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Social Capital and Conflict in the Post-Suharto Regime in Indonesia

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Abstract

This study explores the relationship between social capital and conflict in the post Suharto regime in Indonesia. We employed a combination of cross-section datasets from the Social and Cultural Module of the 2009 National Socio-Economic Survey (SUSENAS) and the media-based conflict data from National Violence Monitoring System (NVMS) of 2010–2014 in Indonesia. Using Binomial Negative Regression, our empirical analysis shows that the past social capital stocks negatively correlate with future conflict intensity. This pattern applies to most conflict types. This result indicates that the social capital stock in 2009 is more likely to be the starting point determining the conflict vulnerability in the subsequent period. Furthermore, the evaluation of the components of social capital reveals that the most crucial type of social capital is trust in neighbors, the government, and local officials. The district with high trust is less prone to conflict.

Keywords: conflict, democratizing country, Indonesia, social capital

JEL classifications: D74; Z13

1. Introduction

The concept of social capital provides a deeper understanding of several economic activities. It is believed that social capital maintains and strengthens the value of physical and human capital. Physical capital, such as infrastructure, provides optimal utility supposing it is maintained by collective actions. Human capital, such as education, offers greater value supposing the knowledge is discussed with or transferred to other people. However, individual and community social capital can change over time and may also imply social phenomena, such as conflict. For example, due to urban formation, bonding social capital or ties among individuals may gradually decrease but bridging social capital (e.g. association membership) may increase (Muzayanah et al. 2020). The low bonding may be prone to rising tensions in the community. The increasing number of associations may promote exclusionary behavior and clashes among groups.

The existing empirical research tends to discuss the reverse perspective (the impact of conflict on social capital). Using a meta-analysis method, Bauer et al. (2016) highlight that numerous studies find the positive effect of conflict on social capital due to the increased bonding, ties, and collective movement based on solidarity during times of conflict. Studies employing social capital as a predictor of conflict are limited. Therefore, this study aims to examine whether social capital stock has a role in determining conflict intensity using Indonesia as a case study.

Prior studies reveal that areas with heterogeneous identity are prone to conflict incidence or social problems (Bleaney & Dimico 2017; Mavridis 2015; Montalvo & Reynal-Querol 2005). As one of the most diverse countries in the world (Arifin et al. 2015), Indonesia is not an exception. The country has witnessed numerous horizontal and identity conflicts, particularly in the aftermath of the Asia Fi-

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nancial Crisis in 1998.[1] At the same time, Indonesia also possesses a considerably high level of social capital—the willingness of people to help each other, loosely defined (Legatum Institute Foundation 2020). The situation indicates that despite the relatively high social capital endowment, the role of social capital in conflict remains an open question for Indonesia as a diverse country.

Therefore, we employed the largest social capital survey in Indonesia, namely the Social and Cultural Module of the 2009 National Socio-Economic Survey (SUSENAS). This module provides nationally representative social capital profiles that account for 291,753 households. The conflict data were extracted from the National Violence Monitoring System (NVMS) of 2010 to 2014 published by the World Bank. Alternative conflict data source is available from the national village census (PODES) dataset. However, we prefer to use NVMS due to its coverage of conflict incidence sourced from the media reports.

To the best of our knowledge, this is the first study on the topic using a single diverse country such as Indonesia. Prior studies commonly evaluate the effect of conflict on social capital[2]. The closest studies are Alcorta et al. (2020) and Lederman, Loayza & Menéndez (2002). They use a cross-country dataset to examine the role of social capital in political violence and violent crime, respectively. Both studies find that one type of social capital, such as trust, is proven to negatively correlate with political violence and violent crime, whereas the other social indicators show an ambiguous result. Alcorta et al. (2020) also highlight that association membership is likely to drive more conflict.

The case study of Indonesia offers a variety of empirical evidence since we applied within-country estimates. This arrangement entails advantages on data problems. The cross-country dataset frequently causes comparability issues, particularly with regard to how each country measures conflict incidence and social capital. To mitigate this shortcoming, we prefer to utilize a within-country dataset. This arrangement raises comparability across units of analysis and minimizes the potential for bias from heterogeneity measurements across observations.

Another crucial issue of social capital and the empirical design of conflict is related to the problem of reverse causality. Researchers obviate the problem using an instrumental variable approach. However, finding a valid instrument in social capital and conflict nexus is arduous because the development aspect will mostly always become another mechanism of how the instrument affects conflict. It means that the exclusion restriction assumption is hard to satisfy. Handling this issue, we utilized the lagged social capital instead of identifying a good instrument. We hypothesized that the past variation of social capital in 2009 remains relevant to comprehend the conflict incidence in the following years of 2010 to 2014. We also assumed that the economic crisis in 1997/1998, 2008/2009, and political instability in this period may become the shock that induces a new social capital profile in Indonesia.

In summary, our findings are coherent with the literature. The empirical analysis consistently illustrates that social capital negatively affects conflict intensity. This pattern also applies to nearly all conflict types, but the stronger effect is found on vigilante, law enforcement, household, and crime. By magnitude, every one-unit increase in the share of individuals with high social capital, the rate of conflict intensity is expected to decrease with a factor of 0.60 or by approximately 40%. Nevertheless, the estimation of aggregate or single social capital on

[1] For example: Anti-Chinese riots in Jakarta, Dayak and Madurese conflict in Kalimantan, and Ethno-religious conflict in Poso and Maluku (Siddiq 2005).

[2] For example, Goodhand, Hulme & Lewer (2000) evaluate the impact of military violence on social capital in Sri Lanka; McIlwaine & Moser (2001) assess social capital in the urban context with high violence intensity in Guatemala and Colombia; Deng (2010) examines social capital in the civil war condition in Sudan; Cassar, Grosjean, & Whitt (2013)) elaborate the effect of individual exposure to Tajik war in Tajikistan on trust and preference for market participation; Dinesen et al. (2013) observe the social condition of post-conflict in Guatemala; Schaub (2014) check the impact of violence on collective actions in Nigeria; De Luca & Verpoorten (2015) examine the implication of armed conflict in Uganda on civic and political participation; and lastly, Ingelaere & Verpoorten (2016) scrutinize the inter-ethnic trust following the genocide crime in Rwanda.

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conflict may be ambiguous due to the heterogeneity of the impact of social capital types. Therefore, we conducted an evaluation of social capital at the component level. The estimation reveals that trust and networks are the most crucial determinants of conflict intensity. Trust has the largest and most consistent effect on most all conflict types, specifically crime and vigilante. Interestingly, we also discover that association membership does not significantly affect conflict as suggested by prior literature. This result indicates that the character of association in Indonesia may be different from other countries. The exclusive behavior in the association may not be problematic. The interaction across groups probably also represents more bridging rather than tension or clash. Overall, the findings signify that the fluctuation of social capital endowment may be the initial stage of conflict vulnerability.

This study offers three contributions. Firstly, this study is the first attempt to provide the general pattern of social capital and conflict nexus in Indonesia in the post-authoritarian regime period. Secondly, this study also identifies the specific components of social capital that are most crucial in the efforts of conflict alleviation. Thirdly, this study employs a unique dataset combining nationally representative social capital surveys and conflict data from NVMS media reports.

The structure of the paper is as follows. The following section elaborates the concepts and the pathways of social capital and conflict. Then, the third section comprehends the identification strategy and empirical model. The fourth section discusses the descriptive pattern and empirical result. The last section is the conclusion and limitations of the paper.

