COMMUNITY DRIVEN DEVELOPMENT PROGRAM AND LONG-TERM SOCIAL CAPITAL: THE CASE OF INDONESIA KECAMATAN DEVELOPMENT PROGRAM AND URBAN POVERTY PROGRAM

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ABSTRACT

Since the post-Asian Financial Crisis in 1997, Government of Indonesia launched two Community Driven Development (CDD) programs namely *Kecamatan Development Program* (KDP) and *Urban Poverty Program* (UPP) to alleviate poverty, increased livelihood, and strengthen the local institution. The impact of CDD Programs to social capital still tend to be understudied in Indonesia, regardless the importance of social capital as one relevant aspect in development economics. CDD Programs can improve or deteriorate the social capital, since it will induce pro-social behaviour or not developing the livelihood because of obstructive institutional factor. This paper assesses the impacts of Indonesia's CDD Programs on long-term social capital and participation in community activities. Using the IFLS 2007 & 2014 and Susenas 2009 & 2012 data, with Propensity Score Matching and Difference-in-differences Method, we found that CDD Programs in Indonesia had mixed results regarding changes in the outcome of social capital and participation over time. KDP and UPP Programs have a negative and significant impact on social capital and participation, albeit UPP Program has a positive impact on bridging social capital.

Keywords: Social capital, community-driven development program, impact evaluation, diversity, rural-urban.

1. INTRODUCTION

The social protection system does not rely on individual social assistance only; it also included Community-driven Development (CDD) Program to provide a more sustainable and comprehensive development policy. CDD programs have been implemented in some developing countries to complement individual social assistance or the final decentralization stage (Wong, 2012). CDD directly impacts community socioeconomic indicators, such as reducing the poverty rate, better targeting poor people in the community, increasing the provision of health, education, and support infrastructure at a lower cost, and increasing democracy in the form of community participation in the project (Wong & Guggenheim, 2018). In the long term, CDD aims to establish and strengthen community institutions to achieve sustainable community projects (ADB, 2016). Participatory development strategies such as the CDD program make the community members involved in the project, and the community's development process will occur in a sustainable manner (Cameron et al., 2015).

After the rapid increase in the poverty rate during post-Asian Financial Crisis 1998, the Government of Indonesia launched two CDD programs: Kecamatan Development Program (KDP) for rural areas and Urban Poverty Program (UPP) for the urban area. The KDP program provides grants for village infrastructure ranging from IDR 500 million to IDR 1 billion to meet project development within one to five years (Voss, 2008). In Indonesia, the CDD program was later upgraded to PNPM-Mandiri for rural, urban areas, and the incentivized program (PNPM Generasi) with higher grants and village coverage since 2007 (Olken et al., 2014; Voss, 2012). Indonesia's CDD program, in general, has been proven to have a significant contribution in reducing poverty in communities, also increasing access to health and education facilities after the 1998 AFC crisis until the 2010s (Burger et al., 2012; Voss, 2012).

One of the strong institution quality indicators is social capital (Knack, 2002), because it serves as the complement of physical, human, and financial capital, which can explain how development occurred or not in a situation (Grootaert, 1998). Communities with higher initial social capital tend to build more infrastructure projects and experience higher benefits when compared to communities with lower social capital (Cameron et al., 2015). However, there were still mixed results within the studies of CDD intervention to social capital where some countries have an improvement in social capital such as trust, participation, and government trust (Labonne, 2011; Wong, 2012), there was no effect due to CDD intervention in social capital (Casey et al., 2011; Nguyen & Rieger, 2016; Parajuli et al., 2012), a mixed result where participation and community meeting but the negative impact on generalized trust (Labonne & Chase, 2011), and even deterioration in social capital (Ostrom, 1994).

Studies related to the impact of CDD and social capital in Indonesia still limited, where the analysis is more sporadic and limited to few areas (Gunawan et al., 2020; Beard & Dasgupta, 2007) or only short-term analysis after the program was first implemented (Olken et al., 2011; Voss, 2012). Besides, impact evaluations related to CDD in Indonesia still focus on the leading indicators: economic, health, and education. Only limited studies that look at the impact of changes in social capital in the longer term, such as Krishna et al. (2007), who estimated the impact of changes in the social capital index in Indian villages in 1997-2004 and Labonne & Chase (2011) who examined the impact of CDD in the Philippines on the formation of formal and informal social capital after three years of implementation.

This study will contribute by observing the KDP and UPP's impact on the formation of bonding social capital, bridging social capital, and long-term participation after seven or more years since the program was first implemented in Indonesia. Implementation of the CDD program in Indonesia might be different from the experience of several other countries. Several factors that might affect the CDD program implementation: the differences in the characteristics of rural and urban communities, as well as some risk that might be occurred: elite capture, corruption, and the inadequacy of program officials, the impact of the CDD program Indonesia could be different from previous research. This study adopted the regression model from Labonne & Chase (2011) and Sparrow et al. (2013) to observe CDD interventions' impact on long-term social capital.

To analyzed the impact of the CDD program in Indonesia on bonding social capital, bridging social capital, and community participation in the long term, a propensity score matching with the difference-in-difference model will be used within this study to acquire samples with the similar characteristics. This study will be focused on KDP and UPP policy, which serves as the most extensive CDD program after the AFC. We used datasets obtained from the Indonesia Family Life Survey (IFLS) Wave 4 and 5, SUSENAS 2009, and SUSENAS 2012. Other controls and matching variables such as poverty incidence, village characteristics, ethnic fractionalization index are obtained from other datasets such as SUSENAS, PODES, and Indonesia National Census Data.

This research's hypothesis is that the CDD program will affect social bonding capital, bridging social capital, and long-term participation after it is implemented. The argument is that CDD will affect social capital and participation, but the direction of impact might be positive or negative. Social capital and participation might increase after CDD implementation if the community has low social capital and low networks. On the contrary, the characteristics of the community, society, and other unobserved mechanisms can lead to low growth or decline in

social capital, such as the risk of elite capture, corruption, incompetent officers, and failed administration process and existing traditional networks.

