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PAPERS

1. Does interest rate shocks transmit from united states to Ghana?evidence from vector auto-regression
*Chibuike R. Oguanobi, Anthony A. Akamobi
Ogonna E. Ifebi, Anne C. Maduka* 1
2. Efficacy of the theory of planned behavior in the context of hiring Malaysians with disabilities
Magdalene C.H. Ang, T. Ramayah, Hanudin Amin 13
3. One more year of schooling or work: grade-transition and child labor in rural Bangladesh
Alok Kumar 27
4. The impact on health of recurring migrations to the United States
David L. Ortmeier, Michael A. Quinn 49
5. Why resist? examining the impact of technological Advancement and perceived usefulness on Malaysians' switching intentions: the moderators
*Nik Mohd Hazrul Nik Hashim, Ameet Pandit,
Syed Shah Alam, Rosli Abdul Manan* 65
6. Spillover from oil market to stock market in Nigeria: evidence from granger causality in risk
Olayeni O. Richard, Olofin O. Philip 81
7. Development and income inequality: a new specification of the Kuznets hypothesis
*Katherine C. Theyson, Lauren R. Heller** 103
8. Productivity and efficiency impacts of urea deep placement technology in modern rice production: an empirical analysis from Bangladesh
Sanzidur Rahman, Basanta K. Barmon 119
9. Open economy macroeconomics of credit, employment and growth: a structuralist approach
Rilina Basu (Banerjee), Ranjanendra Narayan Nag 135

10. Brazil-US trade balance and exchange rate: dynamic empirics 151
Muhammad Mustafa, Matiur Rahman, Kishor K. Guru-Gharana
11. International technology transfer and domestic patent policy: 165
an empirical analysis of Indian industry
Ruchi Sharma, Sunil Kumar Ambrammal
12. The returns to education in Indonesia: post reform estimates 183
Losina Purnastuti, Ruhul Salim, Mohammad Abdul Munim Joarder
13. Impact of public transfer on rotating savings and credit 205
associations (roscas): the Indonesia household case
Mohtar Rasyid, Elan Satriawan, Catur Sugiyanto
14. Market structure, rice and paddy prices, and farmers family 217
income in the Kroya district of Indonesia
Yogi Makbul, Pradono, Sudrajati Ratnaningtyas, Pringgo Dwiyantoro
15. External financial inflows and domestic investment in the 229
economies of WAEMU: crowding-out versus crowding-in effects
Charles Fahinde, Alexis Abodohoui, Muhammad Mohiuddin, Zhan Su
16. Revisiting the relationship between internal marketing 249
and external marketing: the role of customer orientation
Norizan Mat Saad, Siti Hasnah Hassan, Liew Mei Shya
17. Does corporate governance influence earnings 263
management? evidence from Singapore
*Jayalakshmy Ramachandran, Zipora Adoyo Ngete,
Ramaiyer Subramanian, Murali Sambasivan*
18. The impact of organizational structure on knowledge 275
management processes in Egyptian context
Mohamed Wahba
19. Underemployment in Latin America 293
Luis Rene Caceres, Susan Ann Caceres
20. An autoregressive distributed lag (ARDL) analysis of the nexus 323
between savings and investment in the three Asian economies
*Nurul Wahilah Abdul Latif, Zulkifli Abdullah,
Muhamad Azhan Md Razdi*
21. Is the boom in East Asian tourism happening at the expense 335
of other destinations? a cross-country analysis
Byron Lew, Saud A. Choudhry

22. The effect of shocks on household consumption in rural Nigeria 353
Abdulaziz Shehu, Shaufique F. Sidique
23. Combining local and global markets in asset pricing in emerging markets: evidence from three BRICS nations 365
Shabir Ahmad Hakim, Zarinah Hamid, Ahamed Kameel Mydin Meera
24. Does organizational culture moderate the relationship between ISO 9000 soft factors and organizational performance? 379
Rohaizah Saad, Mohd Norhasni Mohd Asaad

NOTES

25. A comparative study of problems encountered in the development of small businesses in the U.S. and Mexico 395
John P. Hayes, Sudhir K. Chawla, Yunus Kathawala
26. Pension accounting disclosures and stock market reactions 407
Nor Asma Lode and Mohd, Atef Md Yusof
27. The role of parent's influence and self-efficacy on entrepreneurial intention 417
Ahmad Rachmawan, Ayu Aprilianti Lizar, Wustari L.H Mangundjaya

**IMPACT OF PUBLIC TRANSFER ON
ROTATING SAVINGS AND CREDIT
ASSOCIATIONS (ROSCAS): THE INDONESIA
HOUSEHOLD CASE**

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ABSTRACT

Public transfers in the form of financial assistance to poor households have a positive impact on recipient's and neighboring households. However, the effect of public transfers on social participation so far has not been empirically supported. This study aimed evaluating the impact of public transfers (direct cash assistance, BLT) on household participation in community activities. The data used in this study is collected from the publication of Indonesia Family Life Survey (IFLS), which has complete information about the activities of household members in the Rotating Savings and Credit Associations (RoSCAs), cooperatives, and community service activities in village development. The availability of household-level micro data allows this study to be done with two important contributions. Firstly, this study can analyze the social impact of public transfers by using multiple more specific indicators of community participation. Secondly, this paper uses the appropriate methodology to control the characteristics of households that are not observed but were highly correlated with community participation and the government programs. As an illustration, egoistic households tend to be inactive in the social activities. These households will also innocently and ineligibly receive assistance and transfers from the government. Without controlling the unobserved heterogeneity, the estimated regression coefficient between program variables and various indicators of public participation will be potentially biased. The nature of the household may influence the decision to attend a social gathering as well as be correlated with the status of the household in obtaining public transfers. To isolate the influence of unobserved factors, this study uses the approach of First Difference (FD) with a combination of Fixed Effect (FE) at the community level. Test results consistently show that the BLT is positively related to social gathering activity. The results showed that households that received public transfers (BLT) were more active in RoSCAs activities. The positive correlation between BLT and RoSCAs activities (Arisan) can still be proven even though there are cases of mistargeting of public transfers (leakages and under coverage cases). The results of this study have a significant policy implication. Social capital held by the public is undoubtedly an important element in the development of society. Social capital also plays very important role in the successful implementation of government programs. Strong social bonds can reduce the turbulence caused by targeting error. In contrast, government programs in the form of public transfers are also shown to have a positive impact on the strengthening of social capital.