2. Literature Review

2.1. The Concept of Social Capital

The definition of social capital emerges in a multidimensional manner. Hence, it may be helpful to create a limited but precise definition (Robison, Schmid & Siles 2002). The main discussion of the concept of social capital lies in three aspects: the source of social capital, how it works or where it resides, and its implication. Putnam (1993) explains social capital as trust, norms, and networks that can elevate the efficiency in organizing society due to its role in generating coordinated actions. This definition indicates three parts of social capital: trust and norms as sources, networks as a mechanism of how trust and norms work, and the efficiency of society as an implication.

Uphoff (2000) proposes that social capital has two categories: structural and cognitive. Structural social capital means various features of social organization, such as roles, rules, precedents, procedures, networks, cooperation, and collective actions. Meanwhile, cognitive social capital refers to social skills acquired by mental or cognitive processes, such as trust, norms, values, attitudes, and beliefs. In addition, Putnam (2002) emphasizes social capital formation, namely the bonding and bridging processes. Bonding is a social relationship between individuals with similar identity, while bridging is across different identities. The third type, linking, is introduced to represent the connection across power status, such as the state-society relationship. However, the definitions of bonding, bridging, and linking are prone to overlap and quite hard to separate in the measurement process.

These various definitions lead to the main difference between social capital and other capitals, namely the interaction process. Social capital seems to work through repeated human interaction mechanisms. However, this aspect also bolsters another debate on how we determine the unit of social capital, whether it belongs to an individual or community.

Overall, researchers have not yet fully agreed upon the definition (and measurement) of social capital. In this study, we prefer to employ social capital as a general idea of human interaction. Even though several researchers argue that this concept may not adequately fit with the basic concept of capital, the implication of solid human interaction across individuals is real and crucial in reducing transac-

tional costs (Lederman, Loayza & Menéndez 2002). Therefore, elaborating on this aspect may provide meaningful intuition on how social capital affects social, political, and economic phenomena.

2.2. How Social Capital Affects Conflict

Backer argues that crime stems from an individual decision on a cost-benefit analysis between legal and illegal activities. This view underlines that crime originates from a personal rational choice in maximizing its utility. However, in several cases, conflict may be driven by individual choices and collective behavior resulting from social interaction. The personal decision does not merely represent utility but also considers other utility as a community. Therefore, social interaction intensity and conflict incidence may be close.

The connection between social capital and conflict can also occur both ways. Bauer et al. (2016) document the empirical studies on the topic of conflict and social capital. They show that the society or community exposed to conflict or war tends to own stronger social capital. The hardship drives people to rely on each other. However, this finding may not apply to all dimensions of social capital. Conflict may increase bonding social capital but disrupt bridging and linking social capital. This finding may imply that higher social capital (bonding) correlates with higher conflict, but it does not necessarily mean that higher social capital causes higher conflict. The role of social capital in conflict incidence has different and varied mechanisms.

Lederman, Loayza & Menéndez (2002) summarize two mechanisms by which social capital affects conflict. The first point is via sympathetic behavior that reduces a large number of transactional costs, such as negotiation and enforcement costs. This behavior also increases individual awareness, enhances community ties, and develops informal protection in preventing internal or external conflict (Avdeenko & Gilligan 2015; Hansen-Nord et al. 2016). The second one is the role of social capital in handling the free-rider problem (Ostrom & Ahn 2009). Togetherness and solidarity, such as the culture of mutual cooperation in Indonesia, are proven to solve numerous social problems in the community without additional costs, such as in public goods provision. These points may also reduce the potential for opportunistic behavior that stimulates tension in society. Interpersonal trust and engagement tend to build solid relationships (Brehm & Rahn 1997).

However, there is also a possibility that higher social capital correlates with higher conflict. The rising number of associations or organizations within society may also increase the fractionalization and exclusive behavior across groups (Portes 1998). The social capital within organizations may increase, but it may not occur between organizations supposing exclusivity across groups is dominant. Instead of improving bridging, the fractionalized community in groups tends to stimulate clash. The negative side of social ties may also stimulate criminal organization or community fanaticism fostering more crime and violence (Ostrom & Ahn 2009; Rubio 1997).

Alcorta et al. (2020) and Uphoff (2000) reveal that the effect of social capital depends on its type. The cognitive and structural social capital may drive a different implication. The cognitive elements, such as trust and sympathy, may reduce the potentiality of conflict, while the structural elements, such as association membership, is more likely to bolster conflict incidence. This hypothesis is empirically proven by Alcorta et al. (2020) using the dataset of Africa.

The relationship between social capital and conflict has numerous possibilities and can occur both ways. The direction of the effect of social capital on conflict seems to depend on the type, characteristic, and context of social capital, such as structural or cognitive type and conflict or non-conflict area. The growing literature is also dominated by the association of conflict with social capital formation. Therefore, this study attempts to explore the different perspectives of social capital and conflict nexus by exploring the direct implication of social capital on conflict and analyzing the heterogeneity of various types of social capital. This study divides social

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capital into several types to explore the possibility of a heterogeneous pattern of social capital and conflict nexus. In addition, this study also represents a unique context, namely Indonesia, a developing country with diverse identities and a large social capital stock.

3. Method

3.1. Identification Strategy

The source of bias in the social capital and conflict nexus is joint endogeneity from omitted variable bias (OVB) and two-way relationship (reverse causality). Moreover, the social capital and conflict data may also be prone to measurement errors. In handling OVB, we develop Directed-Acyclic Graph (DAG) to identify the potential confounders that may drive a biased estimator. Nevertheless, not all confounders were observed. The identified control variables probably remain imperfect and insufficient to represent all observed and unobserved confounders. To check the coefficient consistency, we utilized three datasets: (1) cross-section data in 2010, (2) cross-section data in 2014, and (3) pooled cross-section data in 2010–2014.

The second issue is reverse causality. Lederman, Loayza & Menéndez (2002) use a geographical dummy (depicting the development stage), the number of telephones per capita, and the number of radios per capita as instruments for social capital. Nevertheless, these instruments may violate the exclusion restriction assumption via development pathways that correspond to conflict intensity. Tackling this issue, we utilized the lagged social capital instead of identifying a good instrument.

The last issue is measurement errors in social capital and conflict variables. We applied the Rasch Model to reduce the possibility of measurement errors in the social capital survey. Compared to simple sum score, this method has superiority in accommodating the latent factors of the survey, namely the variation of question difficulty and the ability of respondents to answer. Both aspects are then used as a weighting factor in indexation. Furthermore, in creating district social capital, we also prefer to use the share of individuals with high social capital instead of the individual mean. We utilized the national social capital mean as the minimum threshold for high social capital criteria. This method may increase data variability.

The conflict data are also prone to underreporting. There are two sources of conflict data in Indonesia: media-based data in NVMS and survey-based data in PODES. The NVMS dataset may represent more actual conflicts because the data originated from media, but they are less in coverage, especially before 2014. Meanwhile, the PODES data may capture a broader scope, but they probably have a larger potential for measurement errors due to memory recall capability. We prefer to use the NVMS data because, based on the number of conflicts, NVMS is extremely larger than PODES (see Figure 2). Thus, the underreporting in NVMS may be relatively lower than in PODES.

The measurement errors in NVMS may be caused by the heterogeneity of media coverage and quality across regions. This problem also implies confounding bias due to the possibility of media quality and social capital nexus. The high reach and quality of media probably correspond to a broader conflict identification; at the same time, it is also likely to correlate with social capital formation. Lederman, Loayza & Menéndez (2002) argue that communication infrastructure, such as telephone or radio subscriptions, may stimulate social interaction. Unfortunately, data on media coverage and quality are unavailable, thus we used a dummy province to capture them.