2. LITERATURE REVIEW

2.1. Social Capital and External Intervention

Social capital can be defined as social networks, the norms of reciprocity and trustworthiness that result from them, where it can be formed within the community or through the collaboration between government, market, and the community (Dekker & Uslaner, 2003). Woolcock & Narayan (2000) distinguished four types of social capital views: communitarian, network, institutional, and synergy. The Network View stresses the social network and relationship between people within and among the community; meanwhile, the synergy view emphasizes the collaboration between government and society to form bonding and bridging social capital. In the network view, there are two types of capital: bonding and bridging social capital. Bonding social capital occurred between intracommunity ties with common socioeconomic characteristics and shared purpose (Astone et al., 1999), commonly present in close neighborhoods with strong internal group cohesion upon the trust and reciprocity (Woolcock, 1998). In contrast, bridging social capital emphasizes the relationship between people with different socioeconomic characteristics, which occurs within overlapping networks or cross-cutting societies (Putnam, 2000; Paxton, 2002). This study stresses more on the network view: observing government intervention to changes in bonding social capital, bridging social capital, and participation in the community.

2.2. CDD Impacts on Social Capital

Community-driven development (CDD) programs are a development approach that incorporates community authority of planning choices and investment opportunities (Wong & Guggenheim, 2018). Philippines CDD Program KALAHI-CIDSS increased participation in local community activities such as village assemblies, the higher number of village meetings, an increment increases in generalized trust, but lower collective action, which indicates that CDD did not have an entirely positive impact on social capital, after three years of implementation (Labonne & Chase, 2011). CDD Program in Zambia improved the social capital (community willingness to take other projects initiative) significantly in rural areas, but not in urban areas because community participation in the project is higher in rural areas (Chase & Sherburne-Benz, 2001). Several studies also show that there is no significant effect of CDD on social capital. Sierra Leone GoBiFo programs also did not improve the social capital: trust, networks, collective action, inclusion, and women participation but increase local government

participation and citizen confidence in local government (Casey et al., 2011). A field experiment in Morocco also showed that the CDD program has no impact on trust and altruism, even though decentralized decision-making might improve citizens' responsibility and participation in their community (Nguyen & Rieger, 2016). Wong et al. (2012) summarized a small positive impact of CDD programs on trust and collective action in the Philippines, Zambia, and Armenia and no impacts of CDD in social capital for other countries.

2.3. CDD in Indonesia Context

The Government of Indonesia implemented CDD programs named the Kecamatan Development Program (KDP) and Urban Poverty Project (UPP) since the post-Asian Financial Crisis era in 1997-1998 generated a high poverty rate in Indonesia. KDP and UPP are two of the government efforts in alleviating poverty, complementing the cash and in-kind transfer to individual beneficiaries (Suryahadi et al., 2010). In 2004, KDP covered 30 of 34 provinces in Indonesia, with the project already implemented in 28,000 villages (Prasta et al., 2004). Selection criteria for KDP village consist of subdistrict with high poverty incidence based on SUSENAS (expenditure) and PODES (village infrastructure) data, geographical poverty data by Bappenas, and consultation with local government (Prasta et al., 2004; Voss, 2008). The selection of the UPP area also depends on the poverty ranking constructed from SUSENAS and consultation with provinces and local government (*Pedoman Umum P2KP*).

There are some leakages during the project's implementation. Community participation in supervising road construction under the KDP project failed to reduce the loss of grants and increased participation in village meetings as 40% did not reduce the loss of grants (Olken, 2007). Woodhouse (2005) also evaluates some corruption cases in KDP village since the village head has domination and better access to projects and suggests lowering the potential cost of whistleblowing and transparency. Other technical weaknesses such as no online budget system, poor information management, and high intensity of complaints might also deter community development (IRAI & PNPM Support Facility, 2012). The UPP program did not positively impact community participation in village organizations and activities, with a significant reduction in citizens' participation in village projects (World Bank, 2013).

3. METHODOLOGY

3.1. Structure of Data

This study uses the Indonesia Family Life Survey (IFLS) Wave 4, IFLS 5, Susenas 2009, and Susenas 2012 to capture the bonding social capital, bridging social capital, and participation in individual and community levels. Unit analysis in this study is at the individual

level, but the matching procedure will occur on the subdistrict (*kecamatan*) level. We used SUSENAS 2009 and 2012 as the second dataset in this study for robustness check purpose since it has a higher sample and statistical power, even though the individuals are not the same panel respondent. This study also uses other data such as the National Social and Economic Survey (SUSENAS), Village Potential (PODES), and Indonesia National Census Data for baseline covariates and control variables.

There are three independent variables, namely: Bonding Social Capital, Bridging Social Capital, and Participation. The bonding social capital and bridging social capital variables are taken from the IFLS and Susenas in individual level data. The social capital variable will be transformed from ordinal categorical data into a sum of Z score and latent variable through the Item Response Theory – Rating Scale Model. For participation, we estimate the variable with Item Response Theory – One Parameter Logistic Model. A higher value of the latent variable means a higher social capital score.

Control variables for subdistrict level consist of time-varying variables such as ethnic diversity using Ethnic Fractionalization Index (EFI), Ethnic Polarization Index (EPI), and Palma Index. The variables are obtained from Indonesia National Census Data and Susenas. Besides, **control variables for individuals** consist of age, size of a household member, education, and per capita expenditure are obtained from IFLS and Susenas Data. **Propensity Score Matching baseline variables** consist of poverty incidence, the population in subdistrict level, dummy variable of Jawa-Bali Region, the share of farmer households, and infrastructure condition (percent of household using electricity, clean drinking water, clean wash water, number of elementary schools, middle schools, and high schools, number of hospital and puskesmas, and% of the household having telephone).

3.2. Identification Strategy and Econometrics Model

This study analyzes the total impact of CDD Programs on bonding social capital, bridging social capital, and individual participation in a community, which might also have affected by the time effect due to changes in socioeconomic conditions at the individual and community level from time to time. This study adopted the PSM-DID and difference regression model from Sparrow et al. (2013). The matching procedure was conducted at the community or subdistrict level. Then, the community's data with common support will be merged into the individual-level dataset.

