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Social Studies**

Erasmus

**The Role of Inequality, Diversity, and Social
Capital towards Incidence of Crime and
Conflict**

Panel Data Analysis from 313 Villages in Indonesia

A Research Paper presented by:

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Contents

Chapter 1 Introduction	9
Chapter 2 Context of Indonesia	10
Chapter 3 Theoretical Framework and Empirical Evidence	13
3.1. Theoretical Framework on Inequality	13
3.1.1. Vertical Inequality	13
3.1.2. Horizontal Inequality	14
3.2. Theoretical Framework on Crime	14
3.2.1. Social Capital and Crime	15
3.2.2. Income and Crime	15
3.2.3. Social Diversity and Crime	16
3.2.4. Education (Control Variable) and Crime	16
3.3. Empirical Evidence on Crime	16
3.4. Theoretical Framework on Conflict	17
3.4.1. Social Capital and Conflict	18
3.4.2. Income and Conflict	19
3.4.3. Social Diversity and Conflict	19
3.4.4. Education (Control Variable) and Conflict	20
3.5. Empirical Evidence on Conflict	20
Chapter 4 Methodology	22
4.1. Econometric Model	22
4.2. Data Source	23
4.3. Variables	27
4.3.1. Dependent Variables	27
4.3.2. Independent Variables for Vertical Inequality	28
4.3.3. Independent Variables for Horizontal Inequality	29
4.3.4. Control Variables	30
Chapter 5 Results	32
5.1. Result with Random Effect	32
5.1.1. Result with Crime as Dependent Variable	32
5.1.2. Result with Conflict as Dependent Variable	37
5.2. Result with Fixed Effect Clustered by Province	41
5.2.1. Result with Crime as Dependent Variable	41
5.2.2. Result with Conflict as Dependent Variable	43

Chapter 6 Discussion of Results	47
6.1. Poverty Rate as Proxy for Vertical Inequality	47
6.2. Social Capital	47
6.3. Social Diversity	48
Chapter 7 Conclusion	50
References	51
Annex 1 Correlation Table of Independent Variables	56

List of Tables

Table 1. Type and number of respondents from Secondary Data (IFLS 4 and IFLS 5)	24
Table 2. Original Variables from IFLS 4 and IFLS 5 Dataset	25
Table 3. Descriptive Statistics	26
Table 4. Description of Dependent Variables	27
Table 5. Description of Independent Variables Representing Vertical Inequality	28
Table 6. Description of Independent Variables Representing Horizontal Inequality	29
Table 7. Description of Control Variables	30
Table 8. Estimation of Random Effect Regression with Crime as Dependent Variable including EFI	34
Table 9. Estimation of Random Effect Regression with Crime as Dependent Variable including EPOI	35
Table 10. Estimation of Random Effect Regression with Crime as Dependent Variable including RFI	35
Table 11. Estimation of Random Effect Regression with Crime as Dependent Variable including RPOI	36
Table 12. Estimation of Random Effect Regression with Conflict as Dependent Variable including EFI	38
Table 13. Estimation of Random Effect Regression with Conflict as Dependent Variable including EPOI	38
Table 14. Estimation of Random Effect Regression with Conflict as Dependent Variable including RFI	39
Table 15. Estimation of Random Effect Regression with Conflict as Dependent Variable including RPOI	40
Table 16. Estimation of Fixed Effect Regression Clustered by Province with Crime as Dependent Variable including EFI	42
Table 17. Estimation of Fixed Effect Regression Clustered by Province with Crime as Dependent Variable including EPOI	43
Table 18. Estimation of Fixed Effect Regression Clustered by Province with Conflict as Dependent Variable including EFI	45
Table 19. Estimation of Fixed Effect Regression Clustered by Province with Conflict as Dependent Variable including EPOI	46

List of Figures

Figure 1. Poverty Rate in Indonesia in the Year 2000-2015	10
Figure 2. Gini Index of Indonesia in the Year 1993-2013	10
Figure 3. Number of Conflict Incidence of 13 Provinces in 2004-2014	11
Figure 4. Number of Crime Incidence of 13 Provinces in 2004-2014	12
Figure 5. Summary of Theoretical Framework on Crime	14
Figure 6. Summary of Theoretical Framework on Conflict	18

List of Maps

Map 1. Map of 13 IFLS Provinces in Indonesia	24
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List of Appendices

Annex 1. Correlation Matrix of Independent Variables	56
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List of Acronyms

IFLS	Indonesian Family Life Survey
EPOI	Ethnic Polarization Index
EFI	Ethnic Fractionalization Index
RPOI	Religious Polarization Index
RFI	Religious Fractionalization Index
OLS	Ordinary Least Squares
NGO	Non-Government Organization

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Being confident of this, that He who began a good work in you will carry it on to completion until the day of Christ Jesus.

(Phil 1:6)

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Abstract

Developing countries are often hurdled with conflict or crime that impedes social cohesion and therefore hindering them to grow. Many literatures have discussed its cause but the consensus is yet to be reached. Moreover, numerous studies focus on the economic and diversity aspect but not a lot is paying attention to social capital. This research tries to contribute to the discussion by analysing the causes of conflict and crime from 313 village level data that represents 83% of the population in Indonesia considering three variables: vertical inequality proxied by poverty rate, social diversity in terms of ethnicity and religion, as well as social capital. With panel data regressions, this paper found that income inequality is to certain extent able to explain the increase of the number of incidence of theft, robbery, and conflicts in relation to land and building. Furthermore, the lack of social capital is shown to be positively correlated with increasing incidence of crime such as sexual assault. In contrast, there is no strong evidence that social diversity plays a role in the increasing incidence. While the results are not meant to be generalized, from here one could infer that in order to reduce crime and conflict, it is worth for policy makers to address the root cause of income inequality, try to introduce community-based solution that encourage social capital, and start seeing diversity as an asset instead of divider that triggers incidence.

Relevance to Development Studies

Social cohesion remains to be one of the most important foundations for developing countries to grow. This paper tries to contribute to the discussion by looking at the relationship of social capital, social diversity and vertical inequality with many different types of conflict and crime in Indonesia that could potentially hinder cohesion. By analysing the possible causes of conflict and crime, policy makers could derive which factor is to be prioritized in order to encourage social cohesion and thus accelerate development.

Keywords

Inequality, social capital, diversity, conflict, crime, vertical inequality, horizontal inequality, polarization, fractionalization, ethnicity, religion, relative deprivation theory, poverty, Indonesia, resource mobilization theory, social control theory, expected utility theory, heterogeneity, panel data, social cohesion

Chapter 1

Introduction

With such great diversity, as Stewart (2008) coined, by researching Indonesia one has the opportunity to be exposed with many different contexts that is applicable to different countries at once. As the biggest archipelago in the world, the country consists of over 17,000 islands, 360 ethnicities, and 719 local languages – in addition to *Bahasa Indonesia* as national language. Moreover, according to its constitution Indonesia guarantees freedom of worship of 6 religions. The share of religions according to census in 2010 is 87.2% Islam, 6.9% Protestantism, 2.9% Catholicism, 1.7% Hinduism, and 0.7% Buddhism (Indonesian Bureau of Statistics 2011). Being a democratic country, this diversity could certainly act as a strength for generating much available resources but it also poses threats towards its political and social stability. The risk of conflict and crime to persist is likely to exist.

Drawing from the aforementioned facts, this paper tries to analyse the causes of conflict and crime from 313 village level data that represents 83% of the population, mainly from three different variables. Firstly, it attempts to see the correlation of variables measuring vertical inequality proxied by percentage of poor household in explaining the incidence of crime and conflict. Next, it also considers the social diversity factor measured by heterogeneity of ethnicity and religion. Finally, it aims to introduce the variable of social capital, in this case trust with the same ethnicity and level of alertness one has among the neighbourhood, and see whether it is associated with the number of incidence of crime and conflict. This research is also aimed to provide contribution on policy implication based on the end results. More specifically, the paper tries to address the following research questions:

- Does vertical inequality proxied by percentage of poor household in village level have correlation with incidence of crime and conflict in Indonesia?
- Does social diversity based on different groups of religion and ethnicity in village level have correlation with incidence of crime and conflict in Indonesia?
- Does social capital have correlation with incidence of crime and conflict in Indonesia?

Addressing the relationship of inequality, social capital, crime and conflict is relevant because in developing countries particularly, these factors are crucial in determining political stability, economic growth, and the extent of income distribution. Many prior research has been conducted with regard to these variables with no conclusive results. This paper tries to contribute to the discussion by looking at the relationship of social capital, social diversity and inequality with many different types of conflict and crime in Indonesia. Moreover, as a proxy for social diversity, polarization and fractionalization index were constructed based on the different religions and ethnicities. While Indonesia is not prominently known for being a country with high rate of crime or conflicts nowadays, the interest lies in the diversity it has.

This paper uses panel data approach from recent data in the year of 2007 and 2014 in Indonesia. The data is at the village level and covers 13 provinces of Indonesia. It will then be analysed using OLS random effect and fixed effect with standard error adjusted for 13 clusters in province to see whether the results are consistent throughout different methods.

The context of the country will be explained further in Chapter 2. Next, theoretical framework will be elaborated with the focus on defining vertical and horizontal inequality as well as the existing theories that relate the chosen independent variables with occurrence of conflict and crime. Chapter 4 will explain about the methodology including the model, data, and variables description. Results will be presented in Chapter 5, followed by discussion and conclusion in Chapter 6 and 7.

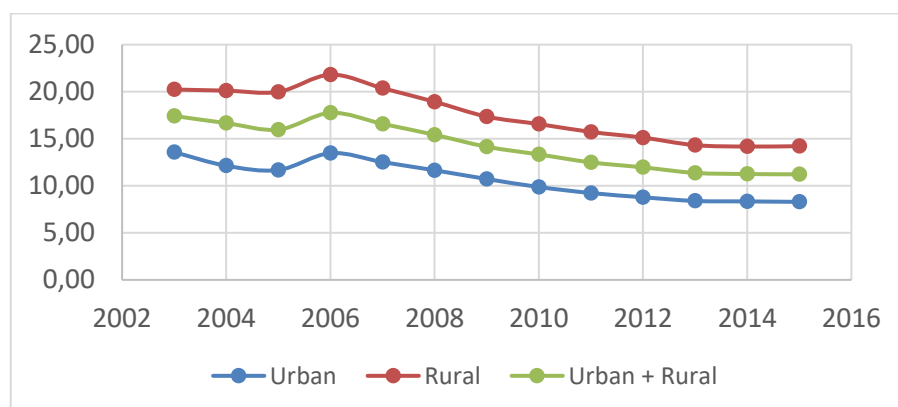
Chapter 2

Context of Indonesia

Indonesia has been a prominent subject for research especially due to its extent of diversity. Being the fourth world's most populous country with over 200 million inhabitants encompassing over 17,000 islands, Indonesia since its inception is posed with challenges to maintain its social cohesiveness and avoid conflict that could shake its economic and political stability.

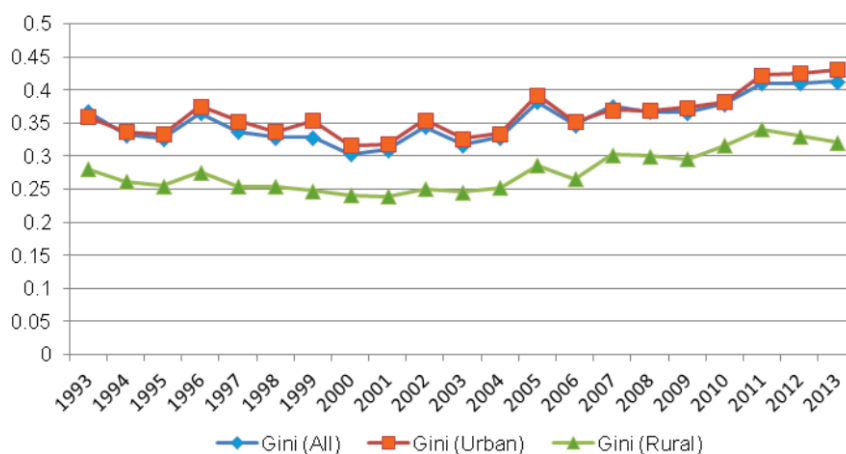
As seen in Figure 1 below, in terms of poverty rate, the trend is decreasing. However, in contrast, being a growing economy with diverse population causes Indonesia to have high inequality, be it income inequality between individuals or inequality based on groups such as due to different ethnicity and religion. Indonesia is continuously experiencing difficulty especially in addressing the issue of income inequality. Despite its success in maintaining growth and surviving global economic crisis, in the past two decades, the gap between the richest and the rest in Indonesia has grown faster than in any country in South-East Asia (OXFAM International 2017). Furthermore, Credit Suisse (2016) found that Indonesia was the fourth most unequal country in the world, behind Russia, India and Thailand. Between 1999 and 2011, expenditure Gini index increased significantly from 0.308 to a record high of 0.41. The latest data was in August 2017 with Gini index stands at 0.393 (The Jakarta Post 2017).