3.2. Empirical Model

We create the DAG of social capital and conflict nexus as a basis for the empirical model development. The use of DAG becomes a new norm for causal inference analysis with observational data (Cunningham 2021; Pearl 2009). This DAG helps identify the source of bias, such as confounders,

that need to be controlled in the model (see Appendix 2). Thus, our main empirical strategy is conditioning by relying on the conditional independence assumption (CIA) to hold (Angrist & Pischke 2009). We also follow Lederman, Loayza & Menéndez (2002) and Alcorta et al. (2020) in considering the relevant control variables in the model. We then add some adjustments adapted to the context of Indonesia. The empirical model is as follows.

$$\begin{aligned}\mathrm{CONFLICT_d} &= \alpha + \beta\mathrm{SOC_d} + \gamma\mathrm{DIVERS_d} \\ &\quad +\rho\mathrm{GINI_d} + \delta\mathrm{INFRA_d} \\ &\quad +\sigma\mathrm{GEO_d} + \pi_{\mathrm{p(d)}} + \varepsilon_{\mathrm{d}} \qquad (1)\end{aligned}$$

The CONFLICT variable is measured by the number of district conflicts in 2010–2014 for every 100,000 population. We also dissect the conflict data into the top five conflict incidence: crime, vigilante, household conflict, law enforcement conflict, and identity conflict. This breakdown is useful to elaborate the specific pattern of social capital and conflict nexus. The social capital variable, SOC, represents the share of individuals with a high social capital index (above the national mean) at the district level. The main parameter of interest is β which captures the effect of social capital on the level of conflict.

We introduce an innovative approach to limit measurement errors in defining the key regressor variable. To calculate this variable, firstly, we estimate the individual social capital using the latent variable estimator within the class estimator of Item Response Theory (IRT), specifically using the Rasch Model (Baker & Kim 2004; Fischer & Molenaar 2012). We assume that the difficulty and ability to answer in the social capital survey are varied. Hence, we employed the Rasch Model to accommodate the latent factor and then used it as the weighting factor for indexation. The step in creating a single individual social capital index is as follows. Firstly, we convert the responses on the survey into binary or dummy variables (see Table 1). Secondly, we estimate a single index showing social capital aggregation at the individual level ($\mathrm{SOCCAP_i}$) with the following formula.

$$\mathrm{SOCCAP_i} = \sum_{\mathrm{j}} \omega_{\mathrm{j}} \mathrm{sc_i^j} \qquad (2)$$

Where $\mathrm{SC_i}$ is the single individual social capital index, ω_{j} is the weight of social capital dimension j, whose value depends on its importance as estimated by IRT-Rasch Model or Rasch Score calculation. $\mathrm{sc_i^j}$ is a dummy variable of individual social capital calculated in the first step. The Rasch Score weighting considers the latent factor of the survey (Van Der Gaag & Webber 2008). We estimate the equation of the Rasch model for individual n with item j from 1 to 18 in Table 1 as the following,

$$\Pr\left(\mathrm{X-nj} = \mathrm{x_{nj}} | \theta_{\mathrm{n}}, \delta_{\mathrm{j}}\right) = \frac{\exp\left(\mathrm{x_{nj}}\left(\theta_{\mathrm{n}} - \delta_{\mathrm{j}}\right)\right)}{1 + \exp\left(\theta_{\mathrm{n}} - \delta_{\mathrm{j}}\right)} \qquad (3)$$

in which θ_{n} is the so-called difficulty level captured by each item or question and δ_{j} is the parameter measuring the level of social capital of individual n. $\mathrm{X_{nj}}$ is a random variable representing the response of the nth individual ($\mathrm{n} = 1, \ldots, \mathrm{N}$) to the j-th item ($\mathrm{j} = 1, \ldots, \mathrm{J}$), $\mathrm{x_{nj}}$ is the realization of response of the individual for each item. Thirdly, to produce district aggregation, we utilize a national mean of individual social capital as the bottom-line threshold for estimating the share of individuals with high social capital in the district.

The aggregation of social capital types in a single individual index may induce an ambiguous result and interpretation in the estimation. Uphoff (2000) and Alcorta et al. (2020) state that the effect of social capital on conflict seems to depend on the type, characteristic, and context of social capital. Therefore, this study does not only assess social capital as a single index on conflict, but also emphasizes the heterogeneity analysis on social capital types such as trust, mutual cooperation, tolerance, networks, and association membership.

The first control variable, DIVERS, is ethnic diversity measured by ethnic fractionalization index (EFI) and ethnic polarization index (EPOI). Fractionalization and polarization are proven to negatively

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Table 1. Questionnaire on Social Capital

No.	Statements/Questions	Binary Transformation	Social Capital Component
1.	Believing that government decisions and policies are always good for public welfare	1 if Strongly Believe or Believe 0 if Less or Do Not Believe or Do Not Care	
2.	Entrusting the financial management to the officials of Neighborhood Association (RT)/Local Environmental Unit (SLS)	1 if Strongly Believe or Believe 0 if Less or Do Not Believe or Do Not Care	
3.	Entrusting the financial management to the community group officials	1 if Strongly Believe or Believe 0 if Less or Do Not Believe or Do Not Care	Trust
4.	Entrusting the financial management to the village officials/head	1 if Strongly Believe or Believe 0 if Less or Do Not Believe or Do Not Care	
6.	Entrusting a child (age 0-12 years) to neighbors if having to go out	1 if Very Trusted or Trusted 0 if Less or Not Trusted or Do Not Care	
7.	Entrusting the house to neighbors if having to go out/spending the night elsewhere	1 if Very Trusted or Trusted 0 if Less or Not Trusted or Do Not Care	
8.	Gathering with neighbors (including prayer group, social gathering, sports etc.)	1 if Very Often or Often 0 if Sometimes or Seldom or Never	
9.	Habit of sharing food with neighbors	1 if Very Often or Often 0 if Sometimes or Seldom or Never	Mutual
10.	Easiness of obtaining financial loan from neighbors for urgent needs	1 if Very Easy or Easy 0 if Uncertain or Difficult or Very Difficult	Cooperation
11.	Readiness to help supposing other neighbors are asking for loan for urgent needs	1 if Very Easy or Easy 0 if Uncertain or Difficult or Very Difficult	
12.	Hospitality with other people from other race	1 if Very Happy or Happy or No Problem 0 if Less or Not Happy	Tolerance
13.	Hospitality with other people from other religion	1 if Very Happy or Happy or No Problem 0 if Less or Not Happy	
14.	Your response to a place of worship of other religions in your village	1 if Very Happy or Happy or No Problem 0 if Less or Not Happy	
15.	Your response to living in an area with people with a much higher standard of living	1 if Very Happy or Happy or No Problem 0 if Less or Not Happy	
16.	Household member with age > 10 who have friend	1 if All or Most HM 0 if Half or Few or No HM	Networks
17.	Total families that become friend with this family – these families	1 if $\geq$ national mean of family friend 0 if < national mean of family friend	
18.	Total associations where respondent is a member (social gathering)	1 if $\geq$ national mean of membership 0 if < national mean of membership	Association Membership

Source: SUSENAS 2009 - Social and Cultural Module

associate with trust, perceived safety, community participation, and election but positively correspond to tolerance. At the same time, they also affect conflict (Alcorta et al. 2020; Bleaney & Dimico 2017; Mavridis 2015; Montalvo & Reynal-Querol 2005; Sanjaya 2022). This condition implies that ethnicity is one of the potential confounders. Unfortunately, due to the collinearity problem, we cannot combine EFI and EPOI in the model as covariates (Mavridis 2015). We tested both indexes in the regression. EFI may be more relevant than EPOI as a control variable due to its significant result. We employed EFI data from Arifin et al. (2015). They use the 2010 population census to estimate both indexes at the district level.

