is the village-level VF allocation, *N_Village* is the number of villages at a certain government level, and *VF_Budget* is the initial VF national budget. Going to major variables, *Pop* is population, *Area* is the administrative-wide area of a particular government level, *P0* is the number of poor citizens, *HH.P0* is the number of poor households, *CCI* is the cost construction index, and *GDI* is the geographic difficulty index.

The formula shows that VF allocation is relatively more weighted toward poverty which leads many literatures to be eager to find its impacts (Pertiwi & Arif, 2022; Rimawan & Aryani, 2020; Sigit & Kosasih, 2020; Susilowati et al., 2017; Tarmizi and Miksalmina, 2020). It also became the main purpose why the government established this policy. In addition, CCI and GDI also play a key role in composing the VF allocation. These conditions led to an allocation gap among districts.

Figure 6 reports the average VF allocation for every province in 2022 calculated based on the VF formula (1) and (2). It shows that the allocations are bigger in Java Island (darkest blue) which is mainly due to the highest concentrated population live in. Allocations in other islands vary depending on the variables that are enumerated by the formula.

**Figure 6**

*Average Village Fund Allocation (2022)*

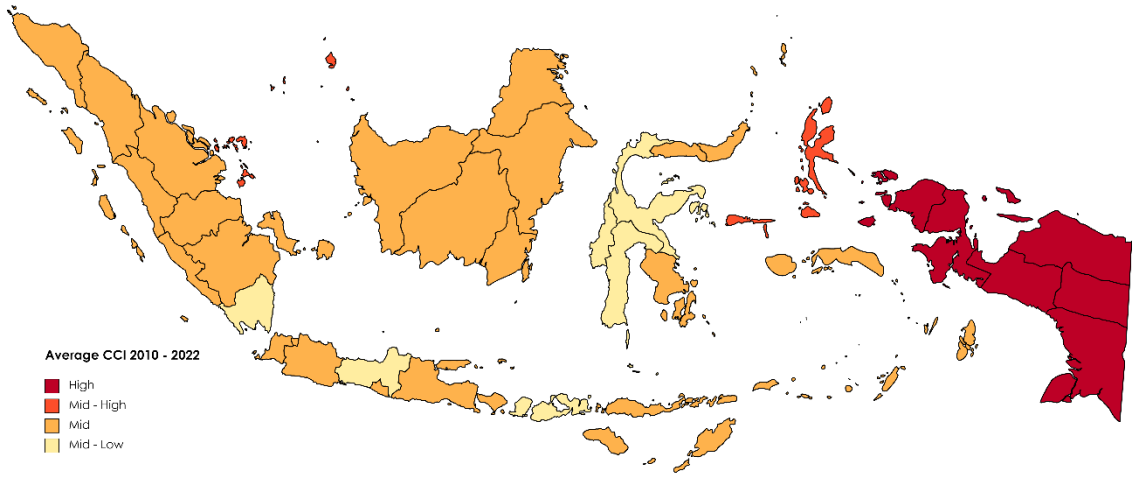



*Note.* Ministry of Finance

The formula also brings major variables that differentiate rural and urban areas called the Construction Cost Index (CCI). Figure 7 shows that Papua Island has a relatively bigger CCI than other regions due to the development inequality in the past 5 decades.

**Figure 7**

*Average Construction Cost Index 2010 -2022*




*Note.* Statistics Indonesia

A number of recent studies have investigated the outcome of VF implementation which is cascaded by measuring the socioeconomic variables that can reduce the urban-rural disparity (see Sigit & Kosasih, 2020; Susilowati et al., 2017; Ripandi, 2018). Optimizing the fixed effect model Susilowati et al. (2017) claim that the Allocation of VF has a significant impact on reducing poverty. On the other hand, utilizing pooled least square methodology, Pertiwi and Arif (2022) find that VF doesn't have any significant impact on reducing the poverty level in Central Java (see also Rimawan & Aryani, 2020; Tarmizi and Miksalmina, 2020).

### *2.3.2. Impact of The Village Fund on Poverty*

The typical variable sought by researchers to observe the impact of IGTs, particularly the VF, is poverty. In addition, this variable is being highly emphasized as one of the major village development issues to deal with. Letting poverty become a more convenient and well-known variable to utilize. The VF implementation has a significant impact on reducing poverty. It was emphasized by Sigit and Kosasih (2020) who state, "The village fund variable has a negative influence according to the regression results based on the value of the regression coefficient is negative. It means that when village funds increase then the number of poor people will decrease" (p. 114).

### *2.3.3. Impact of The Village Fund on Health*

The Human Development Index (HDI) is measured by composing three variables which are life expectancy, years of schooling, and per capita spending. A few studies have observed the impact of VF on HDI (Simangunsong et al., 2021; Suhyanto et al., 2020). Simangunsong et al. (2021) claim that the VF and gross regional domestic product simultaneously have a positive impact on HDI, as well as life expectancy indirectly. In addition, one of the new priority programs funded by VF is stunting prevention which affects the quality of health. It was also

emphasized by Arumsari et al. (2022) who says that “the reducing stunting program is mostly funded by VF” (p. 84).