Propensity Score Estimate

$$\Pr(CDD = 1|X_i) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 Relpov + \beta_2 Population + \beta_3 Region + \beta_4 Village + \beta_5 Water)}} \quad (1)$$

This study uses a logistic regression model to measure the community's propensity score to receive the CDD Program (Equation (1)). The dependent variable consists of a binary dummy variable where CDD = 1 represents the treatment group, and CDD = 0 represents the control group. Matching variables in determining PSM weighting are obtained based on selection criteria for sub-districts receiving KDP or UPP such as relative poverty, population, Jawa-Bali region dummy, number of villages/kelurahan in one subdistrict, access to clean water, adopted from Voss (2008), and Prasta et al. (2004). Propensity Score Matching was the first step of regression we employ, where the matching process was estimated at the subdistrict level.

Difference-in-difference

$$\beta_{DD} = E\left(y_{ik,2014} - y_{ik,2007} \middle| CDD = 1\right) - E\left(y_{ik,2014} - y_{ik,2007} \middle| CDD = 0\right) \quad (2)$$

The DID model can be used to evaluate the effect of a policy or intervention (Wang et al., 2019). The difference-in-differences approach will be estimated by comparing individuals in the community with and without CDD before and after it was introduced, shown in Equation (2) above. In order to control the time-variant covariates, difference regression will be conducted:

Difference Regression

$$\Delta y_{ikt} = \beta_{DD}\Delta CDD_{ikt} + \gamma\Delta X_{kt} + \delta\Delta X_{ikt} + \Delta\varepsilon_{ikt} \quad (3)$$

In Equation (3), the treatment variable $CDD_{ikt} = 1$ if individual i in kecamatan k received CDD (KDP or UPP) in year t, and $CDD_{ikt} = 0$ if otherwise. Control variable (X_{kt}) for district levels such as Ethnic Fractionalization Index, Ethnic Polarization Index, and Palma Index are also included in the different regression equation. The equation also includes the individual control variable: age, the household's size, years of education (individual), and per capita expenditure. IFLS data analysis will use this equation since the first difference regression will control unobserved time-invariant variables, and the data set up is panel respondents.

Propensity Score Matching and Difference-in-Difference (PSM-DID)

$$\beta_{PSM} = E\left(y_{ik,2014} - y_{ik,2007} \middle| CDD = 1, S_{ik} = 1\right) - E\left(W_{ik}(y_{ik,2014} - y_{ik,2007} \mid CDD = 0, S_{ik} = 1)\right) \quad (4)$$

Equation (4) above shows the PSM-DID equation, where $W_{ik} = W(P(X_{ik}))$ which is a weight based on the estimated propensity score $P(X_{ik})$ and matching method, S is common support. To overcome the heterogeneity problem between individual, it is better if the selected control group is an individual who has characteristics as close as possible to the treatment group before DID estimation so that the use of propensity score matching (PSM) as the weight will make the

estimation more efficient (Khandker et al., 2010). Propensity score matching (PSM) constructs a statistical comparison group based on a model of the probability of participating in the treatment, using observed characteristics. PSM-DID using linear regression with large dummy variables are conducted in SUSENAS data analysis since the data is the pooled cross-section data.

Table 3. 1. Description of Variables

Variable	Description	Source
Dependent Variable:		
Bonding Social Capital	The sum of Z score and latent variable from the intracommunity trust or common characteristics neighbor	IFLS 2007 & 2014; Susenas 2009 & 2012
Bridging Social Capital	The sum of Z score and latent variable from the intercommunity trust or different characteristics neighbor	IFLS 2007 & 2014; Susenas 2009 & 2012
Participation	The sum of Z score and latent variable from participation in community and *arisan*	IFLS 2007 & 2014; Susenas 2009 & 2012
Independent Variable:		
Individual Characteristics		
Age	Age of Respondent during Interview	IFLS 2007 & 2014; Susenas 2009 & 2012
Size of Household Member	Number of HH member	IFLS 2007 & 2014; Susenas 2009 & 2012
Education	Years of Schooling of individual	IFLS 2007 & 2014; Susenas 2009 & 2012
PCE	Per capita expenditure in the form of natural logarithms	IFLS 2007 & 2014; Susenas 2009 & 2012
District Control Variable:		
Ethnic Fractionalization Index (EFI)	The probability that two individuals, randomly selected from the population, belong to the different ethnic groups. (Alesina et al., 2003)	Indonesia Census 2000 & 2010
Ethnic Polarization Index (EFI)	The probability that two ethnic groups shared an equal size.	Indonesia Census 2000 & 2010
Palma Index	Ratio of 10% richest to 40% poorest share.	Susenas 2000 & 2010
PSM Pre-treatment Covariates:		
Relative Poverty	Percentage of the lowest 40% population from expenditure decile, by subdistrict	Susenas 2006
Population	Number of populations in the subdistrict	PODES 2006
Region Jawa-Bali	Dummy variable of Jawa-Bali region. 1 = Jawa-Bali 0 = Outside Jawa-Bali	PODES 2006
Number of Village/Kelurahan	Number of Village or Kelurahan in a subdistrict	PODES 2006
% with Access to Clean Water	Percentage of the individual having access to clean water	Susenas 2006

4. RESULT

4.1. Descriptive Statistics

Propensity score matching results shows that for KDP Program, 99.34% of communities are in common support, where 36.64% are the treated communities, and 64.37% are the control communities. The probability of communities receiving the KDP Program is ranging from

0.099 until 0.746. As for the UPP Program, 99.34% of communities also in the common support, where 49.50% are the treated communities, and 50.50% are the control communities. Figure 4.1. shows the probability of communities receiving a KDP program (propensity score) ranging from 0.1 until 0.7, the probability of receiving a UPP program ranges from 0.044 until 0.0977. On average, 31.9% of the population are in the lowest 40% in terms of per capita expenditure, have 77,188 populations in subdistrict level, 63.3% are located in Jawa-Bali Region, have 11 village or *kelurahan* in a subdistrict, and 86.9% of individual have access to clean water.

