

## **CHAPTER III**

### **RESEARCH METHOD**

#### **3.1 Quantitative Method**

This study used the quantitative method. This method operationalized objective measurements and statistical analysis in testing hypotheses to understand the linkage of independent variable and dependent variables. Most of Scholars in quantitative methods argue that this method emphasized statistical analysis on collected data, determined the relationship among variables and test specific theories by examining its relationship (see for example, Babbie, 2013; Labaree, 2009; and Cresswell, 2009).

Babbie (2013) constituted that quantitative method emphasized objective measurements and the statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, and surveys, or by manipulating pre-existing statistical data using computational techniques. Quantitative research focused on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon. Labaree (2009) postulated that quantitative method aims to determine the relationship between the independent variables and the dependent variable within a population. Quantitative research dealt in numbers, logic, and an objective stance. Quantitative research also focused on numeric and unchanging data and detailed, as well as convergent reasoning rather than divergent reasoning. Cresswell (2009) presented that the quantitative research method is to test specific theories by examining the relationship between variables. These variables were measured with instruments

of research, so that the data consists of number can be analyzed by statistical procedures.

By conducting quantitative method, this study aimed to test three hypotheses in addressing the linkage of communal conflict with fiscal decentralization, administrative decentralization, and political decentralization.

### **3.2 Hypotheses**

This study tested three hypotheses to understand the linkage of decentralization and communal conflict in Indonesia. This study used 3 (three) measures of decentralization following the work of Schneider (2003), as follow:

(1) Fiscal Decentralization and Communal Conflict

**H<sub>1</sub>:** *Fiscal decentralization will reduce communal conflict if level of allocative efficiency is high and the share of locally generated revenue is great. In contrast, fiscal decentralization will increase communal conflict if level of allocative efficiency is low and the share of locally generated revenue is small*

(2) Administrative Decentralization and Communal Conflict

**H<sub>2</sub>:** *Administrative decentralization will reduce communal conflict if the capacity of institutional and local beaucracy is strong. In contrast, administrative decentralization will increase communal conflict if the institutional and local bureaucracy capacity is weak.*

(3) Political Decentralization and Communal Conflict

**H<sub>3</sub>:** *“Political decentralization will reduce communal conflict if the “mature” democracy is high and reassurance to ethnic minorities is provided in order to legitimate to the local political system. In contrast, political decentralization will increase communal conflict if the “mature” democracy is low and the tendency of*

*shifting power from ethnically heterogeneous areas to those dominated by only one or two ethnic groups is high, and reassurance to ethnic minorities is provided in order to legitimate to the local political system*

### **3.3 Unit of Analysis**

This study used regencies (kabupaten) and cities (kota) as well as villages (desa) and neighborhoods (kelurahan) government which are nested in regencies and cities government in Indonesia as unit of analysis for several reasons.

First, the decentralization reform was generally found at district level of administration, that was, below provincial government level (World Bank 2008). Using district government as the unit analysis was thus more relevant when scrutinizing the effects of decentralization than using either central or provincial government, since it was able to capture the dynamic of reform within those units which were directly affected by decentralization.

Second, using villages and municipalities as the unit of analysis of the linkage of decentralization and communal conflict enabled us to see that the mostly prone areas of communal conflict laid in lower level administration tiers. Since this study captured the association of decentralization and communal conflict in Indonesia, it covered whole districts level and villages/neighbourhoods level instead. By analyzing the association of decentralization and communal conflict until Indonesia's lower administrative tier (villages *desa* and neighborhoods *kelurahan*), this study revealed the association of decentralization's policy on areas mostly prone to communal conflict, i.e. at villages (desa) and neighborhoods (kelurahan) level.