### *2.3.4. Impact of The Village Fund on Education*

The same approach was applied to determine the impact on education by utilizing year of schooling, one of the HDI components, as an independent variable. Even though it has a small effect, Suhyanto et al. (2020) state that VF positively affects HDI. As I mentioned earlier, education is one of the variables that construct the VDI to measure the village development progress. Due to these reasons, I assume that VF will affect the years of schooling.

### *2.3.5. Impact of The Village Fund on Household Spending*

Even though there are no current studies which claim that VF has an impact on household spending or consumption, Rawlings and Rubio (2005) state that conditional cash transfer assistance succeeds in increasing household consumption. Nevertheless, since 2020, the VF implementation has prioritized programs that can lead to an economic bounce back due to the pandemic outbreak. One of the programs is Village Cash Transfer Assistance (VCTA) which has a comparable function to conditional cash transfer. Due to this consideration, I assume that VF also affects household spending.

Many studies that I mentioned earlier are conducted mostly in specific regions and haven't been analyzed in comparing the before and after impact of VF implementation. Knowing these limitations, this paper is eager to examine the impact of the VF that aggregated in the national level to give a macro perspective on how the influence of the policy and compare the shifting of regional inequality pre- and post-policies implemented using the Difference-in-Difference methodology which will be discussed in the next chapter.

# Methodology

This research aims to investigate the impact of VF implementation on urban-rural inequality that related to village empowerment. In this section, I will develop a research framework and hypotheses development to become a guideline for performing the analysis. Then, I will explain the data that has been utilized in this study. In the research methodology part, I will deliver the consideration of employing the Difference-in-Difference model. And lastly, the empirical analysis shows the econometrics models.

## 3.1. Hypothesis Development and Research Framework

As I mentioned earlier in the previous sections, this study builds the hypothesis that VF policy implementation has an impact on reducing socioeconomic inequality between urban and rural regions. Two research questions will be constructed to prove the hypothesis. First, finding shifting the socioeconomic inequality between urban and rural regions in Indonesia affected by does the VF policy. Second, in what directions does the policy affect the outcome in rural regions in Indonesia? In the literature review, either IGTs as a whole or a particular VF policy has a significant impact on socioeconomic outcomes whether it changes in a positive or negative direction. Based on this literature and analysis in the following sections, the first question will be answered.

Socioeconomic outcome will be measured by four variables which are mean years of schooling, poverty rate, life expectancy, and per capita spending. Apart from utilizing the VF as a policy instrument, I will employ other significant IGTs which are GAF, SAF, and RSF to control any causal effect on outcomes. To reduce the endogenous effect between variables, this study will perform a sub-sample classified by VF allocation and cost construction index. The result of this research framework will respond to the second question.

### 3.2. Data Collection

To conduct empirical analysis, this research exploits the panel data gathered from 2010 to 2022. The socioeconomic data comes from Statistics Indonesia which provides poverty rate, life expectancy, years of schooling, and per capita spending at the district level. The intergovernmental transfer data is provided by the Ministry of Finance (MoF) which consists of budget allocation and realization amount of general allocation fund, special allocation fund, revenue sharing fund, and village fund at the district level.

Table 1 presents the descriptive statistics for all variables utilized in this research. Years of schooling and life expectancy are enumerated by years, poverty rate is in percentage, while spending and fund variables are in logarithm form to de-scaling the effect of the large number and for ease of calculations. The poverty rate reports the highest standard deviation among others, which means that the range of the observation is wider than the others which can be assumed it have a bigger gap.

**Table 1**

*Descriptive Statistics*

| Variable | Observation | Mean | Std. dev | Min | Max |
|---|---|---|---|---|---|
| Years of Schooling | 6,422 | 7.81 | 1.68 | 0.25 | 12.52 |
| Poverty Rate | 6,422 | 13.22 | 8.19 | 1.33 | 49.58 |
| Life Expectancy | 6,422 | 68.91 | 3.71 | 52.65 | 77.82 |
| Log of Per Capita Spending | 6,422 | 9.14 | 0.27 | 8.08 | 10.09 |
| Log of General Allocation Fund | 6,261 | 13.21 | 0.46 | 7.22 | 14.59 |
| Log of Special Allocation Fund | 6,246 | 11.65 | 0.96 | 4.97 | 14.17 |
| Log of Revenue Sharing Fund | 6,273 | 10.99 | 1.13 | 8.60 | 15.54 |