Figure 1. Poverty Rate of Indonesia in the Year 2000 - 2015



Source: Indonesia Statistics Bureau 2017

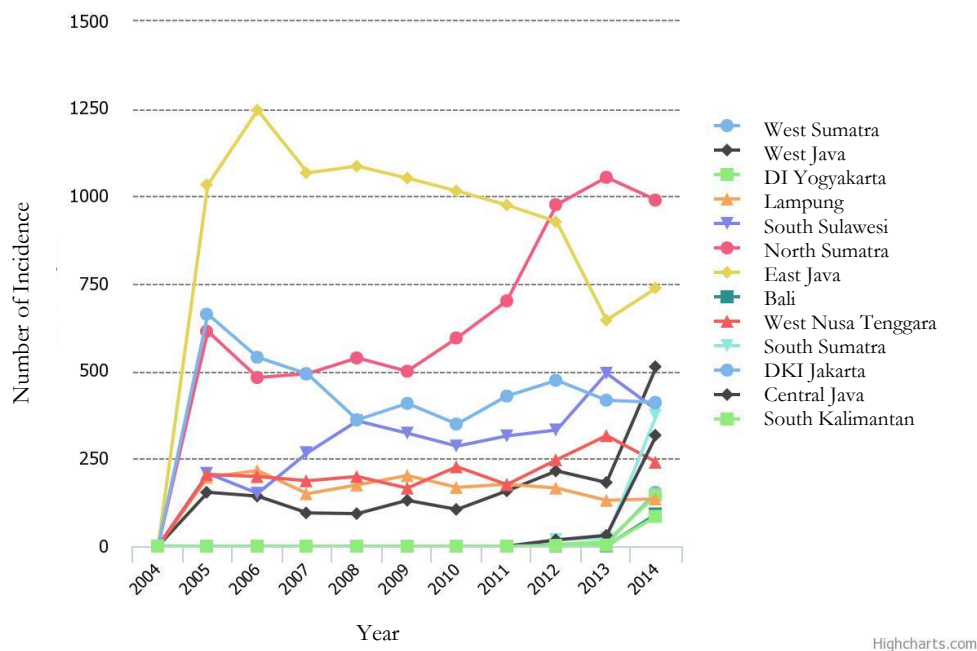
Figure 2. GINI Index of Indonesia in the Year 1993-2013



Source: Indonesia Statistics Bureau 2017

With regard to conflict, Indonesia has come from a long history of it since the past 72 years of independence. It has experienced massive ethnic conflict on one hand but also for instance, group brawls regularly. In terms of the number of incidence recently, the trend is decreasing with slight increase from 2013 to 2014 for most of the 13 provinces covered in this paper. North Sumatra is shown to have the highest number of conflict incidence while Bali has the lowest number of conflict incidence in 2014. Nevertheless, it needs to be taken into account that this paper uses data from 313 villages in 2007 and 311 villages in 2014 from these provinces. This chart provides the exact condition of the province but not based on the villages that are the main data source of this paper. More detailed condition on the data used in this paper will be presented in Chapter 4.

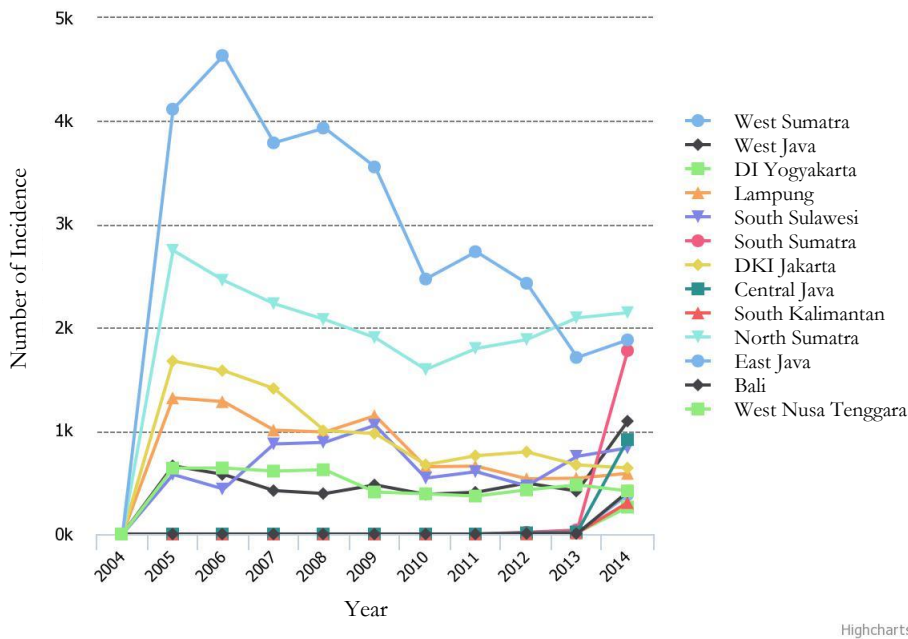
Figure 3. Number of Conflict Incidence of 13 Provinces in 2004-2014



Source: National Violence Monitoring System Indonesia 2017

Similarly, in the 13 provinces of Indonesia as shown in Figure 4, the number of crime incidence has decreasing trend but increased slightly particularly from 2013 to 2014. North Sumatra is shown to have the highest number of crime incidence while DI Yogyakarta has the lowest number of crime incidence in 2014. Here, there crime data also include domestic violence and violence related to law enforcement. Again, the data here represents the exact number of cases in provincial level. The pattern could be similar to the ones that will be discussed from IFLS survey but it is not exactly the same as the sample size of the survey does not represent the whole population in province level.

Figure 4. Number of Crime Incidence of 13 Provinces in 2004-2014



Source: National Violence Monitoring System 2017

Moving on, there are plenty of existing literatures discussing about what factors cause crime and conflict in Indonesia. However, few of them are including variables in relation to social capital, for instance level of trust among community and how it affects the likelihood of conflict and crime incidence. According to Mancini (2008), Indonesia is experiencing “great religious polarization” that could be the risk for conflict. In addition, more recent research by Arifin et al. (2015), based on 2010 census coined that Indonesia is ethnically fractionalized especially in the provinces and districts outside of Java island. Therefore, it is worth to consider the role of social capital to encourage cohesion. This paper is trying to fill this gap by having 6 different types of conflict and 6 different types of crime as the dependent variables as well as including variables that explain social capital.

Finally, between 2025-2035, Indonesia is predicted to experience “demographic bonus” in which the population size with productive age will be higher than the number of children and elders (The Jakarta Post 2014). In such young demography with large and varied population, it is becoming more important to maintain social cohesion and stability so that this “bonus” can be utilized at maximum for the welfare of citizens. Therefore, it is worth to analyse these different factors that matter to induce social cohesion. The next chapter will explain about the underlying theories that relate income inequality, diversity, and social capital towards incidence of crime and conflict.

Chapter 3

Theoretical Framework and Empirical Evidence

3.1. Theoretical Framework on Inequality

3.1.1. Vertical Inequality

Vertical inequality is measured according to individual level differences with the most common one being based on income or land acquisition. In this paper, one uses income as the main focus to describe vertical inequality. The work on income inequality was pioneered by Kuznets (1955) who coined that income inequality and economic growth follows inverted U-shape relationship. As a country goes through industrialisation, income inequality will first increase and then normalised or reduced when the transition from agriculture to industry sector is finished. With regard to income, Østby (2013) mentioned that “national income distribution” can be measured based on 3 indicators: the mean of the distribution measured by rate of growth; spread of distribution measured by inequality indexes such as Gini coefficient; and lower tail of distribution in which one poverty line is set as measurement. He further mentioned that most literature focuses on income inequality in explaining political violence.

The link between income inequality and crime or conflict, however, have not yet reached a consensus. Although it is easy to generally associate that poverty has tendency to cause conflict, Kanbur (2007) argued in his paper that “wealth can provide the means for conflict as much as take away the reason for it”. There are some countries that are poor but more peaceful, for instance, compared to the richer countries.

With regard to its relation with conflict, vertical inequality has been a part of study for a long time. Nagel (1974) mentioned that Aristotle has coined that the incidence of protests and violence depends both on the economic status but also the extent to which wealth is distributed in a nation. Furthermore, the theories that relates inequality and conflict can be explained into three. The first one is Marx’s (1967) class struggle theory which hypothesised clash between the proletariats and bourgeoisie due to income inequality. Exploitation of resources is the main cause why the working-class rebels and cause conflict. Next, it is the theory of relative deprivation (Gurr 1970) who emphasized the discrepancy of people’s “value expectation” which is the goods and services people believe they should have and “value capability” which is the capability to obtain those desired goods and services. Building on this theory of relative deprivation, the term “synchronic relative deprivation” was utilized by Boswell and Dixon (1990). It emphasises that conflict is often triggered by some part of society who sees there are others who are still part of them but are in better economic state. This theory, however, was then criticized by the approach of “resource mobilization” (Tilly 1978). It argues that in every society there is always certain level of inequality and dissatisfaction. Therefore, what is more important is not the causes of grievance but whether or not society has the opportunity to be engaged in conflict. Other than that, with regard to ethnicity, Gurr (1993, 2000) coined that the grievances due to discrimination based on ethnic diversity would trigger mobilization and thus poses more risk to violent actions.

In this paper, since the level of observation is up until the village, the Gini index is not available for Indonesia. Therefore, to approximate, the percentage of poor household is used to measure vertical inequality.

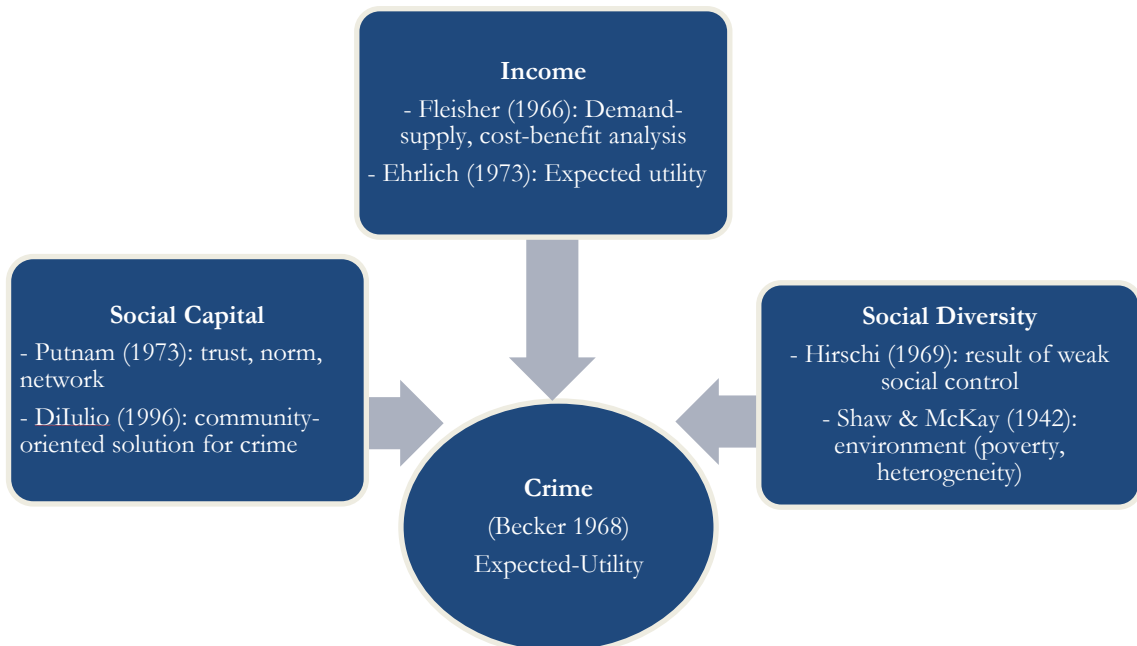
3.1.2. Horizontal Inequality

Horizontal inequality, in contrary to vertical inequality, does not line up individuals and take into account the differences between them. Instead, it measures the inequality between groups, be it in terms of ethnicity, religion, or different locations. Furthermore, horizontal inequality does not solely focus on economic differences but takes into account more diverse factors such as political and social aspects between groups. As mentioned by Stewart (2000), when a country is unequal in terms of its economic status, political and economic condition, then identity including ethnicity matters to trigger political violence. What could finally lead to violence is when these inter-group identity is associated with grievance and opportunity. Moreover, according to Østby (2013), this analysis combines the theory of relative deprivation (Gurr 1970) and social identity theory. It mentions that the importance of group boundaries and the level of investment given by a person to their member group tend to increase likelihood of collective relative deprivation.

What is different between horizontal inequality and relative deprivation, however, is that according to Østby (2013), horizontal inequality emphasises that those who has likelihood to trigger conflict is not only the relatively deprived. Instead, those who are better-off compared to the rest of a society could also increase the risk of conflict. They could have disagreement with the poor or the state to protest “unfair redistribution” or with the purpose to maintain the status quo and avoid the poor “gaining political power and demand more resource redistribution or address their grievances”. Furthermore, in terms of opportunity, he argued that this more privileged part of society has more opportunity to mobilize people and trigger conflict since they have more access to resources.

3.2. Theoretical Framework on Crime

Figure 5. Summary of Theoretical Framework on Crime



One of the most prominent economic approach on crime is by Becker (1968) who mentioned that crime is actually following the concept of expected utility. When a person needs to make a decision with being uncertain of the outcome, they will try to choose the decision that gains the highest expected utility. According to Becker (1968), this decision-making process is also included in deciding to engage in crime or not. It is a rational, self- interested decision as response to incentives from the agents “via expenditures on law enforcement and corrections”.