There are 8,054 panel respondents for the KDP Program dataset and 8,076 panel respondents for UPP Progam. We can see that the social capital in the sum of the Z-score or latent variable has a declining trend during the baseline and post-treatment period. However, participation and bonding social capital in Z-score has a higher average value than other social capital in 2007. It indicates that individuals in the baseline period have higher participation in their community and bonding social capital but lowers in the next period. Individual who receives the KDP Program treatment is 43.1%, meanwhile for UPP Program is 41%. On the other hand, the pooled Susenas dataset has more samples with over 55,000 respondents in the baseline period and more than 12,000 respondents in the post-treatment period. The social capital outcomes in Susenas are different from the IFLS dataset, where they have positive value for the bridging social capital and negative value for the remaining outcome in the baseline period. All the social capital indicators also have a rising trend during the baseline and post-treatment period. We set the treatment variables for the year 2007 and merge the data to both datasets (baseline and post-treatment). For KDP Program, the percentage of treated samples in 2007 is 30.7%; meanwhile, 2014 is 32.9%. UPP Program has higher treated respondents where 62.9% of the samples receive UPP in 2007, and 59.6% of the samples receive UPP in 2014. We can see that most of Susenas respondents receive UPP Program. Susenas data shows different results compared to IFLS since the sample size is larger,

4.2. Empirical Results

4.2.1. Main Result

Table 4. 1. Main Result for KDP Program (IFLS Dataset)

VARIABLES	(1) Bonding Social Capital (Z-score)	(2) Bonding Social Capital (Latent)	(3) Bridging Social Capital (Z-score)	(4) Bridging Social Capital (Latent)	(5) Participation (Z-score)	(6) Participation (Latent)
KDP Treatment = 1	-0.0493	-0.0195	-0.176***	-0.0804***	-0.131***	-0.0453***
	(0.0612)	(0.0192)	(0.0456)	(0.0109)	(0.0373)	(0.0114)
Year = 2014	0.675***	0.190***	0.412***	0.105***	-0.126	-0.0311
	(0.209)	(0.0655)	(0.156)	(0.0373)	(0.127)	(0.0387)

Age	-0.118***	-0.0327***	-0.00893	-0.00187	-0.0287	-0.00928*
	(0.0289)	(0.00907)	(0.0215)	(0.00516)	(0.0176)	(0.00536)
Years of Education	0.00342	-0.000732	0.0210	0.0117***	0.0231**	0.00688**
	(0.0173)	(0.00544)	(0.0129)	(0.00310)	(0.0106)	(0.00322)
Household Size	-0.000929	-0.000513	-0.0696***	-0.0130***	0.0507***	0.0154***
	(0.0242)	(0.00759)	(0.0180)	(0.00432)	(0.0147)	(0.00448)
ln(PCE)	0.0834*	0.0155	-0.181***	-0.0451***	0.137***	0.0423***
	(0.0487)	(0.0153)	(0.0363)	(0.00870)	(0.0297)	(0.00904)
Ethnic Fractionalization	1.022**	0.333**	-0.430	0.216***	0.229	0.110
	(0.414)	(0.130)	(0.309)	(0.0741)	(0.252)	(0.0769)
Ethnic Polarization	-0.652*	-0.231**	0.0231	-0.243***	-0.188	-0.0549
	(0.354)	(0.111)	(0.264)	(0.0632)	(0.215)	(0.0656)
Palma Index	0.553***	0.157***	1.408***	0.362***	-0.112	-0.00362
	(0.160)	(0.0503)	(0.119)	(0.0286)	(0.0975)	(0.0297)
Constant	3.394**	1.075**	1.814*	0.410	-0.696	-0.234
	(1.396)	(0.438)	(1.041)	(0.250)	(0.850)	(0.259)
Transformed Control Group Mean	10.548	3.028	4.578	1.419	2.94	0.863
Observations	16,108	16,108	16,108	16,108	16,108	16,108
R-squared	0.007	0.006	0.025	0.033	0.025	0.025
Number of pidlink	8,054	8,054	8,054	8,054	8,054	8,054

Notes: standard error in parentheses with *, **, and *** denotes statistical significance at 10%, 5%, and 1%.

Table 4.1. above show the Difference-in-Difference estimates using the IFLS 2007 and 2014 data, where social capital outcomes are represented in the sum of Z-score and predicted empirical Bayes means after IRT model estimates (latent variable). Column (1) and (2) shows the outcome of bonding social capital, column (3) and (4) shows the outcome of bridging social capital, and column (5) and (6) shows the outcome of participation. Consistent with the PSM estimates, latent variables yield lower estimates than the sum of the Z-score. Difference-in-difference (DID) estimate indicates that the KDP program in 2007 will decrease individual bridging social capital in terms of the latent variable (sum of Z-score) by 8.04 (17.6) p.p. and decrease participation in society by 4.53 (13.1) p.p. However, this estimate also shows that the KDP program did not significantly affect bonding social capital. The magnitude of the KDP program's impact on bridging social capital is about 3.8%-5.7%. Meanwhile, participation is about 4.5%-5.2% of the control group's mean.

Table 4. 2. Main Result for KDP Program (Susenas Dataset)

VARIABLES	(1) Bonding Social Capital (Z-score)	(2) Bonding Social Capital (Latent)	(3) Bridging Social Capital (Z-score)	(4) Bridging Social Capital (Latent)	(5) Participation (Z-score)	(6) Participation (Latent)
KDP Treatment = 1	0.145***	0.0439***	-8.09e-05	-0.00706	-0.0918***	-0.0398***
	(0.0369)	(0.0120)	(0.0290)	(0.0135)	(0.0270)	(0.00962)
Year = 2012	0.275***	0.0877***	-0.00792	-0.00466	0.0442**	0.0167**
	(0.0265)	(0.00861)	(0.0208)	(0.00968)	(0.0194)	(0.00690)
KDP*Year	-0.100**	-0.0324**	0.0370	0.0395**	-0.100***	-0.0321***