### **3.4 Population and Sample**

This study used a large population and sample of villages and neighborhoods level which were nested in regencies and cities governments in Indonesia. Considering the said reasons at unit of analysis, this study used the population of villages/neighborhoods, and regencies/cities in Indonesia between 2008 and 2014. For example, in 2008, the total number of villages and neighborhoods is N=75.100 of 458 regencies (kabupaten) and cities (kota). In 2011, the total number of villages and neighborhoods is N=76.404 of 471 regencies (kabupaten) and cities(kota). While in 2014, the total number of villages and neighborhoods is N=81.923 of 510 regencies (kabupaten) and cities (kota). This population represented all villages (desa/nagari) and neighborhoods (kelurahan) and regencies/ cities in all provinces in Indonesia. However, the villages and neighborhoods were excluded for the reason that DKI (Daerah Khusus Ibukota) provinces had no indicators of decentralizations.

### **3.5 Data Source**

To test the hypotheses in this study, I used the PODES (The Village Potency Census) which was conducted by Central Board of Statistics (BPS) and official statistics obtained from several national institutions from 2008 to 2014.

#### **3.5.1 PODES**

This study used the PODES (The Village Potency Census) data sets. To examine the presence of communal conflict in Indonesia, I used dataset of the PODES (the Village Potency Census) in Indonesia from 2008 until 2014. The PODES was a longstanding tradition of data collection at the lowest administrative tier of local governments considering small area estimation (SAE).

The PODES consisted of more than 77.500 villages (desa) and urban neighborhoods (kelurahan) in averages ( $N_{2008}=75.100$ ,  $N_{2011}=76.404$ , and  $N_{2014}=81.923$ ) across all of the 491 regencies and cities in averages in Indonesia ( $N_{2008}=465$ ,  $N_{2011}=497$ , and  $N_{2014}=511$ ) in the period of 2008 until 2014. The census was conducted every 3 (three) years by the Indonesian Central Board of Statistic (Badan Pusat Statistik) since 1983. Collected by Badan Pusat Statistik (Indonesia Central Board of Statistics) every three years since 1980, the PODES was the only spatial data the BPS has.

This PODES census focuses on an overview of spatial situations in order to easy to identify accuracy and errors of the spatial dataset. There have been 3 times of the PODES data collection over the past 10 years as part of the series of Population Census, Agricultural Census and Economic Census. However, since 2008, The PODES data has been collected independently as part of the series of census activities. Since 2011, There have also been 3 (three) types of questionnaire, i.e. desa (village) questionnaire, kecamatan (subdistrict) questionnaire, and kabupaten / kota (regency/city) questionnaire. In this way, data accuracy and completeness can be ensured. Detail information is gathered on a range of characteristics including communal conflict information.

Information is gathered by conducting interviews with the key informants such as: kepala desa (rural village heads) and lurah (urban neighborhood heads) and/or other credible informants as well as some field observation (BPS, 2014).

### **3.5.2 Official Statistics**

I also use several official statistics to measure fiscal, administrative, and political decentralization as the main independent variables, as well as other determinants of communal conflict in regencies/cities and villages/neighborhoods level.

To measure decentralization, I follow the work of Schneider (2003) which has measuring decentralization into three types, i.e.: fiscal decentralization, political decentralization, and administrative decentralization.

#### **(1) Fiscal Data (to measure fiscal decentralization)**

Regencies/Cities' fiscal data is collected by the Ministry of Finance, in e-government system named as Sistem Informasi Keuangan Daerah (Local Government Financial Information System ) under Direktorat Jendral Perimbangan Keuangan / DJPK (Directorate General Balancing Fund). This dataset provides detailed information ranging from each regencies/cities' own revenue source, balancing funds and general allocation funds deriving from central government, and to sectorial development expenditure. I will use fiscal data from 2007 to 2013 (the year prior to my chosen PODES dataset), as regencies/cities' development spending data in the Indonesian budgeting system takes at least 1 year to produce effect.

#### **(2) Administrative Indicators (to measure administrative decentralization)**

To measure the administrative decentralization in this study, a dataset from the PODES census is used. This dataset indicates the proportion of education level of chief of villages or neighborhoods within regencies (kabupaten) and cities (kota).

### (3) Political Indicators (to measure political decentralization)

I use the first local and national election data base of Indonesia Ministry of Home Affairs to measure political decentralization. This data base contains information about those regencies/cities which by the period of 2008 until 2014 had already implemented direct elections, which is also known as Pemilihan Kepala Daerah Langsung (Pilkada).