3.2.1. Social Capital and Crime

Several factors have been theorized to be correlated with crime incidence. One of them is social capital. It is defined by Putnam (1993 pp. 167) as the “features of social organization such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions.” Therefore, community organizations including religious institutions, civic associations, and the neighbourhood which forms a person’s upbringing plays major role in their likelihood to be involved in crime. As mentioned by DiIulio (1996) for instance, 75% of violent juvenile offenders come from abusive family and 25% of the adults who are in prisons have parents who are involved in drugs and alcohol. Therefore, he argued that utilizing social capital is more plausible to reduce crime in the US compared to imprisonment. He suggested that “community- oriented solutions” have more chance to succeed in tackling crime issues since imprisonment have drawbacks such as losing human resources’ productivity and high cost of taking care of inmates. Drawing from this theory, this paper tries to test whether or not social capital variables have effect towards the likelihood of crime happening in the village. It uses two variables: alertness and trust with the same ethnicity as dummy variables to gauge its effect towards crime. Then the following hypothesis is made regarding social capital:

- The higher the level of alertness needed to be taken by community in their neighbourhood, the higher the number of crime incidence
- The higher the level of trust with the same ethnicity, the higher the number of crime incidence

3.2.2. Income and Crime

Next, the research by Fleisher (1966) discussed the relationship between income and delinquency. In his paper he started by using the classic demand and supply theory to understand someone’s decision to be engaged in delinquency. From the demand side, economic condition and other characteristics that he coined as “taste for delinquency” has a role in someone’s decision to engage in a crime. On the other hand, from the supply side, opportunity that “depends on the economic and social characteristics of the environment” also presents as a force. The interplay of these two factors ultimately determines whether someone decides to commit a crime. Furthermore, he assumed that committed crime is also result of cost-benefit analysis. People will commit it when the opportunity cost to be delinquent is low. Similarly, the research of Ehrlich (1973) also used “economic theory of choice under uncertainty” which hypothesized that in a mutually exclusive situation, the decision to be involved in legal and illegal activity is based on the expected utility of each other. Therefore, when individuals have low income, they have higher tendency to conduct crime since the cost of being involved in legal activity is higher. By conducting crime, they will expect higher benefit. People with low income will be more likely to conduct it since they have not much to lose. Based on these theory, this paper uses variables that can be proxy of income inequality condition which is the percentage of poor household. Village budget per capita is also used here as control variable but not the main analysis. The hypothesis is:

- The higher percentage of poor household, the higher the number of crime incidence
- The higher the village budget per capita, the lower the number of crime incidence

3.2.3. Social Diversity and Crime

The theory underlying social diversity and crime comes from Hirschi (1969) who coined the social control theory that “crime is the result of weak social institutions” that are not able to control the community. In other words, it suggests that crime and social control are negatively correlated. The degree of ethnic and religious homogeneity is some of the factors that affect social control. Other supporting theories include social disorganization theory (Shaw and McKay 1942) who stated that the behavioural decision made by a person, including to commit crime, is a product of their social environment. It is not the individual trait that causes it but instead it is a result of structural causes. Neighbourhood with “physical dilapidation, poverty, and higher level of ethnic and culture heterogeneity” is hypothesised to be a better predictor for higher crime rates. At the end, based on these theories, the likelihood of crime should be lower in community with more homogenous ethnicity and religion. In this paper, fractionalization and polarization index are included as independent variables to show social diversity. This leads to the following hypothesis:

- The higher the EPOI, EFI, RPOI, and RFI, the higher the number of crime incidence

3.2.4. Education (Control Variable) and Crime

While it is not the focus of this paper to study the relationship of education and crime, this variable is included as one of the control variables in addition to total village budget. Some relevant theories include Lochner (2004) who mentioned that education has deterrent effect towards crime. People who have higher education level and therefore acquiring human capital will have higher opportunity cost of engaging in crime. They risk losing their expected income in the future, for instance, and will have more to lose when being imprisoned. Other than that, Becker and Mulligan (1994) coined that with education, one has time preference to delay present consumption to the future. This means they care more with what is done now which will impact the future. Again, this entails the fact that when they are committing crime, they might be worse off in the future for being imprisoned. In this paper, the variable to represent education is percentage of the population who are registered in the secondary school. Based on these theories, the hypothesis for education is:

- The higher percentage of the population who are registered in the secondary school, the lower the number of crime incidence

3.3. Empirical Evidence on Crime

Fleisher (1966), from his research in the US, found that in the area with high criminality or the most extreme, “1% increase in income may well cause a 2.5% decline in the rate of delinquency”. Overall, his results from the data of the US in the 1960 concluded that along with other variables, 10% increase in income will likely to decrease rate of delinquency by 15-20%. Ehrlich (1973) furthermore shows that there is positive correlation between rate of crime and community’s income inequality. Next, from the research in 12 provinces of Indonesia between 2005-2012, Tadjoeddin et al. (2016) found that vertical inequality has positive correlation with violent crime.

In relation to ethnicity and religion, by using Herfindahl index to measure homogeneity of the community in the US, Trawick and Howsen (2006) found that the higher homogeneity in ethnicity

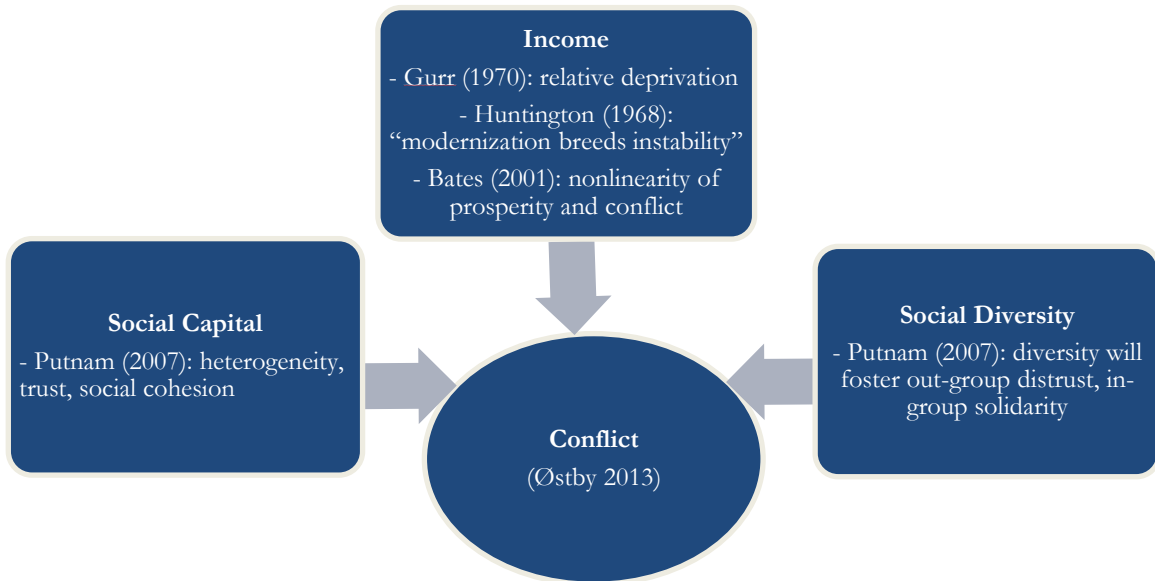
and religion of certain community, the lower crime occurrence. Furthermore, Baier and Wright (2001) studied the relationship between religion and crime by conducting meta-analysis from 60 prior research. The finding of the research is that religion does decrease the likelihood for someone to engage in a crime particularly in the area in which religiosity is deemed important and has become a social norm.

Finally, with regard to education and crime, some relevant research includes Lochner and Moretti (2004) who found that in the US, schooling has significant effect of decreasing probability imprisonment. Furthermore, the decrease of crime in correlation to high school graduation is contributing to substantial social savings which is 14-26% of private return. Other than that, Groot and van den Brink (2010) coined that years of education and probability of engaged in crime is positively correlated.

3.4. Theoretical Framework on Conflict

There are two types of conflict according to Tadjoeeddin and Murshed (2007): “episodic conflict” which happens not so often but larger in scale, creating more damage and “routine conflict” that happens more frequently but has lower impact such as fewer casualties. Routine conflict consists mainly of group brawls, vigilantes. In nature, it is similar to “mass political violence short of internal war” (Hibbs 1973). Indonesia has experienced both types of conflict since its inception. With regard to episodic conflict, it went through separatism movement of Timor Leste in the past which eventually ended with the country being actually independent. On the other hand, other type of conflict is routine conflict. This is more frequently occurred such as demonstrations resisting government programs or group fights between neighbourhood. In reality, sometimes it is unavoidable for routine and episodic conflicts to overlap. For this paper, however, the types of conflict discussed is categorized as routine conflict.

Figure 6. Summary of Theoretical Framework on Conflict



Conflict is widely perceived by political science literatures to be motivated by two things. First of all, conflict or rebellion is mostly seen as a way to express “extreme grievance” by those who are disadvantaged and is conducted with the purpose to fight for justice. This view is supported by theories such as by Gurr (1970) or Davies (1962) but could be traced back up until Marx (1967) with the class struggle theory. Those who are part of the working class are politically and economically exploited. Therefore, it is expected that they rebel and engage in violence to struggle for justice. Today’s grievances could be due to for instance corruption by the government, oppression, or inability to fulfil economic needs. There is other view however that is called “resource mobilisation” theory (Snyder and Tilly 1972). This view sees conflict to occur as “a form of organized crime” which happens when there is financial and political opportunity or when it is feasible. Here, conflict is seen a disruption to productive economic activities which could be sourced from greed or the desire to acquire power. More detailed theoretical background on how social capital, income, and social diversity could relate to conflict will be explained in the following section.

3.4.1. Social Capital and Conflict

“Conflict theory suggests that diversity enhances the in-group/out-group distinction and strengthens in-group solidarity or bonding social capital.” (Putnam 2007). Since Indonesia is a country with many types of ethnicity, there is possibility that the likelihood of conflict will increase. This is because, as also coined by Putnam (2007), “In the short run ... ethnic diversity tends to reduce social solidarity and social capital”. Intuitively, people who have higher level of trust of each other, or in other words stronger ties of social capital, tend to cooperate, avoid conflict and

often it ends with economic gain as mentioned by the case of Prisoner's Dilemma (Miller 1993). The following hypothesis is then formulated:

- The higher the level of alertness needed to be taken by community in their neighbourhood, the higher the number of conflict incidence
- The higher the level of trust with the same ethnicity, the higher the number of conflict incidence

3.4.2. Income and Conflict

In explaining the incidence of conflict, there is a need to consider income factors which could be seen from poverty rate as proxy to income inequality. As mentioned by Sen (1973), "the relation between inequality and rebellion is indeed a close one". The higher the economic gap, there is more tendency for greed from the poorest part of the population which could increase the risk of conflict. The work of Gurr (1970) also mentioned how "relative deprivation" which defined as "perceived discrepancy between men's value expectation and value capability" creates grievances that cause internal violence. Expectation could increase when individuals see others have more. When increase of expectation is not followed by capability to reach these "values" in form of goods and services, the more likely aggression occurs due to dissatisfaction. For instance, as stated by Tadjoeeddin and Murshed (2007) building from the theory of Gurr (1970), when educational attainment is not followed by economic development, this would trigger conflict since this creates dissatisfaction from knowing what can be achieved without having the capability to obtain it.

Furthermore, poverty is often associated with higher tendency for conflict since individuals who are living in it are more prone to dissatisfaction and, arguably, greed. In addition, theory from Huntington (1968) stated that "modernity breeds stability, but modernization breeds instability". Countries that are well developed economically and has experienced modernity are then theoretically experiencing more politically stable state while poorer countries tend to have more instability. This can be associated with having more conflicts in the country.

Furthermore, the relationship between prosperity and violent conflict is non-linear according to Bates (2001). Countries tend to be more peaceful when they are either very poor or very rich. During the low stages of development, violence increases as wealth accumulate in a country. Afterwards it decreases until it reaches the stage in which the state takes control in giving the appropriate punishment to perpetrators and maintain peace. Low-middle income countries such as Indonesia are especially prone to conflicts and instability since it is currently growing. This leads to the following hypothesis:

- The higher percentage of poor household, the higher the number of conflict incidence
- The higher the village budget per capita, the lower the number of conflict incidence

3.4.3. Social Diversity and Conflict

The other factor that is hypothesised to contribute in conflict incidence is diversity of ethnicity and religion. Hatred or intolerance cannot be quantified, as mentioned by Collier and Hoeffler (2004). However, it could only occur arguably when a society is consisting of more than one ethnicity or religion. Inter-group fractionalization is often associated with higher likelihood of conflict. The argument is that diversity will "fosters out group distrust and in-group solidarity" (Putnam 2007). What is also considered to be important is the level of polarization which portrays how much diversity of ethnicity or religions has created boundaries and caused society to be divided.

According to Esteban and Ray (1994) as mentioned by Murshed and Tadjoeeddin (2009), polarization is “when two groups exhibit great inter-group heterogeneity combined with intra-group homogeneity”.

In addition, inter-state conflict could only occur when the grievances are translated into “collective action” as mentioned by Olson (1965). Coined by Murshed and Tadjoeeddin (2009), ethnicity plays more important role as the basis to form groups within a society. It acts as stronger basis compared to, for instance, social class. Therefore, the variables that show group differences such as ethnicity and religion is important to be included and these can be proxied with index of polarization and fractionalization that covers different category of religion and ethnicity in each village. Based on these theories, the following hypothesis is deduced:

- The higher the EPOI, EFI, RPOI, and RFI, the higher the number of conflict incidence

3.4.4. Education (Control Variable) and Conflict

Being the control variable in this paper, there are some theories that coined relationship between education status and conflict. First, Hibbs (1973) and Huntington (1968) explained that having higher education will decrease political violence because academic institution becomes the place in which people can channel their political grief and conflict of interest. Therefore, the probability to engage in more violent protest will decrease. In addition, Collier and Hoeffler (2004) mentioned that with higher education, the opportunity cost of youth to engage in conflict will also increase. Therefore, to reduce conflict, it is worth to invest in secondary education for youth. Drawing from these theories, the appropriate hypothesis would be:

- The higher the percentage of population registered in secondary education, the lower the number of conflict incidence

3.5. Empirical Evidence on Conflict

One of the research conducted in Indonesia is by Barron et al. (2004) who used cross-section data in village level of Indonesia in 2002. The total number of observation is 69,000 villages – excluding the high conflict area and the main finding is that there is positive correlation between poverty, inequality and economic measures toward incidence of violent conflict. Still in relation with income, Rodrik (1999) mentioned countries which have lower income due to financial crisis have higher likelihood of violent conflict. In contrary, Fearon and Laitin (2003) found no evidence for the correlation between conflict and inequality in a cross-national setting.