The second control variable, GINI, is income inequality or Gini ratio. We estimate the district Gini ratio using the 2009 SUSENAS. This variable also represents the implication of uneven government policy that may associate with social capital and conflict simultaneously (Lederman, Loayza & Menéndez 2002; Tadjoeddin, Suharyo & Mishra 2001; Yumna & Suryahadi 2015). Explicitly, higher inequality may correspond to higher conflict and lower social capital implying a negative bias in the absence of control.

The development stage may also influence social capital and conflict (Tadjoeddin & Murshed 2007). Thus, we include infrastructure as the third control variable, INFRA. The number of primary schools and the share of villages with community health centers are employed as the proxies for infrastructure

development. We do not use expenditure per capita due to its endogenous characteristics (for example, the omitted variable bias and reverse causality between conflict and expenditure per capita) and to avoid perfect predictions. This variable contains population variable which is also used in the outcome variable.

We also include the geographical characteristics, GEO, such as elevation and distance to shoreline as control variables. The individuals and community are likely to live by adapting to their environment or geographical conditions (Iyigun 2005). In addition, these variables may also reflect some unobserved heterogeneity across districts. To capture governance heterogeneity that confounds the model, such as political aspect, government control, and media quality, we add the dummy province π. Overall, there may be a mixture of positive and negative biases in the absence of these control variables.

Due to the characteristic of the count outcome variable, we estimate the model using count data regression. We prefer to use Negative Binomial rather than Poisson estimation because of the overdispersion issue. The mean and variance of dependent variable are not close (see Table 2). This condition is a sign that the dependent variable distribution is more likely to be over-dispersed.

Furthermore, we also conducted an overdispersion test using the Stata command overdisp to identify overdispersion by considering covariates (Fávero et al. 2020). The test result indicates the presence of significant overdispersion in the dependent variable. In the heterogeneity analysis, we utilize zero-inflated binomial regression due to the excessive amount of zero data in the conflict types (see Figure 1).

4. Results and Analysis

4.1. Mapping Conflict in Indonesia

Large-scale conflict occurred and emerged in Indonesia following the collapse of the New Order regime (Siddiq 2005). At that time, Indonesia experienced an economic crisis that destroyed numerous aspects of life, including social and economic conditions. Political turmoil, economic shock, and ethnic clash exacerbate social disharmony and stimulate further conflict in several areas. Varshney, Panggabean, & Tadjoeddin (2004) document the media-based conflict incidence of violence during 1990–2003. They reveal that the conflict intensity of violence increased in 1997–2001 (see Figure 2). The source of conflict is mainly from ethnic and communal conflicts, such as the anti-Chinese in Jakarta, Madurese versus Dayak/Malays in Kalimantan, Muslims versus Christians in Sulawesi, and others. The frequency of conflict then gradually declined after 2001.

These 1997–2001 events and the subsequent major shock, such as the 2008/2009 crisis, may destroy the social capital endowment in Indonesia. Hence, the new variation of social conditions probably also affects the future social fabric and community resilience. This condition is also likely to determine the vulnerability of conflict in the subsequent period.

To show the conflict trend after 2001, we extract the data from NVMS and PODES. Both datasets show "the rising trend" of conflict, but by magnitude, the number of conflict in NVMS is larger than in PODES. For example, the total conflict in NVMS in 2014 is 28,046 cases (or 11,435 without crime), while in PODES it is only 4,658 cases (without crime) (see Figure 3). Moreover, the rising trend in NVMS cannot be interpreted solely as an increase in conflict because the district coverage becomes wider over time. The conflict data in PODES do not include crime due to data unavailability. Therefore, even though both datasets may be underreported, NVMS may still provide better data.

By province, the areas with high conflict intensity

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Table 2. Mean and Variance of Conflict

	Total conflict	Crime	Vigilante	Household conflict	Law conflict	Identity conflict
	in every 100.000 people					
2010						
Mean	16.42274	10.20712	1.735584	1.59282	.4944848	.4563173
Variance	719.477	371.7332	7.126775	12.7562	.4243185	1.835219
2014						
Mean	15.87147	9.783497	1.801023	1.30342	.8495523	.4914133
Variance	741.9309	366.4891	9.403247	8.155213	1.563574	1.827536
All						
Mean	15.52035	9.663047	1.66783	1.371048	.6224969	.4160637
Variance	804.6535	404.9257	8.426142	11.37024	.9132914	1.552591

Source: NVMS 2010–2014

per 100,000 population in 2014 are North Sulawesi, West Papua, Bengkulu, and Papua (see Figure 4). The conflict in Indonesia is also dominated by several types, namely crime, vigilante, household conflict, law enforcement conflict, and identity conflict (see Appendix 1). Crime and household conflict are likely to correlate with the condition of social capital in the family and the community, such as trust in neighbors, mutual cooperation, tolerance, and networks. Meanwhile, vigilante and law enforcement conflict may correspond to the level of trust in the government or the linking social capital. Lastly, the identity conflict may be strongly correlated to group diversity (structural social capital or bridging aspects), such as ethnic clashes or group riots.

4.2. Mapping Social Capital in Indonesia

Social capital in Indonesia in 2009 turns out to be moderate. The individual social capital mean in the Rasch Score is 4.31 or 50.34% of its maximum value (see Table 3). However, at the component level, the level of trust is quite high, namely 4.13 or 72.43% of the highest score. Other components, such as mutual cooperation, networks, and membership, are relatively moderate, yet tolerance is quite low, namely 1.3 or only 23.92% of the highest value. The data indicate that conflict incidence in the post-New Order era, economic crisis, and uneven government policies combined with the nature of diversity may induce the fluctuation in social capital in the subsequent years and form a moderate level of social capital in 2009.

At the province level, the top five provinces with the highest social capital are North Sulawesi, Gorontalo, Lampung, West Nusa Tenggara, and Yogyakarta, whereas the bottom five are Papua, Jakarta, Banten, Nanggroe Aceh Darussalam, and West Papua (see Figure 5). It is surprising that North Sulawesi is included in the top five as simultaneously, this province has a sizeable conflict incidence. Papua, Jakarta, Banten, Nanggroe Aceh Darussalam, and West Papua are also well-known as provinces with high conflict vulnerability triggered by separatism and crime.

Table 3 and Figure 5 also indirectly exhibit the variation of social capital at the regional level. Even the Island of Java with a relatively similar development stage has a varied pattern. We also checked the density of social capital to provide a more precise illustration of the variability across regions. Overall, social capital and its components are heterogeneous. In line with the data summary, networks are likely to be superior to other components.