	(0.0461)	(0.0150)	(0.0363)	(0.0168)	(0.0337)	(0.0120)
Age	-0.000453	-0.000198	0.00113***	0.000544***	0.00601***	0.00214***
	(0.000549)	(0.000178)	(0.000432)	(0.000200)	(0.000401)	(0.000143)
Years of Education	0.00368	0.000876	0.0160***	0.00735***	0.0275***	0.00993***
	(0.00249)	(0.000809)	(0.00196)	(0.000909)	(0.00182)	(0.000649)
Household Size	0.0109**	0.00585***	0.00682*	0.00258	0.0958***	0.0344***
	(0.00477)	(0.00155)	(0.00375)	(0.00174)	(0.00349)	(0.00124)
Ln(PCE)	-0.316***	-0.0986***	0.122***	0.0543***	0.0689***	0.0283***
	(0.0165)	(0.00535)	(0.0129)	(0.00601)	(0.0120)	(0.00429)
Ethnic Fractionalizatio n	0.739**	0.268***	0.534**	0.253**	-0.714***	-0.359***
	(0.292)	(0.0948)	(0.229)	(0.106)	(0.213)	(0.0759)
Ethnic Polarization	-0.672***	-0.223***	0.234	0.118	-0.0976	1.01e-05
	(0.226)	(0.0734)	(0.178)	(0.0825)	(0.165)	(0.0589)
Palma Index	-0.843***	-0.292***	-0.116	-0.0864**	0.768***	0.253***
	(0.120)	(0.0389)	(0.0941)	(0.0437)	(0.0874)	(0.0312)
Constant	4.549***	1.423***	-1.964***	-0.855***	-2.096***	-0.758***
	(0.268)	(0.0871)	(0.211)	(0.0978)	(0.196)	(0.0698)
Transformed Control Group Mean	9.75	2.71	4.217	1.868	3.823	1.29
Observations	64,941	64,941	64,941	64,941	64,941	64,941
R-squared	0.107	0.111	0.121	0.121	0.136	0.139

Notes: standard error in parentheses with *, **, and *** denotes statistical significance at 10%, 5%, and 1%.

To check the robustness of the KDP Program impact on social capital, we employ DID regression using the Susenas 2009 and 2012 data with larger samples. Data from Table 4.2. above can be compared with IFLS DID estimate, where KDP Program negatively impacts bonding social capital and participation. However, DID estimates with Susenas data also show weak to little evidence in increasing the bridging social capital. KDP Program decreases the bonding social capital by 3.24 p.p. and decreases participation by 3.21 p.p. Compared to the control group, the magnitude of KDP program impact is about 1-1.1% on bonding social capital, about 2.1% in bridging social capital, and about 2.4%-2.6% on participation. Other individual and district characteristics such as years of education, household size, per capita expenditure, EFI, and EPI yield the same result with the IFLS dataset. The differences are in the age variable where an increase 1 year in age improves bridging social capital and participation, but the magnitudes are small. Palma Index as the proxy of economic inequality at the district level has a significant negative impact on bonding and bridging social capital but positively impacts community participation.

Table 4. 3. Main Result for UPP Program (IFLS Dataset)

VARIABLES	(1) Bonding Social Capital (Z-score)	(2) Bonding Social Capital (Latent)	(3) Bridging Social Capital (Z-score)	(4) Bridging Social Capital (Latent)	(5) Participatio n (Z-score)	(6) Participation (Latent)
UPP Treatment = 1	-0.0166	-0.00889	0.370***	0.109***	-0.0712*	-0.0119

	(0.0634)	(0.0199)	(0.0469)	(0.0112)	(0.0387)	(0.0118)
Year = 2014	0.534***	0.161**	0.158	0.00487	-0.158	-0.0484
	(0.205)	(0.0644)	(0.152)	(0.0365)	(0.126)	(0.0383)
Age	-0.102***	-0.0299***	-0.00552	0.000627	-0.0276	-0.00874
	(0.0285)	(0.00895)	(0.0211)	(0.00506)	(0.0174)	(0.00532)
Years of Education	0.00417	0.000255	0.0156	0.0111***	0.0232**	0.00696**
	(0.0174)	(0.00545)	(0.0129)	(0.00308)	(0.0106)	(0.00324)
Household Size	0.0115	0.00349	-0.0653***	-0.0128***	0.0539***	0.0161***
	(0.0240)	(0.00752)	(0.0178)	(0.00425)	(0.0147)	(0.00447)
Ln(PCE)	0.0770	0.0134	-0.159***	-0.0407***	0.138***	0.0420***
	(0.0486)	(0.0152)	(0.0360)	(0.00862)	(0.0297)	(0.00906)
Ethnic Fractionalization	0.737*	0.227*	-0.462	0.186**	0.121	0.0726
	(0.416)	(0.130)	(0.308)	(0.0738)	(0.254)	(0.0776)
Ethnic Polarization	-0.504	-0.172	0.206	-0.170***	0.122	0.0380
	(0.338)	(0.106)	(0.250)	(0.0599)	(0.206)	(0.0630)
Palma Index	0.497***	0.146***	1.175***	0.282***	-0.0923	-0.00605
	(0.166)	(0.0522)	(0.123)	(0.0295)	(0.102)	(0.0310)
Constant	2.779**	0.957**	1.515	0.298	-0.923	-0.295
	(1.377)	(0.432)	(1.020)	(0.244)	(0.842)	(0.257)
Transformed Control Group Mean	10.703	3.077	4.444	1.376	2.874	0.842
Observations	16,152	16,152	16,152	16,152	16,152	16,152
R-squared	0.006	0.006	0.031	0.036	0.023	0.022
Number of pidlink	8,076	8,076	8,076	8,076	8,076	8,076

Notes: standard error in parentheses with *, **, and *** denotes statistical significance at 10%, 5%, and 1%.