With regard to social diversity, the research of Barron et al. (2004) found that horizontal inequality measured by constructed index in educational attainment is negatively associated with incidence of conflict. On the other hand, research by Collier and Hoeffler (2004) coined that the ethnic and political diversity is not significant in predicting conflict intensity. Collier (2001) mentioned that the effect of group diversity towards occurrence of conflict is actually depending on the type of conflict. It has bigger effect when there is a dominant group which covers 45-60% share of population. Other evidence from Indonesia is found by Mancini (2008) who studied the correlation between horizontal inequality and occurrence of ethno-communal violence. According to his research, the districts which have “low levels of economic development and greater religious polarization” are more prone to experience violent conflicts.

With regard to its relation to conflict, ethnic polarization is a significant variable to determine the likelihood of civil war (Montalvo and Reynol-Querol 2005). Moreover, countries with small number of large groups are more prone to conflict because of ease in group mobilization.

Urban areas, as mentioned by (Østby et al. 2011), have higher risk of routine violence. Research in Indonesian provinces in 1990-2003 which shows that the size of urban share of the province is positively correlated with routine violence.

Finally, in terms of education, Barakat and Urdal (2009) found that male youth population will have higher tendency to induce conflict when secondary low education is low, especially in Sub-Saharan Africa.

Chapter 4

Methodology

4.1. Econometric Model

To investigate the relationship between different independent variables with the incidence of conflict and crime, this paper uses panel data approach which has several advantages. First of all, by combining the time series and cross section data, the number of observation increases and it reduces problem of multicollinearity. Then, panel data allows the model to control the unobservable that interfere with the results when only time series or cross section data is used. In other words, it allows to avoid spurious regression. The estimated models for this paper are the following:

$$Conflict_{it} = \beta_0 + \beta_1 Ineq_{it} + \beta_2 Diverse_{it} + \beta_3 Soc_cap_{it} + \beta_4 Edu_{it} + \beta_5 lBudget_{it} + u_{it}$$

<i>Conflict_{it}</i>	Number of different type of conflict incidence, weighted by population size
<i>Ineq_{it}</i>	Variable that acts as proxy for vertical inequality (proxied by percentage of poor household in a village)
<i>Diverse_{it}</i>	Variable that measure social diversity proxied by Ethnic Fractionalization Index (EFI), Ethnic Polarization Index (EPOI), Religious Fractionalization Index (RFI) and Religious Polarization Index (RPOI)
<i>Soc_cap_{it}</i>	Variable that measure social capital proxied by dummy on alertness toward each other in the neighbourhood and trust of village inhabitants with people of different ethnicity
<i>Edu_{it}</i>	Control variable that defines education status measured by percentage of the population who are registered in secondary school
<i>lBudget_{it}</i>	Control variable that is total budget received by the village in a year (in log form)

$$Crime_{it} = \beta_0 + \beta_1 Ineq_{it} + \beta_2 Diverse_{it} + \beta_3 Soc_cap_{it} + \beta_4 Edu_{it} + \beta_5 lBudget_{it} + u_{it}$$

<i>Crime_{it}</i>	Number of different type of crime incidence, weighted by population size
<i>Ineq_{it}</i>	Variable that acts as proxy for vertical inequality (proxied by percentage of poor household in a village)

<i>Diverse_{it}</i>	Variable that measure social diversity proxied by Ethnic Fractionalization Index (EFI), Ethnic Polarization Index (EPOI), Religious Fractionalization Index (RFI) and Religious Polarization Index (RPOI)
<i>Soc_cap_{it}</i>	Variable that measure social capital (proxied by dummy on alertness toward each other in the neighbourhood and trust of village inhabitants with people of different ethnicity)
<i>Edu_{it}</i>	Control variable that defines education status (measured by percentage of the population who are registered in secondary school)
<i>lBudget_{it}</i>	Control variable that is total budget received by the village in a year (in log form)

Since the dependent variables are not dummy, standard OLS regression is going to be used. Result of Hausman test showed that random-effect model should be used in the regression. In addition to that, the data on share of religion is only available for the year 2007. Due to those reasons, random effect is used in the regression for all types of crime and conflict as dependent variable. Random effect model assumes the village-specific effect to be random and is not related to other independent variables. Afterwards, OLS fixed effect regression is also performed to check the consistency of the results. Here, the variables that are related to religion (RFI and RPOI) are not included due to the aforementioned reason. Otherwise, it will induce multicollinearity in the regression. For this model, it is assumed that the variables that are location-specific are not changing overtime and related to other independent variables.

Percentage of population who are registered in secondary school and total village budget are used as control variables in the regression. In the analysis, the dependent variable will consist of 6 different conflicts and 6 different type of crime.

4.2. Data Source

This paper uses data from 313 villages out of 13 provinces in Indonesia. The data is gathered by Indonesian Family Life Survey (IFLS) for the year 2007 and 2014 with cooperation of RAND Corporation (US) and Center for Population and Policy Studies (Indonesia). IFLS survey has actually been conducted five times. The first survey was in 1993 (IFLS 1), 1997 (IFLS 2), 2000 (IFLS 3), 2007 (IFLS 4) and 2014 (IFLS 5). The purpose of this survey is to portray socio-economic condition including education, health facilities, and culture. Since the start of survey in 1993, 13 provinces out of 26 provinces existing at that time were chosen for efficiency since it comprises 83% of the total population in Indonesia. Because this survey is meant to be a longitudinal survey, in every different period, the survey tries to recontact the same person that was involved in the previous survey. The sampling method uses stratified sampling which included both urban and rural area in the villages.

Since IFLS 3, the data provided by this survey is divided into two types: household survey and community facility survey. For the household survey, the data shows prominent socio-economic characteristics with diverse respondents from adults (male and female) as well as youth. However, for this paper, the data used is from community facility survey from IFLS 4 (2007) and

IFLS 5 (2014). This survey covers data from community (mainly community leaders and community existing documents or records) and individuals who are involved with education as well as health facilities. The data gathered are until individual level but this paper further reshape the data into village level.

Table 1. Type and number of respondents from Secondary Data (IFLS 4 and IFLS 5)

Respondent Type	Number of Village	
	IFLS 4 (2007)	IFLS 5 (2014)
Community leaders	313	311
Community records/ document	313	311

Source: IFLS 5 User’s Guide Volume 1

The village-level data come from the following 13 provinces as shown in the map below: North Sumatra (1), West Sumatra (2), South Sumatra (3), Lampung (4), DKI Jakarta (5), West Java (6), Central Java (7), DI Yogyakarta (8), East Java (9), Bali (10), West Nusa Tenggara (11), South Kalimantan (12), South Sulawesi (13). If it is following today’s provincial division in Indonesia, the observation actually comes from 15 provinces. However, for the reason of consistency and to maintain longitudinal purpose of the data, one observation from Bangka Belitung is included in South Sumatra province. Moreover, observations from Banten province is included in West Java province.

Map 1. Map of 13 IFLS Provinces in Indonesia



Source: Indonesian Family Life Survey (2012)

Since some villages in the aforementioned provinces have multiple observations and some only have one, this paper merged the multiple observations so that for every village there is only one observation per year.

For this paper, the original variables taken from the IFLS dataset are as follows:

Table 2. Original Variables from IFLS 4 and IFLS 5 Dataset

Variable Name*	Description
Ethnic conflict	Has conflict between members of different ethnic groups occurred in this village/township since 2007? Yes=1
Religious conflict	Has conflict between members of different religions/faith occurred in this village/township since 2007? Yes=1
Conflict during election	Has conflict related to election of public officials or general election occurred in this village/township since 2007? Yes =1
Government and citizen conflict	Has conflict on land/building between citizen and government occurred in this village/township since 2007? Yes=1
Conflict in relation to abuse	Has conflict arising from abuses of power/authority occurred in this village/township since 2007? Yes=1
Citizen conflict	Has conflict on land/building between citizens occurred in this village/township since 2007? Yes=1
Theft	In the last 12 months has any household in this village been a victim of theft? Yes = 1
Crop/livestock theft	In the last 12 months has any household in this village been a victim of crop/livestock theft? Yes = 1
Robbery	In the last 12 months has any household in this village been a victim of robbery? Yes = 1
Sexual assault	In the last 12 months has there been any incident of sexual assault? Yes = 1
Domestic assault	In the last 12 months has there been any incident of domestic assault? Yes = 1
Other civil strife	In the last 12 months has there been any other assault, including civil strife? Yes = 1
Alertness	In this village, one has to be alert or someone is likely to take advantage of you. True=1
Trust ethnic	In this village, residents from the same ethnicity trust each other more than they trust those from different ethnicity. True=1
Share of religion in each village	% Moslem % Protestant % Catholic % Buddhism % Confucianism Since the data available is only from IFLS 4 (2007), this paper uses the same value for the year 2014 considering that there is not much possibility for big change in the share of religion within 7 years gap.

Share of ethnicities in each village	Share of top three ethnicity in each village
Village revenue and expenditure budget	Total village revenue and expenditure budget (APPKD)/ Village Budget Management (PAD) in the village in the current fiscal year
Poor household	Number of poor households in the village/township
Population size	Population size
Number of registered student	Number of students in Junior High School Number of students in Senior or Vocational High School

Source: IFLS 4 User's Guide (2009)

*Variable name is changed from the original dataset for ease of identification

From the raw data, polarization and fractionalization index are constructed (EFI, EPOI, RFI, RPOI). Furthermore, all variables below are weighted by population size. The descriptive statistics of the data is below. From here it is seen that the average number of incidence of crime and conflict are very low. However, with regard to this data there is always issue of underreporting on such cases. Other than that, religious and ethnic fractionalization as well as polarization indexes were also low. None of them has the mean that is over 0.5 although the maximum value is up until 1.0 which represents homogeneity of the village. This could be because the provinces included in IFLS does not represent areas that are high in conflicts and has high diversity. Today, Indonesia consists of 37 provinces while this dataset only consists of survey for 13 provinces. Considering this limitation, it is important not to generalize the results of this paper to the national level.

Table 3. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>Conflict</i>					
conflict_ethnic	618	1.96E-06	0.000027	0	0.000521
conflict_religion	618	3.44E-06	0.000026	0	0.00029
conflict_govt_citizen	613	2.52E-05	9.03E-05	0	0.001183
conflict_citizens	612	9.47E-05	0.00022	0	0.003175
conflict_power_abuse	614	8.10E-06	5.04E-05	0	0.000627
conflict_election	618	2.42E-05	9.83E-05	0	0.001183
<i>Crime</i>					
robbery	620	1.66E-05	7.04E-05	0	0.000651
theft	620	0.000101	0.000205	0	0.002404
crop	597	6.56E-05	0.000181	0	0.002331
sexual_assault	620	1.32E-05	0.00011	0	0.002439
domestic_assault	620	2.96E-05	9.57E-05	0	0.00113
other_assault	620	1.84E-05	0.000113	0	0.002404
<i>Vertical Inequality</i>					
percent_poor_HH	603	1.681337	30.56916	3.97E-05	714.2843

<i>Social Capital</i>					
trust_ethnic	620	0.000137	0.000273	0	0.003846
alertness	620	0.000223	0.000339	0	0.003846
<i>Social Diversity</i>					
RPOI	621	0.273704	0.280158	0	0.96
RFI	621	0.175491	0.20364	0	0.74
EPOI	624	0.388205	0.351822	0	1
EFI	624	0.242724	0.238816	0	0.75
<i>Control Variables</i>					
log_village_budget_per capita	598	10.73374	2.007521	-4.12829	16.96439
secondary_school	620	539993.8	1075538	11131.07	2.07E+07
population_size	620	12283.49	16693.18	260	206000

Source: Author's Calculation Based on Data from IFLS 4 and IFLS 5

4.3. Variables

4.3.1. Dependent Variables

Some variables are calculated from the raw data provided by IFLS survey. Firstly, the number of conflict or crime incidence. The original data was in individual level with questions “Has conflict occurred in this village in the last 7 years ago?” for *Conflict_{it}* and “In the last 12 months, has there been any incident of crime?” for *Crime_{it}*. Therefore, originally it was dummy variable. However, in the dataset each village has either single or multiple respondents. There is one village, for instance that has up to 8 data entry and most only have one data entry. Since this paper merged the data based on village, the data at the end is not binary. Furthermore, the data is weighted with population size to avoid having bias of more incidence due to larger population size and vice versa.