4.3. Empirical Result

Table 3 shows the estimate of Equation (1) using Negative Binomial regression. Columns (1), (3), and (5) of the table provide the unconditional estimates that indicate a negative relationship between the district measures of social capital and conflict intensity. The magnitude is subject to potential bias (both upward and downward) due to the confounders. Overall, most observed controls, such as fractional-

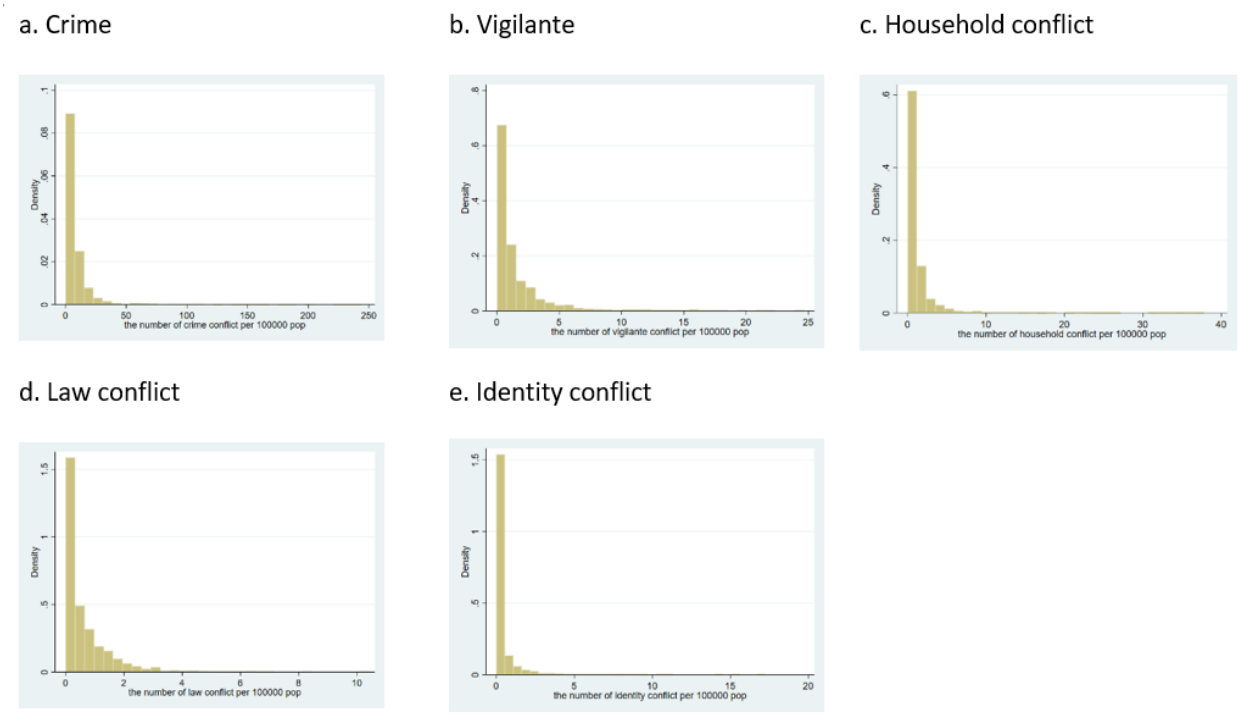

Figure 1. Density of Various Conflict Types
Source: NVMS 2010–2014

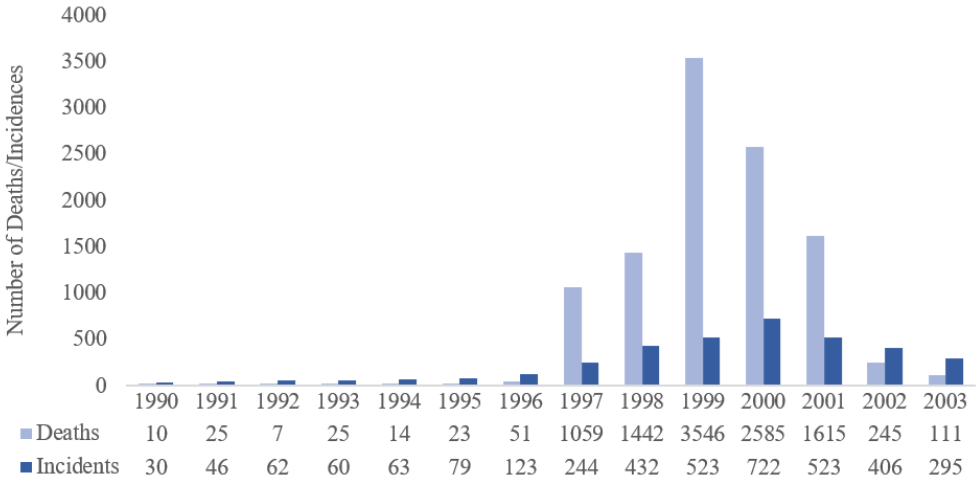

Figure 2. Trend of Violence in Indonesia During 1990–2003
Source: Varshney, Panggabean, & Tadjoeddin (2004)

ization, infrastructure, inequality, and geographical condition reduce the bias of the social capital coefficients in the columns (1), (3), and (5). Controlling these variables (including the dummy province) implies the falling social capital coefficients in columns (2), (4), and (5). The dummy province may capture the media coverage bias. The effects in columns (2), (4), and (5) may remain inaccurate due to imperfect observed controls and reverse causality problem. The part of coefficient value may tend to reflect correlation rather than causation.

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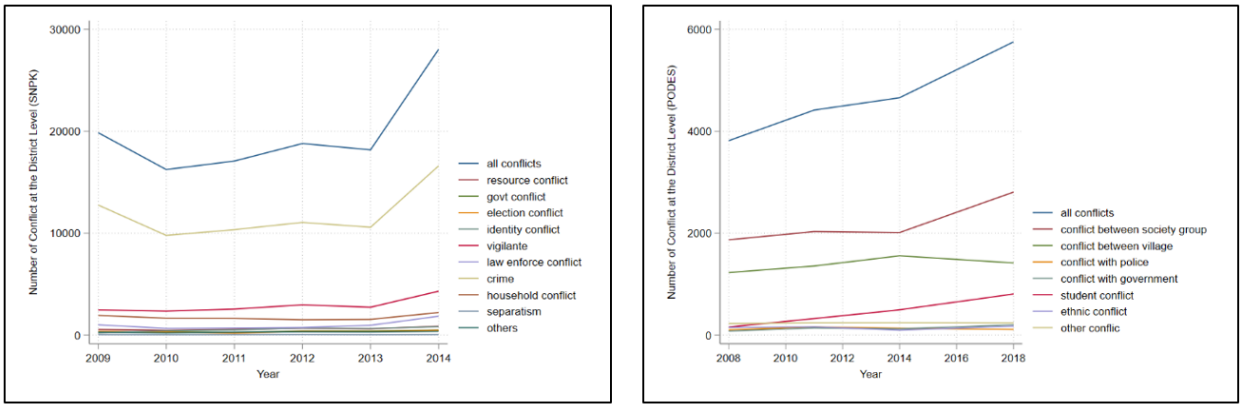

NVMS PODES

Figure 3. Conflict Trend in Indonesia for the Period 2008–2018
Source: NVMS and PODES