*Note.* Statistics Indonesia and Ministry of Finance

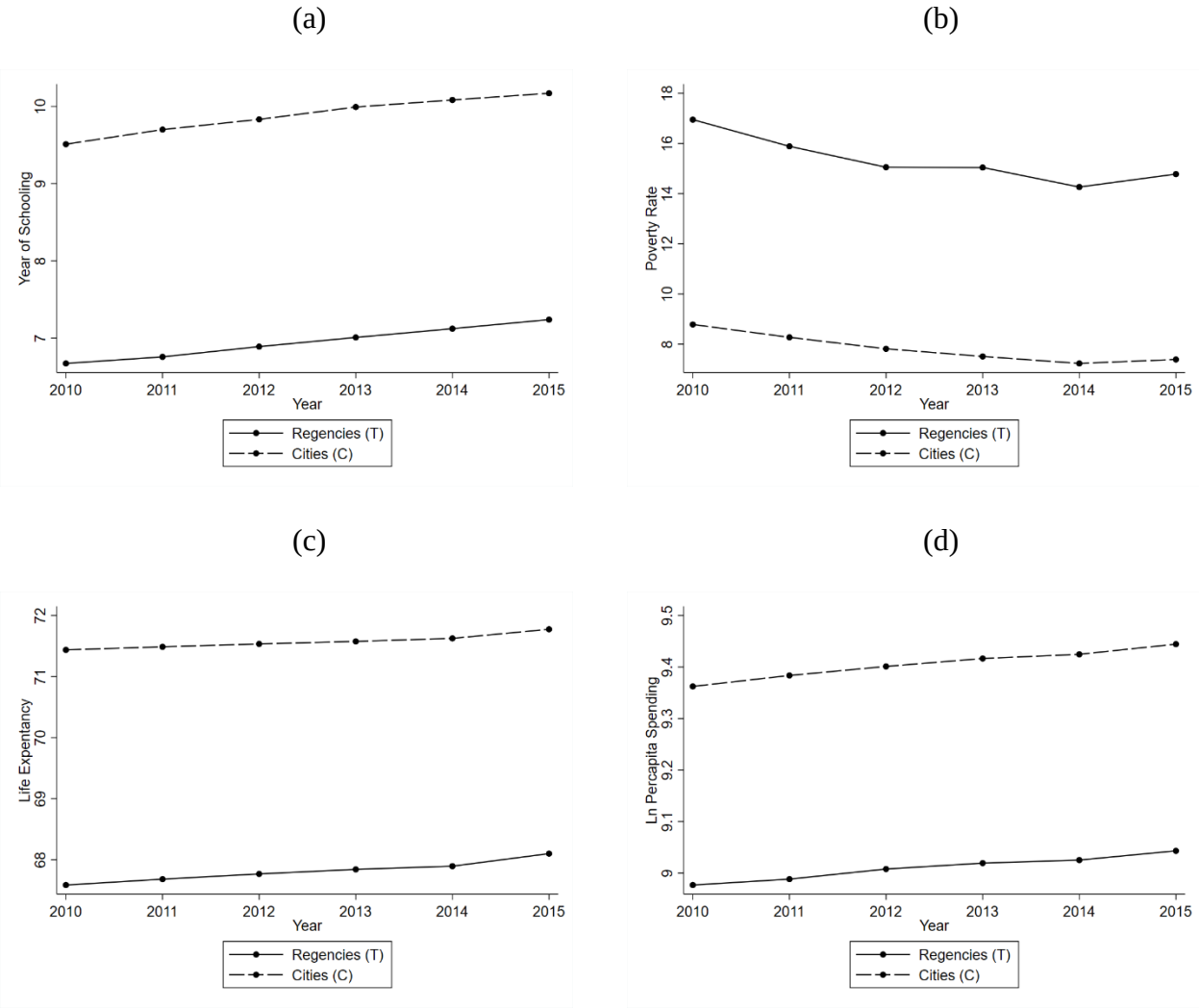
### 3.3. Research Methodology

To come up with robust results, many researchers will analyze their data using the randomized control trial (RCT) methods. In the RCT approach, the differences between control and treatment for any variables who doesn't relate to the research are statistically insignificant due to the treated individuals or units being randomly selected. It means that any other control variables were similar before the time of the treatment group being treated. On the contrary, the major factor that distinguishes the control and treatment group in this research is the fact that the VF policy was only implemented in villages that are the smallest unit of the government in the regency district, not in the city district. In this case, the units in the treatment group are not randomly selected. In addition, the characteristics between regencies and cities are completely different and it will lead to selection bias. However, combining the utilization of panel data and the Difference in Differences approach will omit these issues. The DID method will focus on the effect of the independent variables on the outcomes considering the different effects between the treatment-control group likewise before and after the shock (treated).

The key assumption of the DID method to omit selection bias is the difference between the treatment and control group does not change in the absence of shock (policy). It means the parallel trend between both groups is no different before shock. Figure 8 presents that all outcome variables were in similar trends before the VF policy implementation (2015). Even though there are some different spikes in a certain year, the trends of all variables are similar between districts that get the VF (treatment group) and the ones that do not (control group). Years of schooling, life expectancy, and log of per capita spending were all increasing before policy implementation, while the poverty rate was the only variable that had a decreasing value.