Table 4. Description of Dependent Variables

Variable Name	Description
Ethnic conflict	Aggregate number of ethnic conflict incidence since the past 7 years in each village weighted by population size
Religious conflict	Aggregate number of conflict incidence between members of different faith/religion since the past 7 years in each village weighted by population size
Election conflict	Aggregate number of conflict related to election of public officials or general election since the past 7 years in each village weighted by population size
Government and citizen conflict	Aggregate number of conflict on land/building between citizen and government since the past 7 years in each village weighted by population size

Conflict due to power abuse	Aggregate number of conflict arising from abuses of power/authority since the past 7 years in each village weighted by population size
Citizen conflict	Aggregate number of conflict on land/ building between citizens since the past 7 years in each village weighted by population size
Theft	Aggregate number of theft incidence since the past year in each village weighted by population size
Crop/livestock theft	Aggregate number of crop/livestock theft incidence since the past year in each village weighted by population size
Robbery	Aggregate number of robbery incidence since the past year in each village weighted by population size
Sexual assault	Aggregate number of sexual assault incidence since the past year in each village weighted by population size
Domestic assault	Aggregate number of domestic assault incidence since the past year in each village weighted by population size
Other assault	Aggregate number of any other assault including civil strife incidence since the past year in each village weighted by population size

4.3.2. Independent Variables for Vertical Inequality

Table 5. Description of Independent Variables Representing Vertical Inequality

Variable Name	Description	Expected Sign
Percentage of poor household	Number of poor households in the village/township out of total population in each village	Positive

Percentage of poor household is used as proxy to measure income inequality between the villages since Gini index data is not available for the level of village. This variable is meant to approximate the distribution of income and it is expected to have positive sign. As percentage of poor household increases, it is expected there will be more grievance and this could lead to increasing crime and conflict. The data used in the regression is weighted by population size.

4.3.3. Independent Variables for Horizontal Inequality

Table 6. Description of Independent Variables Representing Horizontal Inequality

Variable Name	Description	Expected Sign
Alertness	In this village, one has to be alert or someone is likely to take advantage of you. True=1 (weighted by population size)	Positive
Trust ethnic	In this village, residents from the same ethnicity trust each other more than they trust those from different ethnicity. True=1 (weighted by population size)	Positive
EPOI	Calculated using data of share of ethnicity in each village from IFLS 4 (2007) and IFLS 5 (2014)	Positive
RPOI	Calculated using data of share of religion in each village. Since the data available is only from IFLS 4 (2007), this paper uses the same value for the year 2014 considering that there is not much possibility for big change in the share of religion within 7 years gap.	Positive
EFI	Calculated using data of share of ethnicity in each village from IFLS 4 (2007) and IFLS 5 (2014)	Positive
RFI	Calculated using data of share of religion in each village. Since the data available is only from IFLS 4 (2007), this paper uses the same value for the year 2014 considering that there is not much possibility for big change in the share of religion within 7 years gap.	Positive

Finally, some variables are constructed as predictor of how horizontal inequality affect the incidence of conflict or crime. There are 2 dummy variables which are used to represent the state of social capital in the village. They are “alertness” and “trust_ethnic”. The “alertness” variable asks questions to respondents about whether they feel they have to always be alert and cautious that other village members will take advantage of them while the “trust_ethnic” shows whether they trust more other village members with same ethnicity. The data is then weighted by population size and used in the regression. Next, fractionalization and polarization index were constructed based on the raw data on share of religion and ethnicity. To measure Ethnic Fractionalization Index (EFI), this paper uses formula from Montalvo and Reynal-Querol (2002)

$$EFI_j = 1 - HHI = 1 - \sum_{i=1}^N S_{ij}^2$$

where S_{ij} is the proportion of ethnic group i ($i = 1 \dots N$) in village j . In addition, Religious Fractionalization Index (RFI) is also constructed with the same formula. Furthermore, to show not only how diverse but also how divided the community is, Ethnic Polarization Index (EPOI) (Reynal-Querol 2002) is also calculated using the following formula:

$$EPI_j = 1 - \sum_{i=1}^N \left(\frac{0.5 - S_{ij}}{0.5} \right) S_{ij}^2$$

where S_{ij} is the proportion of group i ($i = 1 \dots N$) in village j . Similarly, from this formula, Religious Polarization Index (RPOI) is built into the dataset. With regard to indexes related to religion, the available data or share of religion per village is only available in the year 2014. This paper then uses the same value for both 2007 and 2014 considering that 7 years is arguably not enough time for the share of religion to change so much in a community. However, this is not ideal and serves as limitation in this analysis. As mentioned in Chapter 2, these variables on social capital and social diversity are hypothesized to be positively correlated to the number of incidence of conflict and crime.

4.3.4. Control Variables

Table 7. Description of Control Variables

Variable Name	Description	Expected Sign
Log_village_budget_percapita	The log of total village revenue and expenditure budget (APPKD)/ Village Budget Management (PAD) in the village in the current fiscal year weighted by population size (per capita)	Negative
Secondary_school	Total number of registered lower secondary school (Junior High School) and upper secondary school (Senior or Vocational High School) weighted by population size	Negative

There are two control variables used in the regression. The village revenue and expenditure budget is calculated as the total value of “balance from previous year, original revenue of the village, central government contribution, provincial government contribution, regency/city government contribution, third party contribution (local state enterprise, NGO, or other’s local government), village loan, and sub district development/ poverty development program” (IFLS 2014 Community and Facility People and Characteristics Book 2 pp.11). While it is ideal to use the value of original village revenue, there is large number of missing values in the dataset. The number of observations for log of total revenue weighted by population size is 624 while the one showing real revenue is only 370. That is why the total of village budget is used. This is admittedly a limitation and could affect the results of the regression. The data is then weighted by population size to get the per capita value in order get a more representative picture of the condition in the village. The hypothesis is that the higher village budget per capita, the less is the number of crime and conflict incidence as explained before in Chapter 2.

Other control variables include the percentage of population registered in the secondary school. The value is gotten by adding the number of registered students in Junior High School as

well as Senior and Vocational High School then weighted by population size. The hypothesis is that the higher percentage of population registered in secondary school, the less is the number of crime and conflict incidence.

The regressions also include time dummy to be able to see the changes overtime from 2007 to 2014. Finally, referring to correlation table in Annex 1, the indexes on fractionalization and polarization are highly correlated. Therefore, for each regression, only one of those indexes is included as independent variable. This means there are four regressions for either crime or conflict as dependent variable with each method (OLS random effect or fixed effect).

Chapter 5

Results

The results of the regression will be explained in the section below. Since the magnitude of the coefficients are often very small, for ease of presenting, this paper divides all the variables by 1,000,000. This fact, however, does not change the way one interprets the results. The direction and significance level of the coefficients also remain the same. Overall, the four regressions including different polarization and fractionalization indexes in each dependent variable show similar results in terms of the direction of correlation between independent and dependent variables. While there are results that are consistent throughout different methods, some coefficients of independent variables differ when the method is changed from OLS random effect to OLS fixed effect clustered by island.

5.1. Result with Random Effect

5.1.1. Result with Crime as Dependent Variable

The OLS random effect regression is used for 6 types of crime as dependent variables. Robust standard error is used throughout the regression. The first type of crime in discussion is robbery. With random effect, village budget is shown to have positive correlation with robbery. This is also true for percentage of poor household which acts as the proxy for vertical inequality. The result is statistically significant at 1% and this is the only variable that is significant to explain robbery. Furthermore, variables on social capital which are alertness and trust with same ethnicity show negative correlation with robbery although they are not statistically significant. EFI, EPOI, RFI, RPOI are presented to have positive correlation with robbery although the result is not statistically significant. Percentage of population registered in secondary school and the time dummy are showing positive correlation. Compared to 2007, the year 2014 is associated with increase of robbery.

The next type of crime is theft. For this, village budget as control variable is showing positive correlation to explain theft and it is statistically significant at 5%. Percentage of poor household is in line with the hypothesis, showing positive correlation to explain theft with 1% significance level. Next, social capital variables are negatively associated with number of theft incidence. EPOI, EFI, RPOI, RFI are shown to have negative correlation while the percentage of population registered in secondary school is also negatively associated with theft. The latter is in line with the hypothesis although the result is not statistically significant. Time dummy is showing positive correlation. Compared to the year 2007, 2014 is associated with more incidence of theft and the result is statistically significant at 5%.

Crop or livestock theft is showing a different pattern of results compared to the previous types of crime. While village budget is positively associated with number of crop or livestock theft incidence and statistically significant at 1%, the percentage of poor household is showing negative correlation with the incidence although it is not statistically significant. The variables of social capital show inconclusive results since alertness shows negative correlation while trust with the same ethnicity shows positive correlation with incidence of crop or livestock theft. EPOI, EFI, RPOI, RFI are similar with previous results, still shows negative correlation with incidence of crop or livestock theft, contrary with the hypothesis. Percentage of population that is registered in secondary school shows negative correlation as hypothesised with statistical significance of 1%. Time dummy is also showing positive correlation with number of incidence although it is not statistically significant.

With regard to sexual assault, village budget is shown to be negatively associated while percentage of poor household shows positive correlation with the number of incidence. The variables on social capital, shows positive correlation with the incidence which is in line with the hypothesis. As the level of alertness and trust with the same ethnicity increase, the incidence is also increasing. Nevertheless, the result here is not statistically significant. EPOI, EFI, RPOI, RFI are shown to have negative correlation with the number of incidence. Next, percentage of population registered in secondary school is showing negative correlation although the result is not statistically significant. The direction with dependent variable is in line with the hypothesis. Finally, the year 2014 is shown to explain increasing incidence of sexual assault compared to the year 2007 and it is statistically significant at 1%.

In relation to domestic assault, village budget is positively associated with it. On the other hand, percentage of poor household is showing negative correlation with the incidence and the result is statistically significant at 5%. Moreover, social capital is also shown to be negatively associated with number of domestic assault incidence, in contrary with the hypothesis. EPOI, EFI, RPOI, RFI continue to show negative correlation with the incidence of domestic assault. Percentage of population registered in secondary school also continue to have negative correlation with the dependent variable. The year 2014 again is able to explain the increasing incidence of domestic assault compared to the year 2007.

Finally, both village budget and percentage of poor household shows positive correlation with other types of assault including civil strife. Social capital shows inconclusive result as alertness is positively associated but trust with same ethnicity is negatively associated with the incidence of other assault. EPOI, EFI, RPOI, RFI are consistently shown to be negatively associated with incidence of dependent variable while secondary school is also continued to be negatively correlated. Time dummy also show positive correlation here. Nevertheless, there is no statistically significant result in explaining the number of incidence of other assault.

All four tables that display these results are in the next page.

Table 8. Estimation of Random Effect Regression with Crime as Dependent Variable including EFI

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	robbery	theft	crop_live- stock_theft	sexual_ assault	domestic_ assault	other_ assault
log_village_ budget_percapita	0.00631 (0.00518)	0.0255** (0.0116)	0.0205* (0.0113)	-0.00170 (0.00756)	0.00406 (0.00560)	0.00582 (0.00423)
poor_hh_ percentage	7.60e-07*** (2.33e-07)	6.04e-07* (3.41e-07)	6.18e-08 (1.53e-07)	-8.69e-09 (2.61e-07)	-1.46e-07* (8.31e-08)	-1.89e-08 (5.13e-08)
alertness	-0.104 (0.0918)	-0.141 (0.195)	-0.216 (0.186)	0.0720 (0.141)	-0.0496 (0.0990)	0.0866 (0.0736)
trust_ethnic	-0.0162 (0.0209)	-0.0678 (0.105)	0.0726 (0.0985)	0.0985 (0.115)	-0.00558 (0.0330)	-0.148 (0.0972)
EFI	0.0347 (0.0991)	0.0463 (0.315)	0.477 (0.319)	-0.249 (0.175)	-0.0759 (0.128)	-0.246 (0.238)
secondary_ school	-2.00e-07 (3.58e-06)	-2.55e-05 (1.89e-05)	-3.95e-05*** (1.46e-05)	4.17e-06 (6.35e-06)	3.76e-06 (6.17e-06)	-7.74e-06* (3.97e-06)
2014.year	5.572 (5.878)	32.66* (17.86)	4.012 (12.76)	14.39 (11.32)	24.98*** (8.792)	15.33 (13.93)
Constant	8.140** (3.781)	22.74 (21.14)	13.61 (19.32)	-8.345 (14.04)	11.54** (5.529)	-1.180 (11.31)
Observations	593	593	570	593	593	593
Number of village	312	312	310	312	312	312
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Table 9. Estimation of Random Effect Regression with Crime as Dependent Variable including EPOI

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	robbery	Theft	crop_live- stock_theft	sexual_ assault	domestic_ assault	other_ assault
log_village_budget_ percapita	0.00640 (0.00520)	0.0253** (0.0114)	0.0199* (0.0110)	-0.00150 (0.00746)	0.00408 (0.00562)	0.00606 (0.00445)
poor_hh_percentage	7.52e- 07*** (2.32e-07)	6.22e-07* (3.56e-07)	1.06e-07 (1.78e-07)	-1.84e-08 (2.69e-07)	-1.44e-07 (9.05e-08)	-3.12e-08 (6.10e-08)
alertness	-0.104 (0.0918)	-0.140 (0.192)	-0.210 (0.181)	0.0704 (0.140)	-0.0502 (0.0991)	0.0839 (0.0719)
trust_ethnic	-0.0166 (0.0211)	-0.0670 (0.106)	0.0744 (0.0981)	0.0972 (0.114)	-0.00549 (0.0329)	-0.149 (0.0978)
EPOI	0.00518 (0.0553)	0.0504 (0.203)	0.319 (0.200)	-0.149 (0.106)	-0.0379 (0.0839)	-0.150 (0.150)
secondary_school	5.76e-07 (3.86e-06)	-2.72e-05 (2.13e-05)	-4.40e-05** (1.74e-05)	5.37e-06 (7.32e-06)	3.70e-06 (7.06e-06)	-6.31e-06 (4.02e-06)
2014.year	5.814 (5.904)	32.54* (17.75)	4.857 (12.81)	13.77 (10.99)	24.70*** (8.700)	14.72 (13.43)
Constant	8.340** (3.698)	22.63 (21.04)	14.11 (18.60)	-8.827 (14.28)	11.34** (5.578)	-1.576 (11.59)
Observations	593	593	570	593	593	593
Number of village	312	312	310	312	312	312
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Table 10. Estimation of Random Effect Regression with Crime as Dependent Variable including RFI