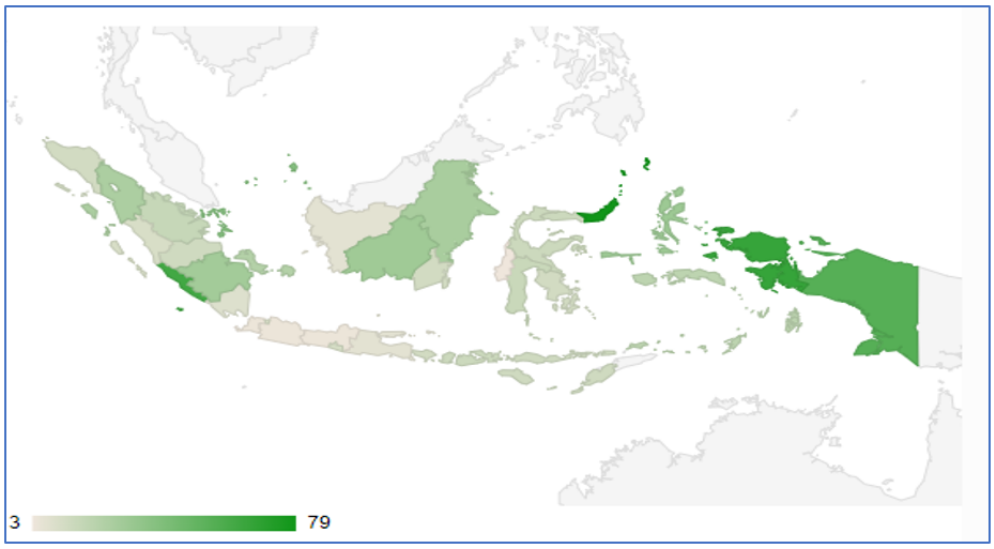

Figure 4. Conflict Intensity in Indonesia in 2014
(Conflict Incidence per 100,000 Population)
Source: NVMS 2014

Districts with high social capital are more likely to correspond with lower conflict intensity and vice versa. Using the 2010 and 2014 sample, the coefficient is insignificant, but in the pooled data, the estimate shows a significant negative sign. This difference may refer to the number of observations. Larger sample tends to produce smaller standard errors (and increase significance).

The meaning of Negative Binomial coefficient is not straightforward. We need to calculate the Incidence Rate Ratio (IRR) to make it easier to interpret. By using the coefficient from column (6), IRR for district social capital parameter is 0.6032. It means that every one unit increase in the share of individuals with high social capital, the rate for conflict intensity is expected to decrease with a factor of 0.60 or by approximately 40%. This result signifies that the decreased social capital endowment may be the starting point for the increased potential conflict in the future. We may need to emphasize programs that can enhance and maintain social capital or

Table 3. Summary Statistics of Social Capital in Indonesia

	Panel A - Individual Level				
	N	Mean	Stand. Dev.	Min	Max
Individual Social Capital	291753	4.306728	1.015309	0	8.559
Individual Trust	291753	4.129068	1.437856	0	5.702
Individual Mutual Cooperation	291753	2.656393	1.486890	0	4.927
Individual Tolerance	291753	1.284665	1.506438	0	5.433
Individual Networks	291753	1.890659	1.384628	0	3.906
Individual Membership	291753	.4056308	.4910145	0	1
	Panel B - District Level				
	N	Mean	Stand. Dev.	Min	Max
District Social Capital	461	.5672534	.1398118	.0259474	.8999058
District Trust	461	.5430401	.1438239	.0156481	.8705191
District Mutual Cooperation	461	.4141856	.119934	.0160915	.705817
District Tolerance	461	.5234594	.1153435	.0626776	.8684055
District Networks	461	.7360466	.1209375	.3010857	1
District Membership	461	.3972637	.1726725	.0051813	.8978844

Source: SUSENAS 2009 - Social and Cultural Module

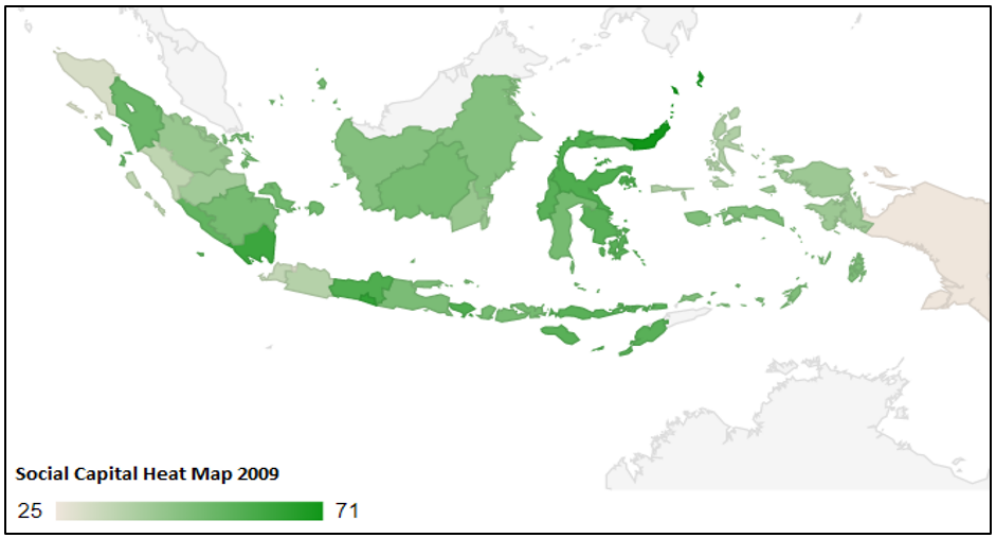

Figure 5. Social Capital Map at the Province Level
Note: Social capital is measured by the share of individuals with a high social capital index
Source: SUSENAS 2009 - Social and Cultural Module

identify and evaluate programs and events that potentially disrupt social capital, such as horizontal equity issues in targeted social protection (Hanna & Olken 2018), externalities from the urban formation (Muzayanah et al. 2020), and other programs or events.

Furthermore, we estimate the impact of social capital on the top five conflict intensity. The negative relationship between social capital and conflict is almost consistent for every conflict type (see Table 5). However, conditional on other relevant confounders, a stronger correlation is found for vigilante. The magnitude of the other conflict types is weak. This small effect may be related to the heterogeneity effect of social capital components.

We also evaluated the relationship of various social capital types and conflict to check the possibility of heterogeneous effect and to analyze the most prominent social capital types in explaining conflict incidence. In addition, this heterogeneity analysis aims to provide a more precise estimation because the aggregation of social capital in a single index

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DOI: 10.47291/efi.2023.02

Table 4. Effect of Aggregate Social Capital on Conflict Intensity

	2010 Data		2014 Data		2010–2014 Data (Pooled)	
	(1) conflict intensity	(2) conflict intensity	(3) conflict intensity	(4) conflict intensity	(5) conflict intensity	(6) conflict intensity
district social capital	-1.2144**	-0.7601	-0.7771	-0.4540	-1.1176***	-0.5048**
	(0.5894)	(0.4708)	(0.5295)	(0.4012)	(0.2479)	(0.2166)
Fractionalization		0.6913***		1.1218***		0.9865***
		(0.2358)		(0.2252)		(0.1169)
Gini ratio		3.0142**		4.0527***		3.3531***
		(1.2678)		(1.1963)		(0.6241)
number of SD		0.0002		-0.0004**		-0.0002**
		(0.0002)		(0.0002)		(0.0001)
% of village with community health centers		4.3280***		2.0186***		2.9190***
		(0.7207)		(0.5107)		(0.3116)
district elevation		-0.0005***		-0.0004***		-0.0004***
		(0.0001)		(0.0001)		(0.0001)
distance to shoreline		-0.0000		0.0000		-0.0000
		(0.0000)		(0.0000)		(0.0000)
IRR	.2968877	.4676106	.4597203	.6350594	.3270482	.6036302
Observations	263	258	458	453	1975	1947
Dummy Prov	X	V	X	V	X	V

Note: Robust standard errors in parentheses with ***, **, and * indicate 1, 5, and 10% significance levels, respectively. Conflict intensity is the number of incidents in every 100,000 population. District social capital is the share of individuals with a high social capital index (above the national mean) at the district level in 2009. The empirical result is based on Negative Binomial regression.

may generate an ambiguous result due to the varied impact of social capital components. According to Table 5, it is obvious that not all components become a meaningful predictor of conflict incidence. Numerous indicators show the negative effect but only trust and networks significantly correspond to decreased conflict. Every one unit increase in the share of individuals with high trust is expected to decrease the rate of conflict intensity with a factor of 0.29–0.32 or approximately by 70%. This result aligns with Alcorta et al. (2020) and Lederman, Loayza & Menéndez (2002), displaying a negative relationship between trust and conflict in the cross-country setup.