**Figure 8**

*Parallel Trend of Socioeconomic Outcomes*




*Note.* Statistics Indonesia

### 3.4. Empirical Analysis

The socioeconomic outcomes of the implementation of the VF policy can be estimated using the following equation 3:

$$y_{it} = \alpha + \beta_1(Treat_i) + \beta_2(Post_t) + \beta_3(Treat_i x Post_t) + \mu_i + \tau_t + \varepsilon_{it} \quad (3)$$

The outcome variables $y_{it}$ is the four socioeconomic outcome variables consisting of years of schooling, poverty rate, life expectancy, and per capita spending of district *i* in the year

of *t*. All outcome variables are at the district level. $Treat_i$ is a binary variable that equals 1 if the district *i* categorizes as a regency and 0 is a city. $Post_t$ is a binary variable that equals 1 when the year *t* has been implemented the VF policy which is from 2015 to 2022 and 0 is otherwise. $Treat_i xPost_t$ is an interaction between two variables. $\beta_1$ is the coefficient of variable $Treat_i$ while $\beta_2$ is the coefficient of variable $Post_t$, therefore $\beta_3$ is the coefficient of interest which shows the effect of the VF policy on socioeconomic outcomes. $\mu_i$ is district fixed effect which controls for fixed characteristics of the district and $\tau_t$ is year fixed effect which controls for time-varying factors.

As previously mentioned, the central government of Indonesia induces many other IGT scheme to district-level government both cities and regencies which consists of GAF, SAF, and RSF. To control the effect of other IGT schemes on socioeconomic outcomes, I decided to add these three variables into the four equations as follows:

$$y_{it} = \alpha + \beta_1(Treat_i) + \beta_2(Post_t) + \beta_3(Treat_i xPost_t) + \theta_1 Lngaf_{it} + \theta_2 Lnsaf_{it} + \theta_3 Lnrsf_{it} + \mu_i + \tau_t + \varepsilon_{it} \quad (4)$$

$Lngaf_{it}$ is log of GAF realization while $Lnsaf_{it}$ is log of SAF realization and $Lnrsf_{it}$ is log of RSF realization. $\theta_1$ , $\theta_2$ , and $\theta_3$ are respectively the coefficients of variables $Lngaf_{it}$ , $Lnsaf_{it}$ , and on will be run by a smaller number of observations due to the missing data. However, it will not strongly affect the result accuracy.

## Result and Discussion

The result of equation (3) which was mentioned in the previous sections is reported in Table 2. Column (1) reports the average year of schooling, column (2) reports the poverty rate, column (3) presents the life expectancy, and column (4) presents the log of per capita spending. Table 2 shows that all socioeconomic outcomes are significantly affected by the VF policy (variable *treatXpost*) except for the log of per capita spending. During the implementation of the VF policy from 2015 to 2022, regencies will increase their average years of schooling by 0.12 years, life expectancy rise by 0.23 years, and the poverty rate will decrease by 0.64% compared to cities in the same period.

**Tabel 2**

*Impact of The Village Fund on Socioeconomic Outcomes*

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| variables | *yos* | *pov* | *life* | *lnspend* |
| *1.treat* | -2.828*** | 13.26*** | -6.880*** | -0.727*** |
| | (0.106) | (0.400) | (0.0859) | (0.0110) |
| *1.post* | 1.243*** | -3.305*** | 1.501*** | 0.194*** |
| | (0.0262) | (0.121) | (0.0296) | (0.00378) |
| *treatXpost* | 0.122*** | -0.638*** | 0.232*** | 0.000894 |
| | (0.0153) | (0.0739) | (0.0180) | (0.00208) |
| *Constant* | 10.78*** | 10.22*** | 73.75*** | 9.685*** |
| | (0.0556) | (0.180) | (0.0593) | (0.00434) |
| Observations | 6,422 | 6,422 | 6,422 | 6,422 |
| R-squared | 0.983 | 0.979 | 0.994 | 0.984 |
| District FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |

*Note.* Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Equation (3) shows that the outcome log of per capita spending is not statistically significant since there is a possibility of the other IGTs or factors having a more decent effect. As I mentioned earlier in the previous sections, per capita income or consumption is highly correlated to conditional cash transfer policy (Rawlings & Rubio, 2005) and one of the VF priorities close to it, the VCTA program, has already been implemented since 2020. However, Table 3 shows a slightly different output.

**Table 3**

*Impact of The Village Fund on Socioeconomic Outcomes (Adding other IGTs)*

| VARIABLES | (1)<br>*yos* | (2)<br>*pov* | (3)<br>*life* | (4)<br>*lnspend* |
|---|---|---|---|---|
| *1.treat* | -2.889***<br>(0.105) | 13.08***<br>(0.400) | -6.827***<br>(0.0892) | -0.738***<br>(0.0108) |
| *1.post* | 1.431***<br>(0.0513) | -4.385***<br>(0.217) | 1.554***<br>(0.0513) | 0.224***<br>(0.00871) |
| *treatXpost* | 0.156***<br>(0.0164) | -0.532***<br>(0.0769) | 0.216***<br>(0.0204) | 0.00762***<br>(0.00211) |
| *lngaf* | -0.246**<br>(0.0985) | 0.612***<br>(0.231) | 0.0706<br>(0.0449) | -0.0446***<br>(0.0167) |
| *lnsaf* | -0.00606<br>(0.00806) | 0.232***<br>(0.0429) | -0.0346**<br>(0.0145) | 0.000695<br>(0.00113) |
| *lnrsf* | -0.0207**<br>(0.00871) | 0.0231<br>(0.0570) | 0.000524<br>(0.0123) | 0.000812<br>(0.00127) |
| Constant | 14.19***<br>(1.274) | 0.120<br>(3.191) | 73.16***<br>(0.615) | 10.24***<br>(0.216) |
| Observations | 6,236 | 6,236 | 6,236 | 6,236 |
| R-squared | 0.987 | 0.982 | 0.995 | 0.989 |
| District FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |