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	robbery	Theft	crop_live- stock_theft	sexual_ assault	domestic_ assault	other_ assault
log_village_budget_ percapita	0.00659 (0.00529)	0.0267** (0.0115)	0.0247** (0.0117)	-0.000439 (0.00705)	0.00393 (0.00595)	0.00520 (0.00379)
poor_hh_percentage	7.44e-07*** (2.29e-07)	5.56e-07* (3.12e-07)	-2.02e-07** (9.85e-08)	2.22e-08 (2.43e-07)	-1.19e-07* (6.63e-08)	7.21e-08 (7.28e-08)
alertness	-0.107 (0.0943)	-0.162 (0.185)	-0.270 (0.183)	0.0318 (0.124)	-0.0511 (0.106)	0.0848 (0.0713)
trust_ethnic	-0.0155 (0.0194)	-0.0607 (0.0990)	0.0871 (0.101)	0.121 (0.128)	-0.00417 (0.0352)	-0.144 (0.0949)
RFI	-0.0229 (0.100)	-0.147 (0.228)	-0.400** (0.168)	-0.308 (0.221)	-0.00861 (0.153)	-0.0159 (0.0607)
secondary_school	1.30e-06	-2.13e-05	-1.69e-05	2.36e-06	1.55e-06	-1.51e-05*

	(2.39e-06)	(1.69e-05)	(1.04e-05)	(4.03e-06)	(5.14e-06)	(9.01e-06)
2014.year	5.647	32.27*	5.717	10.86	24.46***	13.07
	(6.148)	(17.35)	(13.30)	(9.388)	(8.712)	(12.37)
Constant	8.781**	24.76	21.53	-6.885	10.87*	-2.735
	(3.873)	(21.77)	(20.02)	(13.19)	(5.772)	(12.92)
Observations	590	590	567	590	590	590
Number of village	309	309	307	309	309	309
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Table 11. Estimation of Random Effect Regression with Crime as Dependent Variable including RPOI

VARIABLES	(1) robbery	(2) theft	(3) crop_live- stock_theft	(4) sexual_ assault	(5) domestic_ assault	(6) other_ assault
log_vilage_budget_ percapita	0.00695	0.0270**	0.0250**	0.000194	0.00416	0.00536
	(0.00533)	(0.0114)	(0.0115)	(0.00679)	(0.00601)	(0.00387)
poor_hh_percentage	7.35e-07***	5.52e-07*	-2.02e-07**	1.25e-08	-1.25e-07*	6.81e-08
	(2.28e-07)	(3.11e-07)	(1.01e-07)	(2.48e-07)	(6.77e-08)	(7.10e-08)
Alertness	-0.113	-0.166	-0.275	0.0220	-0.0553	0.0818
	(0.0949)	(0.182)	(0.181)	(0.119)	(0.107)	(0.0696)
trust_ethnic	-0.0127	-0.0596	0.0871	0.123	-0.00257	-0.143
	(0.0192)	(0.0968)	(0.100)	(0.129)	(0.0355)	(0.0941)
RPOI	-0.0451	-0.102	-0.245*	-0.219	-0.0230	-0.0216
	(0.0476)	(0.152)	(0.125)	(0.156)	(0.0927)	(0.0440)
secondary_school	2.21e-06	-2.08e-05	-1.67e-05	3.45e-06	2.12e-06	-1.47e-05*
	(2.36e-06)	(1.73e-05)	(1.08e-05)	(4.55e-06)	(5.29e-06)	(8.81e-06)
2014.year	5.419	32.12*	5.594	10.52	24.32***	12.97
	(6.117)	(17.32)	(13.27)	(9.171)	(8.691)	(12.31)
Constant	9.199**	24.74	21.00	-6.873	11.12*	-2.580
	(3.748)	(21.86)	(20.24)	(13.07)	(5.684)	(12.84)
Observations	590	590	567	590	590	590
Number of village	309	309	307	309	309	309
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

5.1.2. Result with Conflict as Dependent Variable

There are 6 types of conflict that are used as dependent variable here. For all the regressions, robust standard error is used. With ethnic conflict as dependent variable, village budget is shown to have negative correlation with it. On the other hand, percentage of poor households as proxy to vertical inequality shows positive correlation with ethnic conflict as hypothesised. The results for social capital variable (trust with same ethnicity and alertness) show positive correlation with the incidence of ethnic conflict. So are the EFI, EPOI, RFI, and RPOI which are in line with the hypothesis. Percentage of population who are registered in secondary school shows negative correlation with the dependent variable. Finally, time dummy shows negative correlation with dependent variable. The results are however, not statistically significant.

Village budget is presented to be positively correlated with religious conflict. In contrast, percentage of poor household does not show positive association with the conflict. With regard to social capital, alertness is shown to be negatively associated while trust with the same ethnicity is presented to be positively associated with religious conflict. Furthermore, among the fractionalization and polarization index, only EPOI is shown to be positively correlated with religious conflict. Percentage of population registered in secondary school as well as time dummy consistently show negative correlation with the religious conflict.

Next, in explaining conflict in relation to land/ building between government and citizens, the village budget is showing negative correlation while percentage of poor household is positively associated with it. Alertness and trust with the same ethnicity are both showing positive correlation as hypothesised. EFI, EPOI, RFI, and RPOI are showing negative correlation with the dependent variable. So are the percentage of population registered in secondary school which is shown to be negatively correlated with the dependent variable. The year 2014 is positively correlated with the increase of conflict on land/building between government and citizens. The results are however, not statistically significant.

The next type of conflict is on land/building between citizens. The variables that are statistically significant are the ones related to social capital. However, the direction is inconclusive. Alertness is shown to be positively associated with this type of conflict at 5% significance level while trust with same ethnicity is negatively correlated with the conflict at 1% significance level. The other variables are shown to have correlation as hypothesised although they are not statistically significant. Village budget, percentage of poor household, EFI, EPOI, RFI, RPOI are positively correlated with conflict while percentage of population registered in secondary school is negatively correlated with conflict on land/building between citizens. For the time dummy variable, it shows that compared to 2007, the year 2014 shows decreasing number of conflict incidence.

With regard to conflict related to power abuse, village budget and percentage of poor household are shown to be negatively correlated with occurrence of conflict. Other than that, the rest of the variables are mostly in line with the hypothesis. Alertness, trust with same ethnicity, EFI, RFI, RPOI are positively associated with conflict while percentage of population registered in the secondary school is negatively associated with conflict. The year 2014 is shown to be positively associated with conflict compared to the year 2007. Nevertheless, no result is statistically significant.

Finally, in conflict during election, variables on vertical inequality, social diversity and education are shown to be in line with the hypothesis. Percentage of poor household, EFI, EPOI, RFI, RPOI are shown to be positively correlated with the incidence of conflict while percentage of population in secondary school is negatively correlated with conflict during election period. However, the result on social capital variables are not in line with the hypothesis. Alertness and trust with the same ethnicity are shown to be negatively associated with conflict during election. The year 2014 is shown to be associated with decreasing number of conflict during election compared to the year 2007. All four tables that display these results are in the next page.

Table 12. Estimation of Random Effect Regression with Conflict as Dependent Variable including EFI

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	conflict_ethnic	conflict_religion	conflict_govt_citizen	conflict_citizens	conflict_power_abuse	conflict_election
log_village_budget_percapita	0.000616 (0.000512)	0.000581 (0.000565)	0.000825 (0.00221)	0.0106 (0.00767)	-0.000438 (0.00133)	0.00508 (0.00424)
poor_hh_percentage	2.64e-08 (2.15e-08)	-3.68e-09 (6.63e-09)	8.83e-08 (2.09e-07)	2.08e-07 (2.42e-07)	-2.44e-08 (2.02e-08)	4.43e-09 (6.04e-08)
alertness	0.00839 (0.00618)	-0.0118 (0.0100)	0.0290 (0.0445)	0.344** (0.166)	0.00654 (0.0246)	-0.0277 (0.0759)
trust_ethnic	0.00368 (0.00719)	0.00109 (0.00252)	0.0202 (0.0329)	-0.409*** (0.138)	0.00304 (0.00924)	-0.0339 (0.0443)
EFI	0.0824 (0.0612)	-0.00189 (0.0139)	-0.0109 (0.0989)	0.0238 (0.255)	0.00521 (0.0412)	0.0161 (0.103)
secondary_school	-2.84e-06 (2.06e-06)	-2.96e-07 (6.57e-07)	-5.18e-07 (6.28e-06)	-2.54e-05 (2.06e-05)	-2.60e-07 (1.75e-06)	-9.26e-06* (5.52e-06)
2014.year	-1.004 (2.515)	-0.769 (1.907)	6.951 (7.011)	-10.46 (15.00)	2.278 (4.147)	-1.317 (8.389)
Constant	1.237 (1.263)	4.109** (1.656)	16.22*** (4.431)	42.96*** (15.12)	7.421** (3.424)	17.13*** (5.410)
Observations	591	591	586	585	587	591
Number of village	312	312	312	312	312	312
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Table 13. Estimation of Random Effect Regression with Conflict as Dependent Variable including EPOI

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	conflict_ethnic	conflict_religion	conflict_govt_citizen	conflict_citizens	conflict_power_abuse	conflict_election
log_village_budget_percapita	-0.000639 (0.000532)	0.000568 (0.000573)	-0.000737 (0.00218)	0.0107 (0.00768)	-0.000415 (0.00133)	0.00512 (0.00423)
poor_hh_percentage	2.46e-08 (2.08e-08)	-2.70e-09 (7.18e-09)	7.96e-08 (2.12e-07)	1.93e-07 (2.42e-07)	-2.69e-08 (1.92e-08)	-9.55e-10 (6.14e-08)
Alertness	0.00910 (0.00656)	-0.0118 (0.0101)	0.0286 (0.0440)	0.344** (0.165)	0.00649 (0.0246)	-0.0277 (0.0755)
trust_ethnic	0.00361 (0.00723)	0.00115 (0.00257)	0.0199 (0.0328)	-0.409*** (0.139)	0.00293 (0.00927)	-0.0341 (0.0443)
EPOI	0.0418 (0.0321)	0.000763 (0.00979)	-0.0179 (0.0580)	-0.00803 (0.162)	-0.000849 (0.0202)	0.00108 (0.0551)

secondary_	-2.80e-06	-3.90e-07	2.44e-07	-2.41e-05	-5.04e-08	-8.83e-06
school	(2.08e-06)	(7.72e-07)	(6.65e-06)	(2.01e-05)	(1.71e-06)	(5.60e-06)
2014.year	-0.709	-0.792	7.052	-10.15	2.336	-1.183
	(2.451)	(1.896)	(7.111)	(14.80)	(4.204)	(8.417)
Constant	1.444	4.085**	16.29***	43.19***	7.465**	17.24***
	(1.325)	(1.654)	(4.399)	(15.01)	(3.391)	(5.369)
Observations	591	591	586	585	587	591
Number of village	312	312	312	312	312	312
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Table 14. Estimation of Random Effect Regression with Conflict as Dependent Variable including RFI

VARIABLES	(1) conflict_ ethnic	(2) conflict_ relgion	(3) conflict_ govt_citizen	(4) conflict_ citizens	(5) conflict_ power_abuse	(6) conflict_ election
log_vil- lage_budget_ percapita	-0.00102 (0.000789)	0.000583 (0.000491)	-0.000741 (0.00207)	0.00957 (0.00825)	-0.000504 (0.00130)	0.00492 (0.00397)
poor_hh_ percentage	1.48e-08 (1.34e-08)	-3.26e-09 (6.59e-09)	8.94e-08 (2.03e-07)	2.33e-07 (2.22e-07)	-2.26e-08 (1.78e-08)	5.49e-09 (5.28e-08)
alertness	0.0211 (0.0145)	-0.0120 (0.00910)	0.0266 (0.0418)	0.365** (0.170)	0.00798 (0.0249)	-0.0237 (0.0672)
trust_ethnic	-0.00296 (0.00636)	0.00117 (0.00318)	0.0213 (0.0376)	-0.418*** (0.136)	0.00200 (0.0113)	-0.0361 (0.0465)
RFI	0.0969 (0.0756)	-0.00131 (0.0193)	-0.0155 (0.0981)	0.164 (0.259)	0.0183 (0.0511)	0.0347 (0.112)
secondary_ school	-2.13e-06 (1.63e-06)	-3.31e-07 (4.69e-07)	-5.60e-07 (5.05e-06)	-2.78e-05 (1.93e-05)	-4.16e-07 (1.53e-06)	-9.43e-06* (5.30e-06)
2014.year	0.151 (2.251)	-0.815 (1.880)	6.598 (7.676)	-10.17 (14.14)	2.334 (4.442)	-1.242 (8.611)
Constant	0.823 (1.216)	4.159** (1.715)	16.51*** (4.724)	42.09*** (15.16)	7.361** (3.552)	17.13*** (5.587)
Observations	588	588	583	582	584	588
Number of village	309	309	309	309	309	309
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Table 15. Estimation of Random Effect Regression with Conflict as Dependent Variable including RPOI