In this study, the trust dimension covers trust in neighbors, the government, and local officials. Firstly, the trust in neighbors represents the strong ties between individuals in the community. This condition is likely to mitigate social tension. Simultaneously, the rising trust also produces an informal safety net fortifying the community from internal and external conflict. Secondly, the trust in the government and local officials may reflect the level of community compliance. An orderly community tends to create a conducive situation to prevent horizontal conflicts, such as crime and vigilante, and vertical conflict such as law enforcement conflict.

The second important component of social capital as a determinant of conflict is networks (see Table 5 Panel C). Every one unit increase in the share of individuals with high networking is expected to decrease the rate of conflict intensity with a factor of .67 or approximately by 33% with the significance level of 10%. The networking aspect is measured by the individual and family friendship network. It means that the district with high culture of friendship is associated with lower conflict. Friendship may be different from association membership. It may represent deeper social interaction, while association membership is likely to reflect formal relationships or interaction driven by shared interests. Friendship may also enhance individual social skills and cognitive abilities, such as sympathy and emotional intelligence.

The link between other social capital types and conflict shows insignificant results with mixed directions. Surprisingly, we also find that association membership does not significantly affect conflict incidence.

Table 5. Effect of Aggregate Social Capital on Conflict Types

Panel A 2010 Data	(1) crime conflict	(2) vigilante conflict	(3) household conflict	(4) law enforcement conflict	(5) identity conflict
District social capital	-0.6923	-1.0022*	-1.0756	-1.7464***	-1.6698*
	(0.5534)	(0.5492)	(0.7097)	(0.5150)	(0.9350)
IRR	.5004452	.3670607	.3411099	.1744026	.1882818
Observations	258	258	258	258	258
Control Variables	V	V	V	V	V
Dummy Province	V	V	V	V	V
Panel B 2014 Data	**(1) crime conflict**	**(2) vigilante conflict**	**(3) household conflict**	**(4) enforcement conflict**	**(5) identity conflict**
District social capital	-0.5590	-1.0953**	0.5243	-0.2478	Fail iteration process
	(0.4237)	(0.5125)	(0.6656)	(0.4599)	(not concave)
IRR	.5717535	.3344337	1.689335	.7805095	
Observations	456	456	456	456	
Control Variables	V	V	V	V	
Dummy Province	V	V	V	V	
Panel C 2010–2014 Data (Pooled)	**(1) crime conflict**	**(2) vigilante conflict**	**(3) household conflict**	**(4) law enforcement conflict**	**(5) identity conflict**
District social capital	-0.5009**	-1.3083***	-0.7284**	-0.3540	Fail iteration process
	(0.2254)	(0.2368)	(0.2834)	(0.2698)	(not concave)
IRR	.6059994	.2702858	.4827007	.7018896	
Observations	1947	1947	1947	1947	
Control Variables	V	V	V	V	
Dummy Province	V	V	V	V	

Note: Robust standard errors in parentheses with ***, **, and * indicate 1, 5, and 10% significance levels, respectively. Conflict intensity is the number of incidents in every 100,000 population. District social capital is the share of individuals with a high social capital index (above the national mean) at the district level in 2009. The empirical result is based on Zero-Inflated Negative Binomial regression. Control variables include ethnic diversity, infrastructure, inequality, and geographical characteristics.

This finding may indicate that the character of association in Indonesia is probably different from other countries (see Alcorta et al. (2020) for the context of Africa). The exclusive behavior may not be problematic in the context of Indonesia. The interaction across associations is more likely to represent bridging rather than tension or clash.

Overall, the heterogeneity analysis reveals that the most crucial social capital types in terms of conflict incidence are trust and networks. Both aspects show a negative effect on conflict intensity. However, by magnitude, the effect of trust is stronger and more consistent than networks. This component may also be a better predictor of conflict rather than aggregate social capital. Therefore, we also tested the nexus of trust in the top five conflicts in Indonesia to validate whether trust is a key predictor of conflict intensity in Indonesia.

As predicted, Table 7 shows that trust consistently shows a negative relationship with all conflict types. Overall, this finding suggests that social capital matters, but the most important aspect to focus on is building the trust level in the society. In this study, trust is divided into two categories: horizontal and vertical trust. Horizontal trust refers to trust in neighbors, while vertical trust is in the government and local officials.

Specifically, the policymaker may need to identify and evaluate the programs stimulating trust in the society. For example, a prior study reveals that social protection programs, such as cash transfer, are proven to increase trust in the government (Camacho 2014; Evans, Holtemeyer & Kosec 2019) and communal trust (Evans & Kosec 2020). The Community-Driven Development, such as Subdistrict Development Program, is also beneficial

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DOI: 10.47291/efi.2023.02

Table 6. Effect of Various Social Capital Types on Conflict Intensity

Panel A 2010 Data	(1) conflicts intensity	(2) conflicts intensity	(3) conflicts intensity	(4) conflicts intensity	(5) conflicts intensity
Trust	-1.1434***				
	(0.4250)				
Mutual help		0.0419			
		(0.4693)			
Tolerance			-0.3030		
			(0.5048)		
Networks				-0.4565	
				(0.4503)	
Association membership					-0.4280
					(0.3530)
IRR	.3187486	1.042743	.7385646	.633473	.6518209
Observations	258	258	258	258	258
Control Var	V	V	V	V	V
Dummy Province	V	V	V	V	V

Panel B 2014 Data	(1) conflicts intensity	(2) conflicts intensity	(3) conflicts intensity	(4) conflicts intensity	(5) conflicts intensity
Trust	-1.2152***				
	(0.3335)				
Mutual help		0.4803			
		(0.4534)			
Tolerance			-0.4679		
			(0.4054)		
Networks				-0.1808	
				(0.3901)	
Association membership					0.0752
					(0.3018)
IRR	.2966423	1.616606	.626317	.834638	1.078137
Observations	453	453	453	453	453
Control Var	V	V	V	V	V
Dummy Province	V	V	V	V	V

Panel C 2010–2014 Data (Pooled)	(1) conflicts intensity	(2) conflicts intensity	(3) conflicts intensity	(4) conflicts intensity	(5) conflicts intensity
Trust	-1.1161***				
	(0.1936)				
Mutual help		0.3408			
		(0.2288)			
Tolerance			-0.1387		
			(0.2253)		
Networks				-0.4000*	
				(0.2224)	
Association membership					-0.2061
					(0.1606)
IRR	.3275644	1.406105	.8705313	.6703024	.8137471
Observations	1947	1947	1947	1947	1947
Control Var	V	V	V	V	V
Dummy Province	V	V	V	V	V