*Note.* Robust standard errors in parentheses

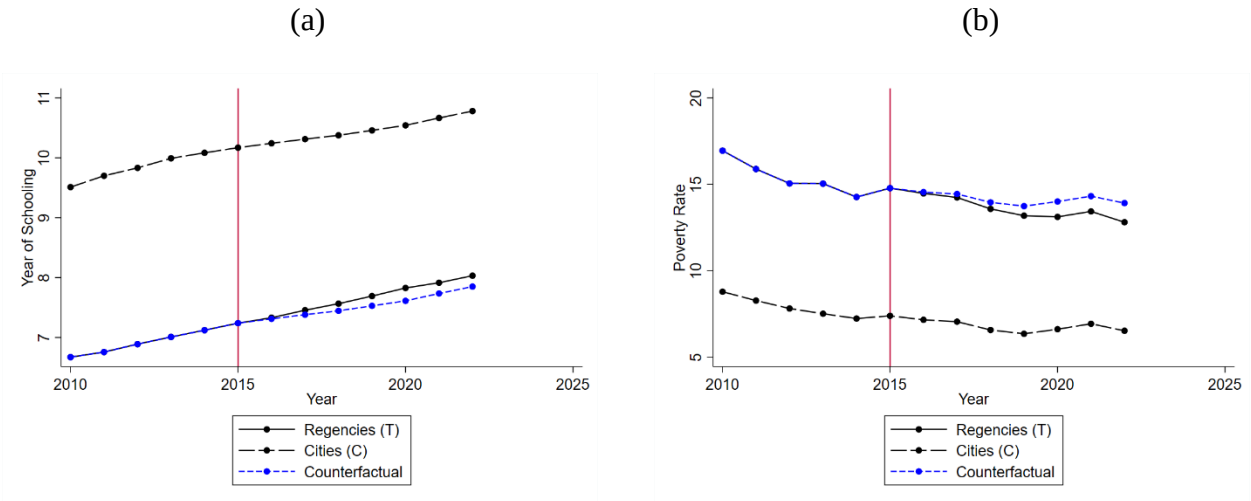
*** p<0.01, ** p<0.05, * p<0.1

While adding other IGTs as the control variables as constructed in equation (4), the VF policy implementation is statistically significant and has an impact on all the socioeconomic outcomes. The impact on the years of schooling has an even bigger effect compared to equation (3). Table 3 reports that regencies will increase their average years of schooling by 0.16 years, life expectancy rise by 0.22 years, per capita spending will increase by 0.76% and the poverty rate will decrease by 0.53% compared to cities in the same period.

To provide a better understanding, this paper calculates the counterfactual estimations to see how much the outcomes will be changed in the absence of the VF policy. It reflects the difference of the gap between regencies (treatment group) and cities (treatment group), does the gap shrink or even expand? Figure 9 presents that compared to its counterfactual estimations (dash blue line), all the socioeconomic outcome gaps between regencies (bold black line) and cities (dash black line) are reduced due to the VF policy implementations. Variable years of schooling, life expectancy, and log of per capita spending are increased while the poverty rate is decreasing. Figure 9 shows that regencies have a bigger magnitude of change than cities.

**Figure 9**

*Result and Counterfactual of Socioeconomic Outcomes*



(c) (d)