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	conflict_ethnic	conflict_religion	conflict_govt_citizen	conflict_citizens	conflict_power_abuse	conflict_election
log_village_budget_percapita	-0.00127	0.000599	-0.000790	0.0101	-0.000491	0.00500
	(0.000975)	(0.000497)	(0.00205)	(0.00822)	(0.00131)	(0.00381)
poor_hh_percentage	1.92e-08	-3.73e-09	9.10e-08	2.16e-07	-2.34e-08	2.55e-09
	(1.65e-08)	(6.40e-09)	(2.03e-07)	(2.29e-07)	(1.84e-08)	(5.33e-08)
alertness	0.0252	-0.0122	0.0277	0.355**	0.00766	-0.0253
	(0.0176)	(0.00923)	(0.0419)	(0.167)	(0.0251)	(0.0641)
trust_ethnic	-0.00417	0.00131	0.0208	-0.414***	0.00221	-0.0353
	(0.00625)	(0.00312)	(0.0382)	(0.136)	(0.0115)	(0.0468)
RPOI	0.0725	-0.00256	-0.00462	0.0513	0.00868	0.0125
	(0.0560)	(0.0106)	(0.0688)	(0.149)	(0.0324)	(0.0688)
secondary_school	-2.61e-06	-2.89e-07	-7.14e-07	-2.63e-05	-3.50e-07	-9.17e-06*
	(1.96e-06)	(4.48e-07)	(5.16e-06)	(2.01e-05)	(1.60e-06)	(5.22e-06)
2014.year	0.291	-0.826	6.629	-10.44	2.323	-1.297
	(2.190)	(1.883)	(7.744)	(14.16)	(4.459)	(8.590)
Constant	0.756	4.181**	16.42***	43.01***	7.421**	17.31***
	(1.175)	(1.724)	(4.724)	(15.10)	(3.531)	(5.497)
Observations	588	588	583	582	584	588
Number of village	309	309	309	309	309	309
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

5.2. Result with Fixed Effect Clustered by Province

5.2.1. Result with Crime as Dependent Variable

To check the results further with other method, the regressions are also performed under OLS fixed effect with standard errors adjusted for 13 clusters in province: North Sumatra, West Sumatra (including Banten province), South Sumatra (including one observation from Bangka Belitung province), Lampung, DKI Jakarta, West Java, Central Java, Yogyakarta, East Java, Bali, West Nusa Tenggara, South Kalimantan and South Sulawesi. For all the regressions, robust standard error is used. The data on religion is only available for the year 2007. Therefore, RFI and RPOI are not used in this fixed effect regression since it will induce multicollinearity.

With robbery as the main dependent variable, village budget and percentage of poor household are shown to have positive correlation with the number of incidence. The result for percentage of poor household is statistically significant at 1%. However, the result for the variables on social capital and social diversity are shown to be not in line with the hypothesis. Alertness, trust with same ethnicity, EFI and EPOI are all negatively correlated with incidence of robbery. The result is statistically significant at 10% and 5% for EFI and EPOI respectively. Furthermore, percentage of population registered in secondary school is also not in line with the hypothesis since here it is positively correlated with robbery. Nevertheless, the result is statistically significant at 5%. The year 2014 is also positively associated with increasing number of robbery.

With regard to theft, village budget and percentage of poor household are both positively associated with its incidence. For percentage of poor household, the result is statistically significant at 5% although the coefficient magnitude is small. On social capital, alertness is shown to be positively associated but trust with the same ethnicity is shown to be negatively correlated with theft unlike the hypothesis. Results on social diversity is also not in line with the hypothesis since EPOI and EFI are both presented to be negatively correlated with theft. Percentage of population who are registered in secondary school is shown to be negatively correlated with theft as hypothesised. Lastly, the year 2014 is associated with increasing incidence of theft compared to 2007 and it is statistically significant at 5%.

Next, the variables of village budget and percentage of poor household show positive correlation with the number of incidence of crop and livestock theft. The percentage of poor household variable shows statistically significant result at 10% although the magnitude of coefficient is small. Variables on social capital is showing mixed results since alertness is showing negative correlation but trust with same ethnicity is showing positive correlation with crop and livestock theft. EFI and EPOI shows results that are not in line with the hypothesis since they are showing negative correlation. Conversely, percentage of population registered in secondary school is consistently showing negative correlation with crop and livestock theft and the result is statistically significant at 5%. Similar to the results to previous type of crime, the year 2014 is associated positively with increasing crop and livestock theft incidence.

In relation to sexual assault, the results for variables on vertical inequality is presented to be not in line with the hypothesis. Percentage of poor household is shown to be negatively correlated with number of incidence of sexual assault. Meanwhile, variables on social capital kept showing inconclusive result as alertness is negatively correlated but trust with the same ethnicity is positively correlated with the number of incidence. For the latter, the coefficient is statistically significant at 10%. EPOI and EFI are both shown to be negatively correlated with incidence of sexual assault. The results are statistically significant at 10%. Finally, in contrary to the hypothesis, percentage of population who are registered in secondary school is positively associated with increasing number of sexual assault. Positive correlation is also found in the year 2014 in explaining the increase of incidence.

Moving to other type of conflict, village budget is shown to have positive correlation with number of incidence of domestic assault. In contrary to hypothesis, percentage of poor household is showing negative correlation with the number of domestic assault incidence. With regard to social capital, it is shown that alertness and trust with the same ethnicity have negative correlation with number of incidence which is also contradictory to the hypothesis. In contrast, variables on social diversity which include EPOI and EFI both show positive correlation with incident of domestic assault as accordance to the hypothesis. Percentage of population registered in secondary school consistently show negative correlation with the number of incidence crime including in this domestic assault. Lastly, the year 2014 is again presented to be positively associated with increasing incidence of domestic assault and the coefficient is statistically significant at 10%.

Finally, in explaining other types of assault including civil strife, village budget is shown to be positively correlated while percentage of poor household is shown to be negatively associated with it. Alertness is shown to be positively correlated with number of other assault. In one of the regressions, the coefficient is statistically significant at 10%. Meanwhile, the two regressions show inconclusive result for trust with same ethnicity. One result shows that it is positively associated with number of incidence and the other shows negative correlation. They are however, not statistically significant. EFI and EPOI are both showing negative correlation with number of other assault in contrary to the hypothesis. Similarly, percentage of population who are registered in secondary school is also not in line with the hypothesis since it is shown to be positively correlated with number of incidence of other type of assault. Consistent with the result of other types of crime, the result for year 2014 is also associated with increasing number of other assault.

Table 16. Estimation of Fixed Effect Regression with Crime as Dependent Variable including EFI (Standard error adjusted for 13 clusters in province)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	robbery	theft	crop_ livestock_ theft	sexual_ assault	domestic_ assault	other_ assault
log_village_budget_ percapita	0.0107 (0.00855)	0.00589 (0.0139)	0.00824 (0.0100)	-0.0105 (0.0116)	0.0119 (0.00873)	0.00289 (0.00192)
poor_hh_ percentage	7.05e-07*** (5.23e-08)	1.11e-06** (3.95e-07)	5.22e-07* (2.79e-07)	-4.15e-07 (3.10e-07)	-1.84e-08 (1.40e-07)	-1.83e-07 (1.91e-07)
alertness	-0.163 (0.124)	0.102 (0.202)	-0.0363 (0.184)	-0.196 (0.114)	-0.191 (0.156)	-0.0673 (0.0383)
trust_ethnic	-0.0203 (0.0480)	-0.0227 (0.103)	0.0157 (0.0915)	0.379* (0.209)	-0.0312 (0.0302)	0.00270 (0.0261)
EFI	-0.162* (0.0816)	-1.266 (1.150)	-0.176 (0.525)	-0.431* (0.229)	0.185 (0.284)	-0.742 (0.743)
secondary_school	1.14e-05** (3.74e-06)	-5.79e-05 (4.26e-05)	-8.05e-05** (3.29e-05)	2.60e-05 (1.63e-05)	-1.37e-06 (1.70e-05)	1.83e-05 (1.88e-05)
2014.year	6.140 (7.309)	38.99** (13.61)	8.223 (12.09)	4.413 (10.90)	21.89* (10.50)	14.21 (15.59)
Constant	3.002 (10.51)	115.2** (49.73)	83.31** (33.59)	53.46** (24.53)	5.448 (10.02)	31.59 (17.82)
Observations	592	592	569	592	592	592
R-squared	0.119	0.228	0.262	0.384	0.068	0.061
Number of village	311	311	309	311	311	311
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Table 17. Estimation of Fixed Effect Regression with Crime as Dependent Variable including EPOI (Standard error adjusted for 13 clusters in province)

VARIABLES	(1) robbery	(2) theft	(3) crop_ livestock_ theft	(4) sexual_ assault	(5) domestic_ assault	(6) other_ assault
log_village_ budget_ percapita	0.0109 (0.00846)	0.00665 (0.0137)	0.00874 (0.00986)	-0.0105 (0.0117)	0.0117 (0.00891)	0.00324 (0.00192)
poor_hh_ percentage	7.00e-07*** (5.31e-08)	1.09e-06** (4.03e-07)	5.01e-07* (2.71e-07)	-4.11e-07 (3.08e-07)	-1.03e-08 (1.40e-07)	-1.93e-07 (2.11e-07)
alertness	-0.164 (0.122)	0.0939 (0.201)	-0.0392 (0.180)	-0.198 (0.114)	-0.189 (0.158)	-0.0717* (0.0392)
trust_ethnic	-0.0217 (0.0477)	-0.0311 (0.0979)	0.0106 (0.0931)	0.379* (0.210)	-0.0289 (0.0306)	-0.00127 (0.0237)
EPOI	-0.109** (0.0422)	-0.815 (0.705)	-0.181 (0.298)	-0.228* (0.124)	0.137 (0.178)	-0.461 (0.493)
secondary_school	1.23e-05*** (3.48e-06)	-5.23e-05 (4.46e-05)	-7.70e-05** (3.10e-05)	2.59e-05 (1.65e-05)	-2.90e-06 (1.76e-05)	2.09e-05 (2.31e-05)
2014.year	5.851 (7.144)	36.42** (13.80)	8.479 (11.31)	3.150 (10.77)	22.12* (10.77)	12.57 (14.48)
Constant	3.537 (10.48)	118.2** (51.34)	85.68** (34.45)	53.08* (24.60)	4.492 (10.51)	32.90 (19.97)
Observations	592	592	569	592	592	592
R-squared	0.122	0.240	0.265	0.381	0.071	0.070
Number of village	311	311	309	311	311	311
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

5.2.2. Result with Conflict as Dependent Variable

Regression with fixed effect and standard error adjusted for 13 clusters in province is also performed with conflict as dependent variable. Similar to previous regressions, robust standard error is also used throughout all the regressions. The first type of conflict is ethnic conflict. The results show that village budget is negatively correlated while percentage of poor household is positively correlated with the number of incidence. Both results are in line with the hypothesis. With regard to social capital, alertness and trust with same ethnicity both show positive correlation with number of incidence of ethnic conflict. This is also according to the hypothesis. Other results are mostly presented to be in line with the hypothesis. EFI and EPOI are positively correlated while percentage of population who are registered in secondary school is negatively correlated with number of incidence of ethnic conflict. The year 2014 is associated with decreasing number of ethnic conflict compared to the year 2007. Nevertheless, none of the results on ethnic conflict is statistically significant.

Next, with religious conflict as dependent variable, the results are mostly in line with the hypothesis except for the variables on social capital. Percentage of poor household as proxy to vertical inequality are shown to be positively correlated with its number of incidence. Moreover, EFI

and EPOI are positively correlated while percentage of population with secondary school is negatively associated with incidence of conflict. In contrast to all that, trust with same ethnicity and alertness show results that are not in line with the hypothesis since they are both presented to be negatively correlated with the number of incidence of religious conflict. The year 2014 is again shown to be associated with less number of religious conflict. The results with this dependent variable is, however, not statistically significant.

After that, village budget is presented to be negatively associated with number of incidence of conflict on land/building between government and the citizens. Moreover, in accordance to the hypothesis, percentage of poor household as proxy to vertical inequality is showing positive correlation with the number of incidence and the result is statistically significant at 1%. Variables on social capital is showing mixed result as alertness is presented to be positively associated with number of incidence as hypothesised while trust with the same ethnicity is shown to have negative correlation with the incidence. Other independent variables are showing results that are in line with the hypothesis. EFI and EPOI are shown to be positively correlated while percentage of population who are registered in the secondary school shows negative correlation with number of incidence of conflict on land/building between government and the citizens. For this type of conflict, the year 2014 is shown to be associated with more incidence compared to the year 2007.

In explaining conflict on land/building between citizens, both village budget and percentage of poor household is shown to have positive correlation with its incidence. The results are statistically significant at 5% and 1% respectively. Variables on social diversity and education are showing results that are in line with the hypothesis. EPOI and EFI are shown to be positively correlated while percentage of population registered in secondary school is presented to be negatively correlated with the number of incidence. Variables on social capital, however, show inconclusive result since alertness is positively associated while trust with same ethnicity is negatively associated with the number of conflict incidence. The year 2014 is presented to be correlated with decreasing number of incidence of conflict on land/building between citizens compared to the year 2007.