Note: Robust standard errors in parentheses with ***, **, and * indicate 1, 5, and 10% significance levels, respectively. Conflict intensity is the number of incidents in every 100,000 population. District social capital is the share of individuals with a high social capital index (above the national mean) at the district level in 2009. The empirical result is based on Negative Binomial regression. Control variables include ethnic diversity, infrastructure, inequality, and geographical characteristics.

to build community capacity in conflict resolution (Barron et al. 2004). Furthermore, the policymaker may also need to examine the programs that potentially destroy trust or social capital in the society. For example, Muzayanah et al. (2020) find that careless urban development may be associated with dissipating social capital in urban areas. The poor design in social protection programs, such as the

Table 7. Effect of Trust on Various Types of Conflict

Panel A 2010 Data	(1) crime	(2) vigilante	(3) household conflict	(4) law enforcement conflict	(5) identity conflict
Trust	-1.2239**	-1.7774***	-0.7241	-1.5307***	-1.5812*
	(0.4935)	(0.5088)	(0.6325)	(0.4816)	(0.9486)
IRR	.2940952	.1690816	.4847647	.2163928	.2057307
Observations	258	258	258	258	258
Control Variables	V	V	V	V	V
Dummy Province	V	V	V	V	V
Panel B 2014 Data	**(1) crime**	**(2) vigilante**	**(3) household conflict**	**(4) law enforcement conflict**	**(5) identity conflict**
Trust	-1.3821***	-1.6549***	-0.5207	-0.2913	Iteration process
	(0.3653)	(0.4254)	(0.5561)	(0.4708)	failed (not concave)
IRR	.2510427	.1911141	.5941251	.7472953	
Observations	453	453	453	453	
Control Variables	V	V	V	V	
Dummy Province	V	V	V	V	
Panel B 2010–2014 (Pooled)	**(1) crime**	**(2) vigilante**	**(3) household conflict**	**(4) enforcement conflict**	**(5) identity conflict**
Trust	-1.2184***	-1.8612***	-1.1348***	-0.4089	Iteration process
	(0.2046)	(0.2126)	(0.2631)	(0.2607)	failed (not concave)
IRR	.2957048	.1554841	.3214831	.66441	
Observations	1947	1947	1947	1947	
Control Variables	V	V	V	V	
Dummy Province	V	V	V	V	

Note: Robust standard errors in parentheses with ***, **, and * indicate 1, 5, and 10% significance levels, respectively. Conflict intensity is the number of incidents in every 100,000 population. District social capital is the share of individuals with a high social capital index (above the national mean) at the district level in 2009. The empirical result is based on Zero-Inflated Negative Binomial regression. Control variables include ethnic diversity, infrastructure, inequality, and geographical characteristics.

mistargeting issue, is also proven to destroy social fabric through the rising crime (Cameron & Shah 2014).

5. Conclusion

In this study, we discover that the past social capital negatively corresponds to future conflict incidence. This pattern applies to most conflict types. This result also shows that the disrupted social capital stock may be the starting point of conflict vulnerability in the subsequent periods. Therefore, we may need to pay attention to maintaining and enhancing social capital, particularly in building trust in the society. Several programs, such as social protection or community development programs may be advantageous in raising trust. In addition, the programs and events that potentially disrupt trust, such as uneven programs, bad program design, economic shock, careless urban development, and uncontrolled migration (implying rising diversity) should be anticipated.

This study is not without limitations. First, we employed a cross-section dataset that may be less powerful in eliminating bias from time-constant unobserved heterogeneity across regions compared to longitudinal or panel data. The observed controls seem to be imperfect. There is also an issue of reverse causality that may generate a biased coefficient. Therefore, the result of this study seems unlikely to show a perfect causal relationship. Future studies may need to emphasize this methodological issue by developing a panel dataset or finding a valid instrumental variable for social capital.

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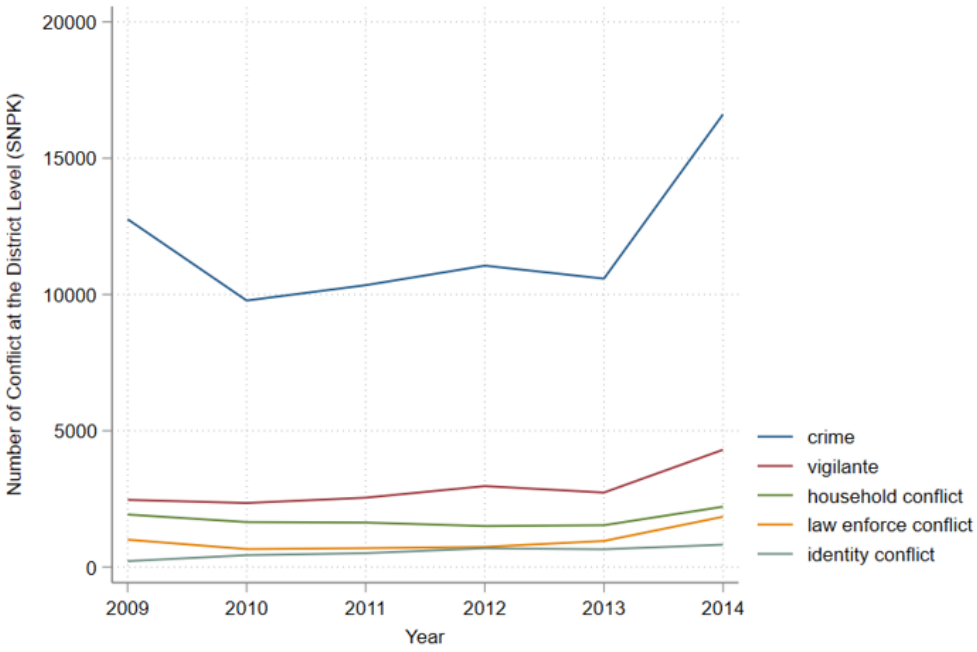
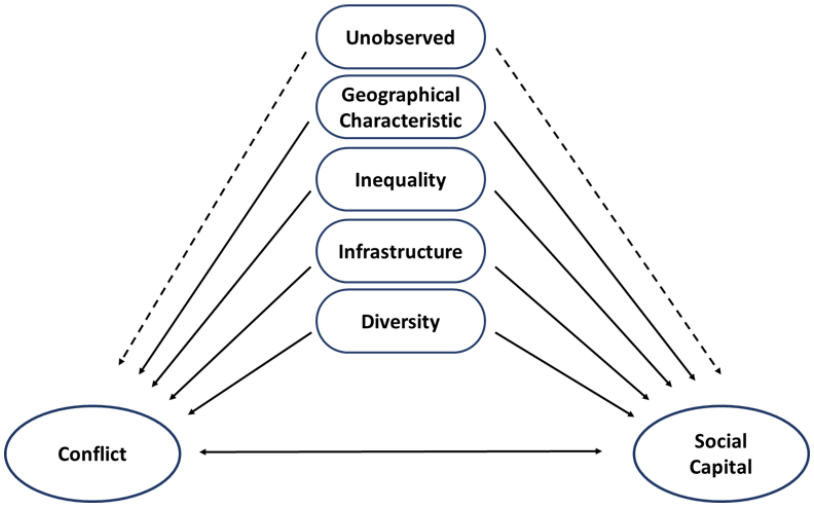
Appendices

Appendix 1 The Top Five Conflict Types in Indonesia



Source: NVMS

Appendix 2 Directed-Acyclic Graph of Social Capital and Conflict Nexus



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