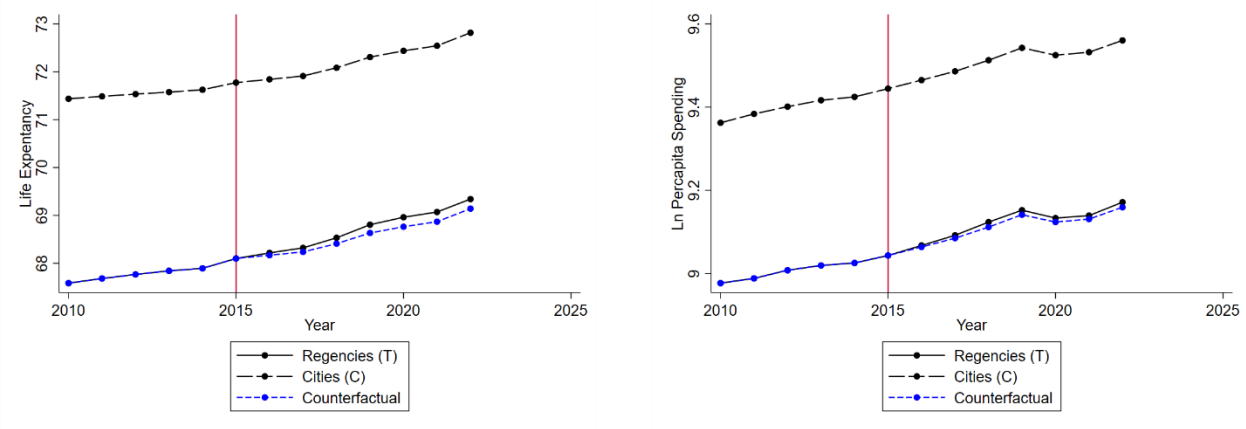



Table 4 summarizes the gap comparison of socioeconomic outcomes between regencies (treatment group) and cities (control group) in the very first VF policy implemented (2015) to 2022 to give a better understanding. Columns (1) and (4) present the cities or control group, while columns (2) and (5) show the treatment group or regencies. Column (3) and (6) is the difference between the control and treatment group in 2015 and 20122 respectively, and column (7) calculates the change of the difference between column (3) and (7).

**Table 4**

*Reduce Gap of Socioeconomic Outcomes*

| | 2015 | | | 2022 | | | Reduces Gap |
|---|---|---|---|---|---|---|---|
| | C (1) | T (2) | Gap (3) | C (4) | T (5) | Gap (6) | (7) |
| years of schooling | 10.17 | 7.24 | 2.93 | 10.78 | 8.03 | 2.75 | (0.18) |
| poverty rate | 7.39 | 14.78 | 7.39 | 6.52 | 12.81 | 6.28 | (1.11) |
| life expectancy | 71.77 | 68.10 | 3.67 | 72.82 | 69.34 | 3.47 | (0.20) |
| log of per capita spending | 9.44 | 9.04 | 0.40 | 9.56 | 9.17 | 0.39 | (0.01) |

Years of schooling in 2022 reduced the 0.18 years gap or 6.19% compared to 2015, while life expectancy dropped by 5.44% bringing the gap shrink by 0.20 years. The most exaggerated change will happen in poverty alleviation in 2022, reducing the gap by 1.11 percentage points or 14.99% compared to 2015. Per capita spending is the smallest one, recording a 1.21 percentage point gap change in 2022 or reduced by 3.03% compared to 2015.

The other tools to easily figure out the magnitude of the VF implementation are reported in Table 5, which compares the average mean base when the policy was implemented (2015) and DID estimation. While Table 4 shows the basic comparison of the gap before and after policy, table 5 reports the percentage change of the outcome affected by the policy.

**Table 5**

*Comparison of Outcomes Mean Base and Research Estimations*

| | Mean base in 2015 (1) | DID estimations | |
|---|---|---|---|
| | | (2) | (3) |
| years of schooling | 7.24 | 0.12 | 0.16 |
| poverty rate | 14.78 | -0.64 | -0.53 |
| life expectancy | 68.10 | 0.23 | 0.22 |
| log of per capita spending | 9.04 | 0.00 | 0.01 |

Column (1) reports the variable's mean base in 2015, while column (2) and column (3) present the DID coefficient of interest as mentioned before in Table 2 (equation 3) and Table 3 (equation 4) respectively. The effect of the VF scheme on average years of schooling increased from 0.12 to 0.16 years or 1.69% to 2.16%, while life expectancy grew by 0.32% to 0.34% bringing the outcomes rose by 0.22 to 0.23 years. The biggest change also happens in poverty alleviation, reducing the output by 0.53 to 0.64 percentage points or 3.60% to 4.32%. Per capita

spending was also the smallest one, recording a 0.09 to 0.76 percentage point change or increased by 0.01% to 0.08%.

Table 6 reports the impact of the VF on four socioeconomic outcomes excluding other IGTs that refer to equation 1. I exclude *constant*, *1.treat*, and *1.post* variables for purposes of brevity. Columns 1, 2, 3, and 4 present the classification of the average VF allocation subsample which is categorized as follows: Sub 1 if the average allocation is fewer than 800 million rupiahs, Sub 2 is at least 800 million to 900 million rupiahs, Sub 3 is from 900 million to 1 billion rupiahs, and lastly, Sub 4 are more than or equal to 1 billion rupiahs. Using the standard deviation and population mean, I divided the average province CCI into five groups. Columns 5, 6, 7, and 8 report the categorization of average province CCI which is classified as follows: Mid-low is 1 SD to 0.5 SD below the CCI mean, Mid is 0.5 SD below to 0.5 SD above the CCI mean, Mid-High 0.5 SD to 1 SD above CCI mean, and finally High is above 1 SD above the CCI mean. A higher CCI indicates difficulty in accessing and building construction which led to physical infrastructure inequality among regions.

From the VF allocation classifications, some of the estimation results do not affect the outcomes, hence most of them are statistically significant with their values varied among the variables. This indicates that increasing VF will not necessarily bring more impact on socioeconomic outcomes. However, the results in the Sub 4 classification significantly impacted all the outcomes which means higher VF allocations will relatively have a more significant impact on outcomes. The result also indicates that a higher allocation of VF is more likely to have a significant impact on per capita spending which is different from the full sample result.