Table 4. 4. Main Result for UPP Program (Susenas Dataset)

VARIABLES	(1) Bonding Social Capital (Z-score)	(2) Bonding Social Capital (Latent)	(3) Bridging Social Capital (Z-score)	(4) Bridging Social Capital (Latent)	(5) Participation (Z-score)	(6) Participation (Latent)
UPP Treatment = 1	-0.178***	-0.0585***	-0.142***	-0.0669***	0.0292	0.00924
	(0.0338)	(0.0110)	(0.0265)	(0.0123)	(0.0246)	(0.00878)
Year = 2012	0.245***	0.0797***	-0.0941***	-0.0265**	0.116***	0.0467***
	(0.0347)	(0.0113)	(0.0273)	(0.0127)	(0.0253)	(0.00904)
UPP*Year	-0.0153	-0.00715	0.159***	0.0562***	-0.155***	-0.0597***
	(0.0440)	(0.0143)	(0.0345)	(0.0160)	(0.0321)	(0.0115)
Age	-0.000514	-0.000223	0.00130***	0.000626***	0.00593***	0.00211***
	(0.000553)	(0.000180)	(0.000434)	(0.000202)	(0.000403)	(0.000144)
Years of Education	0.00417*	0.00102	0.0166***	0.00765***	0.0280***	0.0101***
	(0.00251)	(0.000816)	(0.00197)	(0.000915)	(0.00183)	(0.000653)
Household Size	0.0118**	0.00611***	0.00670*	0.00252	0.0930***	0.0334***
	(0.00480)	(0.00156)	(0.00376)	(0.00175)	(0.00350)	(0.00125)
Ln(PCE)	-0.308***	-0.0962***	0.117***	0.0520***	0.0611***	0.0255***
	(0.0166)	(0.00538)	(0.0130)	(0.00604)	(0.0121)	(0.00431)
Ethnic Fractionalizatio n	0.560**	0.202**	1.079***	0.512***	-0.630***	-0.330***
	(0.268)	(0.0871)	(0.210)	(0.0977)	(0.195)	(0.0697)
Ethnic Polarization	-0.630***	-0.206***	-0.0431	-0.0143	-0.163	-0.0230
	(0.216)	(0.0702)	(0.170)	(0.0788)	(0.158)	(0.0562)
Palma Index	-0.877***	-0.302***	-0.195**	-0.120***	0.885***	0.297***
	(0.121)	(0.0394)	(0.0952)	(0.0442)	(0.0885)	(0.0316)
Constant	4.663***	1.460***	-1.794***	-0.775***	-2.122***	-0.771***
	(0.270)	(0.0877)	(0.212)	(0.0983)	(0.197)	(0.0702)
Transformed Control Group Mean	10.163	2.847	4.059	1.795	3.924	1.325

Observations	64,180	64,180	64,180	64,180	64,180	64,180
R-squared	0.109	0.113	0.123	0.122	0.136	0.139

Notes: standard error in parentheses with *, **, and *** denotes statistical significance at 10, 5, and 1%.

Table 4.3. above shows the impact of the UPP Program on social capital and participation. UPP Program significantly improves social capital, where the treatment community will have 10.9 p.p. increase in the bridging social capital. These estimates also do not support the evidence of UPP's significant impact on other social capital and only weak evidence on decreasing participation. The magnitude of UPP program impact compared to the control group mean about 7.9-8.3% in bridging social capital. On the other hand, Susenas Dataset in Table 4.4, UPP Program also has a significant positive impact on bridging social capital and negatively impacting participation. Both estimates from two datasets provide strong evidence of the UPP Program's positive impact on bridging social capital, which might be one of the individual urban characteristics since they tend to accept people from other ethnicities or religions than people in the rural area. Individual and district control variables show the same result as the KDP Program. However, for the Susenas dataset, the magnitude of UPP program impact is lower than the IFLS dataset: impact of bridging social capital is 3.1-3.9%, and participation 3.9-4.5% of the control group mean.

4.2.2. Heterogeneous Impact on Urban Rural

Table 4.5. CDD Impact in Urban Area (Susenas Dataset)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Bonding Social Capital (Latent)	Bridging Social Capital (Latent)	Participation (Latent)	Bonding Social Capital (Latent)	Bridging Social Capital (Latent)	Participation (Latent)
Year = 2012	0.113***	0.0589***	0.0126			
	(0.00990)	(0.0107)	(0.00805)			
KDP	0.0468***	-0.0253*	-0.0324***			
	(0.0141)	(0.0152)	(0.0114)			
KDP*Year	0.104***	0.137***	-0.0423***			
	(0.0185)	(0.0200)	(0.0150)			
Year = 2012				0.132***	0.104***	0.0442***
				(0.0148)	(0.0160)	(0.0121)
UPP				-0.0580***	-0.138***	-0.00863
				(0.0135)	(0.0146)	(0.0110)
UPP*Year				0.0193	-0.0560***	-0.0114
				(0.0157)	(0.0169)	(0.0127)
Constant	1.793***	-0.380***	-0.770***	1.837***	-0.200*	-0.744***
	(0.105)	(0.114)	(0.0853)	(0.105)	(0.114)	(0.0855)
Transformed Control Group Mean	2.669	1.898	1.275	2.827	1.805	1.42
Observations	50,306	50,306	50,306	49,663	49,663	49,663
R-squared	0.078	0.089	0.132	0.078	0.092	0.131
Individual Control	YES	YES	YES	YES	YES	YES

District Control	YES	YES	YES	YES	YES	YES

Notes: standard error in parentheses with *, **, and *** denotes statistical significance at 10%, 5%, and 1%. Individual control includes Age, Household Size, Years of Education, Per Capita Expenditure. District control includes: Ethnic Fractionalization Index, Ethnic Polarization Index, Palma Index.

Table 4.6. CDD Impact in Rural Area (Susenas Dataset)

VARIABLES	(1) Bonding Social Capital (Latent)	(2) Bridging Social Capital (Latent)	(3) Participation (Latent)	(4) Bonding Social Capital (Latent)	(5) Bridging Social Capital (Latent)	(6) Participation (Latent)
Year = 2012	0.136***	-0.322***	0.00994			
	(0.0242)	(0.0303)	(0.0182)			
KDP	0.0507*	0.0357	-0.00199			
	(0.0294)	(0.0369)	(0.0222)			
KDP*Year	0.0781**	-0.276***	-0.0350			
	(0.0338)	(0.0424)	(0.0255)			
Year = 2012				0.0467**	-0.282***	0.0381***
				(0.0184)	(0.0230)	(0.0138)
UPP				-0.0347	0.215***	0.0698***
				(0.0235)	(0.0295)	(0.0177)
UPP*Year				0.119***	-0.199***	-0.101***
				(0.0356)	(0.0446)	(0.0267)
Constant	-0.538***	-2.255***	-1.449***	-0.386**	-2.405***	-1.459***
	(0.193)	(0.242)	(0.145)	(0.190)	(0.238)	(0.143)
Transformed						
Control Group Mean	2.919	1.708	1.37	2.867	1.783	1.222
Observations	14,175	14,175	14,175	14,057	14,057	14,057
R-squared	0.152	0.225	0.196	0.155	0.229	0.203
Individual Control	YES	YES	YES	YES	YES	YES
District Control	YES	YES	YES	YES	YES	YES

Notes: standard error in parentheses with *, **, and *** denotes statistical significance at 10%, 5%, and 1%. Individual control includes: Age, Household Size, Years of Education, Per Capita Expenditure. District control include: Ethnic Fractionalization Index, Ethnic Polarization Index, Palma Index.