The next type of conflict to be discussed is conflict in relation to power abuse. Here, village budget is positively associated while percentage of poor household is negatively associated the number of this conflict incidence. Most of the results here are not in line with the hypothesis. EFI and EPOI as the variables that represent social diversity shows negative association while percentage of population registered in secondary school is positively correlated with the incidence of conflict. Variables on social capital is again showing mixed result since alertness is showing negative relationship while trust with the same ethnicity is showing positive correlation with the number of incidence. The latter is in line with the hypothesis. For this type of conflict, the year 2014 is associated with higher number of incidence compared to the year 2007.

The last type of conflict is conflict during election. Here, both percentage of poor household and village budget is shown to have positive relationship with the number of conflict incidence. Variables of social capital is again showing inconclusive result with alertness having positive relationship while trust with same ethnicity having negative relationship with conflict. Although it is contrary to the hypothesis, the coefficient for trust with the same ethnicity is statistically significant at 10%. Similarly, EFI and EPOI are presented to be negatively correlated with the number of conflict incidence. The result is again contrary to the hypothesis. Nevertheless, the coefficients are statistically significant at 5% and 10% respectively. Percentage of population registered to secondary school is consistently showing negative correlation with number of conflict incidence as hypothesised. Finally, the year 2014 is associated with higher conflict during election compared to the year 2007.

Table 18. Estimation of Fixed Effect Regression with Conflict as Dependent Variable including EFI (Standard error adjusted for 13 clusters in province)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	conflict_ethnic	conflict_religion	conflict_govt_citizen	conflict_citizens	conflict_power_abuse	conflict_election
log_village_budget_percapita	-0.000507 (0.00111)	0.000419 (0.000341)	-0.00223 (0.00541)	0.0280** (0.00967)	0.00221 (0.00241)	0.00524 (0.00635)
poor_hh_percentage	8.94e-09 (1.21e-08)	5.78e-09 (5.34e-09)	2.60e-07*** (8.48e-08)	1.36e-06*** (3.63e-07)	-3.60e-08 (2.29e-08)	2.45e-07 (1.47e-07)
alertness	0.00134 (0.00687)	-0.00522 (0.00494)	0.0787 (0.110)	0.227 (0.143)	-0.0473 (0.0476)	0.0738 (0.126)
trust_ethnic	0.0152 (0.0186)	-0.00153 (0.00235)	-0.0255 (0.0212)	-0.671*** (0.187)	0.00653 (0.00887)	-0.160* (0.0855)
EFI	0.191 (0.131)	0.00866 (0.00685)	0.147 (0.127)	1.113 (0.630)	-0.00904 (0.0655)	-0.409** (0.177)
secondary_school	-2.55e-06 (2.07e-06)	-5.77e-07 (5.71e-07)	-9.61e-06 (9.74e-06)	-6.23e-05** (2.85e-05)	2.56e-06 (2.81e-06)	-1.23e-05 (1.19e-05)
2014.year	-1.705 (3.366)	-0.177 (2.043)	8.395 (9.498)	-13.04 (16.88)	2.472 (3.684)	2.812 (9.891)
Constant	-3.295 (3.382)	3.093*** (0.948)	15.52 (11.54)	4.607 (31.58)	6.045 (3.679)	27.02** (10.69)
Observations	590	590	585	584	586	590
R-squared	0.066	0.001	0.017	0.362	0.008	0.097
Number of village	311	311	311	311	311	311
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Table 19. Estimation of Fixed Effect Regression with Conflict as Dependent Variable including EPOI (Standard error adjusted for 13 clusters in province)

VARIABLES	(1) conflict_ ethnic	(2) conflict_ religion	(3) conflict_ govt_citizen	(4) conflict_ citizens	(5) conflict_ power_abuse	(6) conflict_ election
log_vil- lage_budget_ percapita	-0.000456 (0.00104)	0.000421 (0.000344)	-0.00221 (0.00542)	0.0276** (0.00960)	0.00232 (0.00241)	0.00511 (0.00647)
poor_hh_ percentage	5.26e-09 (1.29e-08)	5.64e-09 (5.27e-09)	2.58e-07** (8.64e-08)	1.37e-06*** (3.85e-07)	-4.10e-08 (2.32e-08)	2.53e-07 (1.49e-07)
alertness	0.00186 (0.00602)	-0.00520 (0.00498)	0.0792 (0.110)	0.231 (0.147)	-0.0479 (0.0473)	0.0727 (0.127)
trust_ethnic	0.0149 (0.0180)	-0.00154 (0.00226)	-0.0255 (0.0209)	-0.664*** (0.188)	0.00543 (0.00870)	-0.160* (0.0876)
EPOI	0.0952 (0.0700)	0.00441 (0.00463)	0.0773 (0.0757)	0.691 (0.474)	-0.0240 (0.0389)	-0.201* (0.108)
secondary_ school	-2.27e-06 (2.24e-06)	-5.68e-07 (6.09e-07)	-9.56e-06 (1.02e-05)	-6.61e-05* (3.43e-05)	3.33e-06 (2.99e-06)	-1.30e-05 (1.24e-05)
2014.year	-1.096 (2.997)	-0.150 (2.027)	8.830 (9.462)	-10.49 (16.76)	2.597 (3.713)	1.487 (9.722)
Constant	-2.956 (3.420)	3.106*** (0.982)	15.67 (11.68)	2.764 (32.72)	6.584 (3.780)	26.22** (10.55)
Observations	590	590	585	584	586	590
R-squared	0.051	0.001	0.017	0.367	0.009	0.091
Number of village	311	311	311	311	311	311
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Chapter 6

Discussion of Results

6.1. Poverty Rate as Proxy for Vertical Inequality

Vertical inequality is proxied by percentage of poor household. With regard to crime, this variable is shown to consistently have positive correlation with two types of crime: theft and robbery. The higher the percentage of poor household in the village, the higher the likelihood of theft and robbery to happen. The magnitude of the coefficient is small but the results are statistically significant at 1%, 5%, and 10% throughout both random effect and fixed effect regressions. Percentage of poor household also shows statistical significance in explaining crop and livestock theft. However, the direction is not always clear as some regressions show positive while others show otherwise. On the other hand, percentage of poor household is shown to be negatively correlated with number of incidence of domestic assault. In the random effect regression, there is even statistical significance at 1%. This shows that while there is evidence to some extent about how vertical inequality correlates to the incidence of crime, the direction is not always clear. For theft and robbery as dependent variable, the result is in line with the hypothesis but for domestic assault this is not the case. This is actually sensible since the motive of conducting theft and robbery is related to income. Higher vertical inequality will induce it to be more likely to happen. The motive for domestic assault, on the other hand, varied and can be not directly related to income inequality.

When explaining conflict, percentage of poor household is shown to be positively correlated with most types of conflict: ethnic conflict, conflict on land/building between government and citizen, conflict during election, and conflict on land/building between citizens. From those dependent variables, percentage of poor household has statistical significance of 1% and 5% in the fixed effect regressions with conflict on land/building between government and citizen and conflict on land/building between citizens respectively. Conversely, percentage of poor household is negatively associated with conflict in relation to power abuse although none of the result is statistically significant. This shows that vertical inequality mainly plays a role in explaining conflicts that are related to issues with land or building for instance land grabbing or eviction. For this type of conflict, the result is in line with the hypothesis. Nevertheless, one could also see that it is still not an absolute pattern in explaining conflict in general since there are other case when percentage of poor household has negative relationship with conflict in relation to power abuse and inconclusive result to explain religious conflict with different method of regressions.

6.2. Social Capital

There are two variables that represent social capital in this research: level of alertness one has towards the neighbour and trust with the same ethnicity. From

the regressions across different types of crime, trust with same ethnicity consistently appear to have positive correlation with the number of incidence of sexual assault. The result is statistically significant at 10% when using OLS fixed effect regression with standard error adjusted for 13 clusters in province. Level of alertness is also shown to have positive correlation with number of incidence in random effect regression although the sign changes into negative when analysed using fixed effect. Although the evidence is not entirely strong, there is likelihood that social capital affects the number of sexual assault incidence. When a community put more trust only with other people from the same ethnicity and as they have high level of alertness towards one another, the community is then deemed not as safe which could lead to higher number of sexual assault incidence. While this result stands out, other results using different types of crime are shown to be inconclusive.

Next, with different types of conflict as dependent variable, the result is not as clear. Alertness is shown to have positive correlation with ethnic conflict, conflict on land/building between citizens and conflict on land/building between government and citizen. The one between government and citizen is statistically significant at 5%. Conversely, alertness is consistently showing negative relationship with religious conflict. Furthermore, the second variable, trust with the same ethnicity, is showing a different picture. The dependent variable that are consistently shown to be positively associated with trust with same ethnicity is conflict in relation to power abuse. The dependent variables that consistently shows negative correlation is conflict during election and conflict on land/building between citizens. Here, trust with same ethnicity is statistically significant at 1%. While some results are in line with the hypothesis and some are not, there is no clear pattern as to how social capital affects the occurrence of conflict.

6.3. Social Diversity

With regard to crime, there is weak evidence that variables on social diversity could explain it. EFI and EPOI are shown to be positively correlated with robbery, theft, and crop or livestock theft from the regression using random effect. However, when the regression is performed under OLS fixed effect with standard error adjusted for 13 clusters in province, they are only positively correlated with domestic assault. On the other hand, sexual assault is consistently being the dependent variable that has negative correlation with EPOI and EFI. The result is statistically significant at 1% and 10% respectively under fixed effect regression. Robbery, while being positively correlated with EFI and EPOI under random effect regression, changes sign into negative when the regression is done with fixed effect. For EPOI, the coefficient is statistically significant at 5% while for EFI it is statistically significant at 10%. Overall, under fixed effect almost all types of crime are negatively correlated with EPOI and EFI. Similar result is shown for RFI and RPOI. Considering data limitation, these 2 variables could only be analysed using random effect regression. From there it is shown that all types of crime are negatively correlated with either RFI or RPOI. The coefficient of RFI is statistically significant at 5% while the one for RPOI is statistically significant at 10%.

Next, RFI and RPOI are shown to have positive correlation with four types of conflict: ethnic conflict, conflict on land/building between citizens, conflict in relation to power abuse, and conflict during election. They are in line with the hypothesis although the results are not statistically significant. Moreover, EPOI and EFI are shown to have inconclusive results under regressions with random effect. On the other hand, under fixed effect clustered by province, the result for both is the same. EFI and EPOI are positively correlated with ethnic conflict, conflict on land/building between citizens, conflict during election, and conflict on land/building between government and citizens. Statistical significance is however not found here. The only variable that is statistically significant is EPOI being negatively correlated with conflict during election at 10% significance level.

Chapter 7

Conclusion

This paper found some results that vertical inequality proxied by percentage of poor household is to certain extent able to explain the increase of the number of incidence of theft, robbery, and conflicts in relation to land and building. The results are robust across different method of random effect and fixed effect. For the rest of the types of crime and conflict, the results vary. Next, the lack of social capital is shown to be positively correlated with increasing incidence of sexual assault. This is also consistent across different models. For conflict, the result and direction of the relationship with independent variables are highly depending on the type of conflict and the model used. Therefore, it is difficult to see the general pattern. Other than that, with regard to ethnic as well as religious polarization and fractionalization index, there is no clear consensus on the result. RPOI and RFI are shown to be negatively correlated when one uses random effect model. Many types of crime are shown to be positively associated with EPOI and EFI under random effect regression but then the signs change when the regressions are performed under fixed effect with standard error adjusted for 13 clusters in province. Overall, under fixed effect almost all types of crime are negatively correlated with EPOI and EFI. On conflict, the pattern is clearer in showing there is positive correlation between social diversity and many types of crime. The direction of the relationship is similar across both model used although none of them are statistically significant.

From these results, one could see that in order to reduce crime especially robbery or theft, it is worth for policy makers to address the root cause which is income inequality. Next, social capital is shown to play a role in ensuring the safety of community in the village especially with regard to decreasing incidence of sexual assault. Thus, it is important to pay attention to the conduciveness of community cohesion up until the grassroot level. Village leaders for instance play a role in ensuring this. It is also worth to consider encouraging community-based solutions as coined by DiIulio (1996) to reduce crime and conflict. Other than that, inclusive community participation should be promoted to increase trust among village members. Other than that, there is no strong evidence that social diversity plays a role in the increasing incidence of crime and conflict. It does only to certain types of conflict but with no statistical significance evidence. The diversity is a legacy and will not change in short period of time. Therefore, Indonesia should keep seeing this diversity as an asset for growth and development instead of divider.

Finally, it is important to note that the results of this research should not be generalized considering the limitation of survey coverage in Indonesia. Nevertheless, the findings are worth to be taken into account in contributing to discussions that support the ongoing effort to address income inequality and strengthen social capital through policy as well as community-based initiatives.

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Annex 1

Correlation Table of Independent Variables

	Log_village_budget_percapita	% poor HH	Alertness	Trust_ethnic	EPOI	EFI	RFI	RPOI	Secondary_school
Log_village_budget_percapita	1								
% poor HH	0.0232	1							
Alertness	0.9666	0.0218	1						
Trust_ethnic	0.6961	0.0457	0.6491	1					
EPOI	-0.1933	-0.0561	-0.1674	-0.1595	1				
EFI	-0.2114	-0.0522	-0.1814	-0.1711	0.9621	1			
RFI	-0.1933	-0.0334	-0.1726	-0.1419	0.4531	0.4948	1		
RPOI	-0.1984	-0.0343	-0.1847	-0.1531	0.4608	0.494	0.972	1	
Secondary_school	0.5282	0.1545	0.5304	0.2763	-0.0486	-0.0746	-0.0386	-0.0288	1