Moreover, besides using those 3 (three) data sources to measure the main dependent variables, in this study I also use several relevant official statistics in controlling regencies/cities' characteristics, e.g.: GDRP, Gini Ratio, Poverty, and Ethnic Fractionalization Index. I will use those official statistics respectively from Central Board of Statistics (e.g. GDRP, Gini Ratio, Poverty and Ethnic Fractionalization Index).

In the section of variables and indicators, I elaborate more for those said official statistics with their definition, source, and measurement scale.

## **3.6 Variables and Indicators**

This study uses several main independent variables, a dependent variable, and control variables as well.

### 3.6.1 Independent and Dependent Variables

Following to Schneider (2003), there are three types of decentralization, such follow: (1) Fiscal Decentralization, (2) Political Decentralization, and (3) Administrative Decentralization. This study will adopt the measures of decentralization which was introduced by Schneider.

There are 3 (three) main independent variables for measuring decentralization indicators for this study, as follow:

1. Fiscal decentralization, measured by local expenditures on Fungsi Keamanan dan Ketertiban (Peace and Order function key) from the transferred blocked grant (DAU) distributed to each regencies;
2. Administrative decentralization, measured by the proportion of level of education of local villages level in each regencies/cities;
3. Political decentralization, measured by the age of direct Mayor election to indicate how mature of local governments' democracy is.

Adopting work of Barron, et.al (2009) and Tajima (2009) in determining communal conflict variations in Indonesia, this study use a dependent variable which measures the density of communal conflict within villages (desa) and neighborhoods (kelurahan). Table 3.1 presents detailed information about independent variable and main dependent variables with their definition and measurement scale.

Table 3.1  
Variables, Definition, Scale and Source of Data

Variable	Indicators	Definition	Scale	Sources
<b>Independent Variables</b> Fiscal Decentralization	Log of regencies/cities transferred blocked grant	Regencies/Cities transferred blocked grant ( <i>dana alokasi umum</i> ) in peace and order function in(2007-2013)	Interval	SIKD 2007-2013
Administrative Decentralization	Share of level education of local leader	Percentage of level education of village chief with in districts	Percentage	BPS-Podes 2008-2014
Political Decentralization	Age of direct democracy	Age of direct Mayor election ( <i>pilkadal</i> ) in (2008-2014)	Interval	MoH 2008-2014
<b>Dependent Variable</b> Communal conflict	Density of Communal conflict	A Dummy indicator indicating communal conflict occurs at villages in the last of a year village	0 = No communal conflict 1= communal conflict	BPS Podes 2008-2014



From the Table 3.1, I discuss more how to develop the outcome or dependent variable which is used. Based on the information from the official village potential censuses (PODES), I define the dependent variable  $Y_{ij}$  as a dummy, which take a value of 1 if villages  $i$  in district  $j$  has indicated “communal conflict occurs at villages in the last of a year”, 0 otherwise. This dependent variable (communal conflict) is measured first by summarizing the number of communal conflicts events caused by: intervillage brawl, intergroups within villages-outgroups villages’ brawls, student riot, ethnic riot, and other (an excluded variable is the brawls of villagers with the apparatus). Second, after summarizing the total of communal conflicts event, I make dummy variable which consists of categorical values “0” and “1”. The “0” value means “there are no occurrence of communal conflict events within villages in the last of a year. The “1” value means “communal conflict occurs at villages in the last of a year”.

### 3.6.2 Control Variables

There are several control variables which is categorized in social, economic, political, institutional, and environmental determinants. Table 3.2 below indicates proximate determinants which are included in the model of dependent variable, main independent variables, and control variables, as well as its definition and source of data.