Since there are distinctions in the program, where KDP Program intended to village or rural village and UPP Program most likely to be received by kelurahan in urban area, we estimate the impact of CDD Programs for urban and rural areas subsample. However, some communities were recorded received both of the programs, regardless of their area status. KDP Program will decrease the bridging social capital by 4.67 p.p. and participation by 5.42 p.p. in the IFLS Dataset. In addition, UPP Program increases the bridging social capital by 7.4 p.p. For rural areas, the KDP Program significantly decreased the bridging social capital by 3.17 percentage point, but the UPP Program did not significantly impact social capital and participation in rural areas. These estimates provide evidence that the UPP Program significantly improved the bridging social capital in urban areas, according to the estimate from the main result, with a lower or higher magnitude.

KDP Program improved bonding social capital and bridging social capital by 10.4 p.p. and 13.7 p.p., respectively, in urban areas. Interestingly, UPP Program reduces the bridging social capital in urban areas by 5.6 p.p., which shows the opposite result from the previous

estimates from IFLS. In rural areas, both KDP and UPP Programs increase the bonding social capital by 7.81 percentages point and 11.9 p.p., respectively. In conclusion, we cannot see strong evidence on UPP Program improving bridging social capital in an urban area since both datasets provide different evidence. KDP Program in Susenas dataset also shows the positive and significant result to bonding social capital in the urban and rural subsample.

4.2.3. CDD and Agricultural Community

Table 4.7. CDD Programs in Agriculture Community (Susenas)

VARIABLES	(1) Bonding Social Capital (Latent)	(2) Bridging Social Capital (Latent)	(3) Participation (Latent)	(4) Bonding Social Capital (Latent)	(5) Bridging Social Capital (Latent)	(6) Participation (Latent)
Irrigation	-0.0797**	0.240***	-0.0127			
	(0.0315)	(0.0405)	(0.0254)			
Year	0.0432	-0.245***	-0.0482*			
	(0.0345)	(0.0443)	(0.0278)			
Year*Irrigation	-0.0155	0.150**	0.0809**			
	(0.0484)	(0.0621)	(0.0390)			
KDP	0.207***	0.204**	0.0563			
	(0.0644)	(0.0826)	(0.0519)			
KDP*Irrigation	0.00800	-0.0390	0.226***			
	(0.0468)	(0.0601)	(0.0378)			
KDP*Year	0.205***	0.158*	0.0411			
	(0.0680)	(0.0872)	(0.0548)			
KDP*Year*Irrigation	0.0759	0.221***	0.318***			
	(0.0512)	(0.0657)	(0.0413)			
Irrigation				-0.0652*	0.0972**	0.173***
				(0.0375)	(0.0484)	(0.0302)
Year				0.00383	-0.165***	0.0575***
				(0.0256)	(0.0330)	(0.0206)
Year*Irrigation				0.0378	0.249***	0.181***
				(0.0456)	(0.0587)	(0.0367)
UPP				-0.316***	0.373***	-0.0182
				(0.0559)	(0.0719)	(0.0449)
UPP*Irrigation				-0.158***	0.120***	0.0217
				(0.0339)	(0.0437)	(0.0273)
UPP*Year				-0.265***	0.335***	-0.442***
				(0.0713)	(0.0918)	(0.0573)
UPP*Year*Irrigation				-0.105**	0.253***	0.192***
				(0.0459)	(0.0591)	(0.0369)
Constant	-0.296	-1.230***	-1.536***	-0.145	-1.273***	-1.610***
	(0.208)	(0.268)	(0.168)	(0.208)	(0.268)	(0.168)
Transformed Control Group Mean	2.851	1.768	1.361	2.959	1.679	1.347
Observations	11,030	11,030	11,030	11,048	11,048	11,048
R-squared	0.135	0.193	0.182	0.137	0.190	0.189
Individual Control	YES	YES	YES	YES	YES	YES
District Control	YES	YES	YES	YES	YES	YES

Notes: standard error in parentheses with *, **, and *** denotes statistical significance at 10%, 5%, and 1%. Individual control includes: Age, Household Size, Years of Education, Per Capita Expenditure. District control include: Ethnic Fractionalization Index, Ethnic Polarization Index, Palma Index.

Considering the agriculture irrigation system as one of the factors that affect social capital dynamics (von Carnap-Bornheim, 2016), we estimate DID regression and add dummy variables of modern irrigation systems in communities. Agriculture communities are the subdistrict with 50% or more households that works in the agriculture sector. Communities with

modern irrigation can be defined as the subdistricts without the traditional irrigation system (rainwater or tidal field) and have technical or tube well/pump as their primary source of water in the agricultural sector. Table 4.7. above is the interaction between CDD Programs and modern irrigation systems in agricultural society using the Susenas dataset. KDP Program and modern irrigation positively affect social capital. The programs improve the bridging social capital and participation as much as 22.1 percentages point and 31.8 p.p., respectively, compared to the community without a modern irrigation system. In addition, the KDP itself also increases the bonding and bridging social.

For the community with UPP Program and modern irrigation system, bridging social capital and participation is increased, but bonding social capital decreased, compared to the agricultural community with no modern irrigation system. However, the UPP program alone only increased the bridging social capital, but the bonding social capital and participation decreased. This estimate shows the same result as the general result of the UPP Program for all samples. KDP and UPP program results with modern irrigation interaction might indicate that CDD Programs support other projects and additional infrastructures needed by the farmers in the community, thus increasing all social capital indicators and participation.