Utilizing CCI categories as subsample presents more dynamic results. Similar to full sample results, VF does not significantly affect the per capita spending except in the Mid-High

categories. Table 6 also shows that in higher CCI the impact is not significant on reducing poverty. Higher CCI will gradually and significantly increase the impact on years of schooling. The contrast result shows that life expectancy has had a negative significant impact in the High CCI categories.

**Table 6**

*Impact of The Village Fund on Socioeconomic Outcomes (Subsample)*

| | (1) Sub 1 | (2) Sub 2 | (3) Sub 3 | (4) Sub 4 | (5) Mid-low | (6) Mid | (7) Mid-High | (8) High |
|---|---|---|---|---|---|---|---|---|
| years of schooling | 0.0752** | 0.196*** | 0.0451 | 0.158*** | 0.0595* | 0.130*** | 0.166** | 0.274*** |
| | (0.0317) | (0.0242) | (0.0437) | (0.0225) | (0.0310) | (0.0176) | (0.0806) | (0.0834) |
| | [0.966] | [0.984 | [0.982] | [0.991] | [0.985] | [0.981] | [0.970] | [0.980] |
| poverty rate | -1.107*** | -0.809*** | 0.183 | -1.073*** | -0.454*** | -0.337*** | -0.275 | -2.952 |
| | (0.187) | (0.114) | (0.124) | (0.136) | (0.126) | (0.0794) | (0.278) | (1.907) |
| | [0.968] | [0.986] | [0.982] | [0.972] | [0.960] | [0.976] | [0.927] | [0.960] |
| life expectancy | 0.160*** | 0.142*** | 0.385*** | 0.218*** | 0.325*** | 0.196*** | 0.688*** | -1.184*** |
| | (0.0477) | (0.0332) | (0.0308) | (0.0325) | (0.0478) | (0.0180) | (0.104) | (0.226) |
| | [0.988] | [0.995] | [0.995] | [0.992] | [0.994] | [0.994] | [0.990] | [0.993] |
| per capita spending | -0.00374 | -0.000983 | 0.0151*** | 0.00652** | 0.000903 | 0.00246 | 0.0134* | -0.0217 |
| | (0.00464) | (0.00414) | (0.00407) | (0.00311) | (0.00376) | (0.00243) | (0.00755) | (0.0148) |
| | [0.977] | [0.984] | [0.990] | [0.990] | [0.985] | [0.982] | [0.993] | [0.968] |
| Obs. | 1,391 | 2,080 | 1,482 | 1,469 | 1,339 | 4,342 | 208 | 533 |
| District FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES | YES | YES |

*Note.* Robust standard errors in parentheses

R-squared in square brackets

*** p<0.01, ** p<0.05, * p<0.1

Excluding the *lngaf*, *lnsaf*, and *lnrsf* variables for a concise interface, Table 7 shows the output of equation 2 with the subsample employed. In the VF allocation subsample, most of the estimation results are statistically significant with their values varied among the variables except per capita spending which has two insignificant results. The estimation of interest also varies

among the subsample classifications. It also indicates that increasing VF will not necessarily bring more impact on socioeconomic outcomes.

**Tabel 7**

*Impact of The Village Fund on Socioeconomic Outcomes (Subsample with other IGTs)*

| | (1) Sub 1 | (2) Sub 2 | (3) Sub 3 | (4) Sub 4 | (5) Mid-low | (6) Mid | (7) Mid-High | (8) High |
|---|---|---|---|---|---|---|---|---|
| years of schooling | 0.173*** | 0.233*** | 0.0427 | 0.144*** | 0.0787** | 0.160*** | 0.254*** | 0.418*** |
| | (0.0350) | (0.0231) | (0.0546) | (0.0238) | (0.0321) | (0.0191) | (0.0812) | (0.0666) |
| | [0.980] | [0.987] | [0.984] | [0.992] | [0.986] | [0.985] | [0.980] | [0.990] |
| poverty rate | -0.840*** | -0.828*** | 0.348*** | -0.915*** | -0.643*** | -0.272*** | -0.0402 | -3.589* |
| | (0.222) | (0.129) | (0.132) | (0.145) | (0.128) | (0.0830) | (0.393) | (1.967) |
| | [0.974] | [0.989] | [0.984] | [0.973] | [0.965] | [0.979] | [0.943] | [0.974] |
| life expectancy | 0.168*** | 0.0993*** | 0.332*** | 0.213*** | 0.299*** | 0.187*** | 0.822*** | -1.180*** |
| | (0.0615) | (0.0352) | (0.0325) | (0.0340) | (0.0487) | (0.0184) | (0.167) | (0.229) |
| | [0.992] | [0.995] | [0.995] | [0.993] | [0.995] | [0.995] | [0.992] | [0.993] |
| per capita spending | 0.0143*** | 0.00197 | 0.0173*** | 0.00445 | 0.00561 | 0.00737*** | 0.0338*** | -0.00324 |
| | (0.00347) | (0.00430) | (0.00541) | (0.00301) | (0.00363) | (0.00247) | (0.00628) | (0.0101) |
| | [0.989] | [0.989] | [0.992] | [0.991] | [0.989] | [0.988] | [0.997] | [0.985] |
| Obs | 1,273 | 2,031 | 1,467 | 1,465 | 1,321 | 4,188 | 202 | 525 |
| District FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES | YES | YES |