Table 3.2  
Determinants, definition and data sources

Determinants	Definition	Sources
<b>Villages Level</b>		
<b>Social Determinants</b>		
Community group	Dummy indicators indicating the activity of community guard system in the village/neighborhood in the last 1 year	BPS-Podes 2008-2014
Daily Crimes	Dummy indicators indicating the presences of violence crimes related to theft, robbery, heist, lynching, village/neighborhood in the last 1 year	BPS-Podes 2008-2014
<b>Economic Determinants</b>		
Slum Areas	Dummy indicators indicating the presences of slum areas within a village	BPS-Podes 2008-2014
Land converted to non-agricultural land	Dummy indicators indicating the presences of agricultural land converting into non-agricultural land within a village	BPS-Podes 2008-2014
Mining area	District has a mining area	BPS-Podes 2008- 2014
<b>Institutional Determinants</b>		
Local Traditional Elite in communal conflict mediation	Dummy indicators indicating the presences of Local Traditional Elite in communal conflict mediation within a villages	BPS-Podes 2008-2014
Television	Dummy indicator indicating the presence of local television, public/private national television, and foreign cable television broadcast	BPS-Podes 2008-2014

Table 3.2 (continued table)  
Determinants, definition and data sources

Determinants	Definition	Sources
<b>Villages Level</b>		
Natural Disaster		
Drought	Dummy indicators indicating the presence of drought with in the village in the last 3 year	BPS-Podes 2008-2014
Topography		
Mountain	Dummy indicators indicating Village located in mountainous area	BPS-Podes 2008-2014
Valley	Dummy indicators indicating village located in valley	BPS-Podes 2008-2014
Seaside	Dummy indicators indicating village located in seaside	BPS-Podes 2008-2014
<b>Districts Level</b>		
Social Determinants		
Ethnic Fractionalization Index (EFI)	The Index measuring the probability that two randomly selected individuals with in a district are not the same group, range from 0 (for homogenous) and 1 (for heterogeneous)	Work of Arifin, et.al (2015) from BPS-Census 2010
GRDP	Regencies/Cities' Gross Regional Domestic Product by Current Market Prices	BPS 2008-2014
Gini Ratio	Regencies/Cities' Gini Index Ratio	BPS 2008-2014
Poverty	Percentages of People in Regencies/Cities who lived below of poverty line (Poverty line which defined by BPS, people who consume food and nonfood under of 2300kl/day)	BPS 2008-2014
Eastern Indonesia	Dummy indicators indicating districts within Eastern part of Indonesia	MoH 2008-2014

Table 3.2 (continued)  
Determinants, definition and data sources

Determinants	Definition	Sources
<b>Districts Level</b>		
Institutional Determinants		
Citizens' Participation		
Share of NGO, Ormas and Religion Organization at districts	Percentage of NGO, Ormas and Religion Organization within a district	BPS-Podes 2008-2014
Share of territorial force officer at villages	Percentage of territorial force officers (babinsa) ) within a district	BPS-Podes 2008-2014

Following the theoretical reviews which explain the prevalence of communal conflict and the likelihood of it escalating into violence, I include the main determinants capturing the linkage of decentralization and communal conflict (Table 3.2). In other case, I also include all other proximate determinants of communal conflict in social, economic, political, institutional, and environmental aspect.

I also use topography of villages, its location near border, as well as land converted to nonagricultural use and mining location to examine whether villages in the geographical proximity as disadvantaged and less underdevelopment areas have high risk to communal conflicts than other villages.

### 3.7 Multilevel Regression Analyses

The multilevel regression analyses which is used in this study is able to examine the link between decentralization (in district level) and communal conflict (in village level). This analysis can be used to address multilevel heterogeneity,

assuming that the association between the dependent variable and its covariates vary between district and individual level (Ballas and Tranmer, 2012). Hence, the model account for the clustering of villages in district by separating their variance in communal conflict from the districts' variance (Rabe-Hesketh and Scrandal, 2012) . Using this model is thus the most appropriate to test hypothesis about the effects of varying districts and villages characteristics on communal conflict.

A well-known multilevel regression model is also named as the hierarchical regression model. It is known in the literature under a variety of names, such as 'hierarchical model' (Raudenbush & Bryk, 1986; Bryk & Raudenbush, 1992), 'variance component model' (Longford, 1988), and 'random coefficient model' (De Leeuw & Kreft, 1986; Longford, 1993). This model has become so popular that 'multilevel modeling' become almost synonymous with 'applying a multilevel regression model' (Hox, 2000).