4.3. Discussions

In earlier sections, both descriptive and inferential analyses confirm that KDP Program has a negative and significant impact on all the outcomes: bonding social capital, bridging social capital, and participation. Nevertheless, bridging social capital is positive on Susenas Dataset, albeit the magnitude and significance level are low. In addition, UPP Program has a positive impact on bridging social capital but negatively impacts the remaining outcome. KDP Program tends to deteriorate the social capital since the program present in the communities where the traditional network has already bonded (rural subdistrict and village); meanwhile, UPP Program increases the bridging social capital (in urban subdistrict). This result is consistent with a previous study by Labonne & Chase (2011), where the Philippines' community project program decreases participation, collective action, and trust to the neighbor but increases the bridging social capital.

The negative impact from CDD Program to almost all of the social capital indicator also might be driven by the "incentives" which arise between village head to get infrastructures project grants, since every KDP or UPP villages need to propose their project design proposal to central government (Nugraha, 2010). Thus, the incentives such as project grants tend to disrupt the existing social capital and traditional networks in the communities, especially in rural areas. The sustainability of the CDD Project might also be driven by the disbursement of

project grants, not the natural development of social capital (Marcus & Asmorowati, 2006). In the UPP Program, bridging social capital might be increased because of the heterogeneity of the urban population, where people have higher tolerance towards strangers from other ethnicities or religions (Sørensen, 2016).

KDP and UPP Program seem to positively impact social capital in the agricultural society context, especially for the modern irrigation system. CDD programs can become one of the financial and resource supports in providing their demand for agriculture pre- or post-harvest infrastructures through the project. For KDP Program, all social capital and participation indicators might increase, especially for farmers with landowners who need agriculture infrastructure. Thus, the farmers will participate more in public meeting and projects, and CDD programs were not a barrier; instead, it facilitates interaction. Social sapital might increase since the KDP or UPP Program becomes more inclusive, especially in small or agricultural societies, this result supported by Arcand & Wagner (2016) study in Senegal. UPP Program also successfully made infrastructure projects in an agriculture society; even though the elites still exist, but no evidence of elite capture was found (Beard & Dasgupta, 2007). However, the increase of social capital might not explicitly prove the "organic" development of social capital; since it could be the economic driving factor to optimize their agriculture production, thus increasing their income (Shrestha, 2015).

Considering the cost and benefit, World Bank already invested and provided enormous amount of grants for KDP ($421.5 million) and UPP ($126.9 million) Programs (Wong, 2012). We found little to none positive impact of CDD Programs to social capital in Indonesia. Mansuri and Rao (2013) also stated that most CDD might have encountered some loop hole from the supply side (capacity of local officials, administration process, and resources) and demand side (program design, incentives, community geography, economic, and social capacity, also asymmetric information). In general, we also found that positive impact of CDD to social capital only occurred on higher education and wealthier samples, which indicate that the effect of programs was unequal. Some of the KDP and UPP main objective is strengthening the institution and increased the cooperation between government and community, the intention of CDD programs in Indonesia might not fulfil the program main objective, thus not improving the social capital in the community.

However, based on data availability, this study only uses a small sample size for the community-level treatment data (from the maximum of 13 provinces); caution must be applied, as the findings might not represent the general situation. IFLS dataset has a smaller sample size and tends to be urban-biased where most respondents live in the West Indonesia Region. Since

the IFLS first wave, the survey oversamples the enumerator areas in an urban area to compare rural versus urban and Java versus non-Java region (Strauss et al., 2016). The sampling selection will imply that when we observed more heterogeneous characteristics, the result might be discounted or overestimated. In this study, the result tends to be overestimated since the social capital score in East Indonesia tends to be lower than in Western Indonesia. In summary, Susenas capture the treatment effect better than IFLS since it includes many rural area samples.

5. CONCLUDING REMARKS

This paper assesses the impacts of Indonesia's CDD Programs on social capital and participation in community activities. Through several descriptive and inferential analyses in the previous chapters, this study has found that CDD Programs in Indonesia had mixed results regarding changes in the outcome of social capital and participation over time. KDP and UPP Programs have a negative and significant impact on social capital and participation, albeit UPP Program has a positive impact on bridging social capital, specifically. These findings are aligned with previous research from Labonne & Chase (2011), where the CDD Program only increased the bridging social capital. Moreover, there is the positive implication of CDD Programs for the agriculture community with a modern irrigation system.

Result in this study indicate the occurrence of elite capture, which shows by the negative result in most of social capital and participation outcomes. In addition, there are unequal effect of participatory or community-driven development program, where more educated and wealthier people tend to participate more on the project. In order to make the CDD Program more effective, the government needs to provide the detailed supervisor, predefined administrative and reporting process, evaluation, and also capacity building to the local leaders as an attempt to reducing the risk of elite capture and turning back the power structure to its initial function (Mansuri & Rao, 2013; Fritzen, 2007). In addition, to reduce the challenges and control the heterogeneity: other policy adjustments based on socioeconomic, geographic, and people characteristics also crucial in improving social capital development, which related to the establishment of Village Funds in 2014 as expansion of CDD Program in Indonesia.

This study contributes to existing CDD impact evaluation literature by providing the accumulative impact of the KDP and UPP Program in Indonesia on social capital. Nevertheless, this study still has some limitations such as simplified matching method pooled in 2007. Future research might need staggered adoption in the matching method. A larger community-level sample might be needed from the data aspects to capture KDP or UPP's impact to provide a more representative estimate. The elite capture variable was also not available explicitly in IFLS

or Susenas dataset; we suggest that future research consider the experimental or in-depth interview research. Lastly, future studies should include more control variables such as religion polarization and fractionalization index in the matching process and regression estimation to reduce omitted variable bias, both from individual and community-level characteristics. However, the Village Funds Program since 2014 might be taking evaluations from KDP, UPP, and PNPM since the Village Funds Program is the continuation of the CDD Program in Indonesia. Hence, the result on social capital in the longer term for Village Funds Program needs to be analyzed in the future.

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