*Note.* Robust standard errors in parentheses

R-squared in square brackets

*** p<0.01, ** p<0.05, * p<0.1

In terms of CCI categories as subsample also presents more dynamic results. VF does not significantly affect the per capita spending except in the Mid-High and Mid categories, as well as happens in the full sample results. The biggest impact on years of schooling and poverty rate occurs in the High CCI subsample which reaches 0.42 years and 3.69 percentage points respectively. However, this result also presents a contrasting result showing that life expectancy has had a negative significant impact in the High CCI categories.

# Conclusion and Policy Implications

This section summarizes the key research findings and examines how they link to the research objectives, hypothesis, and questions. Discussing the implications that occurred by its result will also be covered. In addition, the limitations of the study are assessed, and possible avenues for future research are suggested.

## 5.1 Summary of Findings

The critical issue raised in this study is to observe how government policy can reduce regional inequality by examining the impact of Inter-governmental transfer policy implementation on reducing the urban-rural socioeconomic development gap related to village empowerment. This study analyzes how the VF transfer scheme policy affects the socioeconomic outcomes in Indonesia. This paper builds the hypothesis that VF policy has an impact on reducing socioeconomic inequality between urban and rural regions. The results indicate that the VF transfer scheme does change urban-rural inequality by focusing on four socioeconomic outcomes at the district level data. The socioeconomic outcome that consists of years of schooling, poverty rate, life expectancy, and per capita spending are all changed significantly by 2.16%, 4.32%, 0.34%, and 0.08% respectively for people who live in the rural village. These changes all are affected by the VF policy. These findings answer the first research questions. On the other hand, compared to what happened in the counterfactual situations all the socioeconomic outcomes have narrowed directions. It indicates that the policy has reduced the regional gap between urban and rural areas which positively responds to the second question. These findings also confirm other studies that claim IGT or VF have a positive significant effect on socioeconomic outcomes (see Sigit & Kosasih, 2020; Susilowati et al., 2017; Ripandi, 2018)

and reducing regional inequality (see Aritenang, 2019; Litschig & Morrison, 2013; Takahata, 2021)

However, by developing a subsample analysis, the result gives more dynamic indications. The subsample of fund allocations indicates that increasing the VF budget does not necessarily increase the impact of the socioeconomic outcomes. On the other hand, the CCI subsample suggests that higher CCI will have more impacts on years of schooling and poverty alleviation that align with previous literatures finding (see Sigit & Kosasih, 2020; Simangunsong et al., 2021; Suhyanto et al., 2020). Conversely, a negative significant impact occurs on the life expectancy outcomes, particularly in the High CCI categories. It is consistent with some literature which claims that this negative impact is caused by the argument that VF implementation (see Pertiwi & Arif, 2022; Rimawan & Aryani, 2020; Tarmizi & Miksalmina, 2020) due to heavy focus on building infrastructure rather than improving other socioeconomic dimensions (Digdowiseiso & Afriyanto, 2023).

**5.2 Implications**

This paper offered input to the government in dealing with regional inequality issues at the national level. However, it will not be as easy as increasing the IGT or VF national allocation. The government is more likely to improve its planning, mechanism, and management to increase the quality of IGT (Bird & Smart, 2022; Fitrianti et al., 2022). The government also needs to focus on reducing the gap between the policy and its implementation (Wong & Chua, 2021).

On the other hand, sub-national governments must be more comprehensive and critical in making a policy to empower rural areas due to dynamic findings in the subsample result, particularly in the policy that affects life expectancy. Local governments in the higher

construction cost regions also need to consider the other development dimensions rather than only focusing on building infrastructure. It will be an adamant challenge due to the conflicts of priorities. In addition to the body of research, this study will contribute to the existing literature by its unique methodology and scope, especially in the regional development and public policy study.

### 5.3 Limitation and Future Research

Despite the plausibility and significance of this research, there are several limitations that future studies should address. First, this paper only focused on four socioeconomic outcomes to measure regional inequality. In the body of literature there are other variables that can be employed such as ownership of the factors of production (Young, 2013), wealth and living standard (Dunford, 2007), infrastructure gaps (Tadjoeddin, 2019), levels of happiness (Burger et al., 2020), infant mortality rate, and per capita public investment (Nayyar, 2008). Linked to the first limitation, I exploited district-level data which is arduously hard to find specific variables that are mentioned above. These variables are accessible at household-level data. Third, this study aims to examine the total effect of the four variables, not the individual ones. Further research could observe which variables have the biggest impact on urban-rural disparity. Due to the existing fact that it will be hard to completely erase the urban-rural disparity, it would be great if researchers could dive deeper into what extent this gap can be tolerated. Lastly, one of the major priorities of the VF policy is building infrastructure, thus future research can harness another variable that are highly corelated to it.

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