Social research regularly involves problems that investigate the relationship between individuals and society. The general concept is that individuals interact with the social contexts in which they belong, that individual persons are influenced by the social groups or contexts in which they belong, and that those groups are in turn influenced by the individuals who make up that group. The individuals and the social groups are conceptualized as a hierarchical system of individuals nested within groups, with individuals and groups defined at separate levels of this hierarchical system. Naturally, such systems can be observed at different hierarchical levels, and variables may be defined at each level. This leads to research into the relationships between variables characterizing individuals and variables characterizing groups, a kind of research

that is generally referred to as multilevel research. In this research, I will purpose two-level logistic regression.

In this study, I use two-level logistic regression, as parts of multilevel logistic regression, as mention in Snijders and Bosker (1999). In their infamous book which is titled” Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling”, they suggested to use multilevel logistic regression for the dichotomous outcome variable. Furthermore, Snijders and Bosker elaborated to develop the basic structure of two level-logistic regression. The basic data structure of two-level logistic regression is a collection of a random sample of  $n_i$  level-one units  $i$  ( $i=1, \dots, n_i$ ) within  $N$  groups (‘units at level two’)  $j$  ( $j=1, \dots, N$ ). The outcome variable is dichotomous and denoted by  $Y_{ij}$  for level-one unit  $i$  in group  $j$ . The outcome variable is coded 0 for “failure” and 1 for “success”. If one does not (yet) takes explanatory variables into account, the probability of success is regarded as constant in each group. The success probability in group  $j$  is denoted by  $P_j$ . In a random coefficient model, the groups are considered as being taken from a population of groups and the success probabilities in the groups,  $P_j$ , are regarded as random variables defined in this population. The dichotomous outcome ( $Y_{ij}$ ) can be represented as the sum of this probability ( $P_j$ ) and a residual ( $R_{ij}$ )

$$Y_{ij} = P_j + R_{ij}$$

In words, the outcome for individual  $i$  in group  $j$ , which is either 0 or 1, is expressed as the sum of the probability (average proportion of successes) in this group plus some individual-dependent residual.

In this study, I use two level logit regression model. Assume that we have data from group  $j$  districts ( $j = 1, \dots, N$ ), with a different number of villages and neighborhoods  $n_i$  in each regencies/cities. On the village level, we have the outcome variable communal conflict ( $Y_{ij}$ ), measured by number of communal conflict events caused by: intervillage brawls, intergroups within villages with outgroups villages brawls, student riot, ethnic riot dead, and other (excluded variables is the brawls of villagers with apparatus).

To analyze these data, I set up two level logit regression model equations with random intercepts in villages and neighborhoods level (unit level 1) to predict the outcome variable  $Y$  using the explanatory variables *in villages and neighborhoods and regencies or cities (unit level 2)*. Considering a village or neighborhood  $i$  nested in a regency or city  $j$ , the logit two level regression model is:

$$Y_{ij} = E_{ij*} ; Y_{ij} \sim \text{Binomial}(n_{ij}, E_{ij*})$$

$$\text{logit}(E_{ij*}) = \beta_0 + \sum \beta_j W_j + \beta_{ij} X_{ij} + \mu_j + \epsilon_{ij} +$$

with

$$E_{ij*} = \text{logit}(P(E_{ij*}=1))$$

$E_{ij*}$  is outcome variables (communal conflict) in villages ( $i$ ) nested within regencies/cities( $j$ )

$\beta_0$  is a random intercept

$W_j$  is a set of district characteristics (e.g Fiscal District Spending, Gini index, GDRP, Poverty and Security Forces)

$X_{ij}$  is a set of villages characteristics (e.g. daily crimes, community group social capital, and television)

$\epsilon_{ij}$  is error which is assumed logistic distributed with zero and variance  $\sigma_\epsilon^2$

$\mu_j$  is a random intercept varying over districts with mean zero and variance  $\sigma_\mu^2$