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INTRODUCTION

One of the features that have an important role in the development is social capital that is owned by a community. Many researchers have realized the importance of social capital in the formation of civil society (Fukuyama, 2000). Not only is social capital important for supporting the effectiveness of government, it has also contributed to sustainable growth and other economic indicators (Keefer and Knack, 2005). Some researchers have also empirically examined the impact of social capital on the performance of economic development.

Empirical studies of the social impact of public transfers so far often face a serious estimation problem. Firstly, the definition of social capital is quite wide making it difficult to obtain sufficient common indicators to represent the concept of social capital. In a society with intensively wide range of social activities, the type of social activities undertaken will vary and must be unique among communities. Secondly, the decision of household member to engage in social activities is also based on factors that are difficult to measure empirically. Social activity is more likely to be influenced by the individual's awareness of the responsibility to keep the safety and comfort of the environment. There are no legal sanctions that bind a person to engage in social activities. Households with a high level of social awareness will be actively involved in community activities. In contrast, relatively egoistic households tend to avoid social activities.

This study has resulted in some important findings. Without controlling the unobserved factors at household level, BLT has a negative relationship with social activities like Rotating Savings and Credit Associations (RoSCAs). If the unobserved heterogeneity is controlled (with First Difference), there is strong evidence that households that earn BLT are relatively more active in the RoSCAs activities. In other words, there is a positive relationship between public transfers and the household members' participation in social activities. The role of public transfers in the form of BLT on RoSCAs and cooperative activities is still quite significant even though there are mistargeting BLT in the local community. Leakage in the BLT does not have a negative impact on community participation activities. In other tests of empirical models, we found no significant evidence that the mistargeting BLT in a community (village) would cause a rise in the probability of households committing crimes.

This paper is organized as follows. The second section describes some relevant literature review and public transfer programs in Indonesia. The third section discusses the methodological issues. The fourth section describes data of sample households in Indonesia, which is used in the IFLS. The last section discusses the generally obtained results, conclusions and recommendations.

PUBLIC TRANSFERS IN PREVIOUS LITERATURE

Social Capital and Economic Development

The importance of social capital as a determinant of economic development has long been discussed by other researchers. Ponthieux (2004) reviewed the concept of social capital from Coleman's social structure, Putman's organizational participation, and Fukuyama's concept of trust. Researchers have also introduced the concept of calculations related to social capital ranging from households to community level (Stone, 2001). Some other researchers such as Hjoellund and Svendsen (2000)

specifically introduced calculation method of the social capital index using factor analysis approach. The linkage between social capital and economic growth in the aggregate is analyzed by Garcia et al. (2006). Using time series data for the period from 1970 to 2001 for 23 OECD countries, they found a significant positive association between social capital and economic growth. Social capital has contributed approximately 7 to 10 percent to economic growth of the sample countries.

Research on social capital in Indonesia has essentially also been conducted from the beginning of the decade of 2000. Miguel et al. (2002), using SUPAS data, PODES and SUSENAS, test the impact of industrialization on social capital in Indonesia for the period from 1985 to 1997. Results of the study revealed that the districts that experienced industrialization had relatively high social capital indicators. Other research relating to social capital in Indonesia is conducted by Grootaert (1999). The research uses survey data of Local Level Institution in three provinces: Jambi, Central Java and East Nusa Tenggara. The data consists of a multi-level unit analysis from the household level and the district community level. There have recently been several studies that are related to social capital and RoSCAs in Indonesia (Varadhajan, 2004; Lasagni and Lollo, 2011; Cameron and Shah, 2012). The results of the studies reinforce the hypothesis that most of the social capital indicators have a particularly positive impact on household welfare and a generally positive impact on economy.

Impact Evaluation of Public Transfers

Impact evaluation of public transfers in the form of cash transfers has been studied, including the effects of an error on the target beneficiaries. Stoffler (2012) conducted a simulation to test the effects of cash transfers on consumption and production of farm households using household data from Taiwan. Some simulation results indicate that the transfer has a positive impact on the increase in consumption and production. The positive effects are also felt by the non-recipient households (non-target) and the recipient households, although not by the poor households (leakage). In relation to targeting error, Weiss (2004) identified that the phenomenon was common in developing countries, including the countries such as India and the People's Republic of China (PRC) that long held poverty alleviation programs.

Coady et al. (2004) conducted a review of targeting programs in several developing countries. Several methods of targeting are discussed in detail and carried out to measure the performance of targeting indexation in some countries (including Indonesia). Evaluation is made not only to the program but also to the transfer of subsidy programs and job creation programs. Evaluation of the impact of the program on direct cash assistance (BLT) was conducted in 2005 and 2006 by Bazzi et al. (2012). Some researchers also examined the impact of indirect public transfers on the provision of social capital. Attanasio et al. (2008) with experimental approach found evidence that the level of cooperation for the people who got the program was relatively higher than that for the people who did not get the program. Meanwhile, Ressler (2008) with a qualitative approach found evidence that the presence of the public transfers strengthened existing social networks. Angelucci and De Giorgi (2009) found that public transfers increased household consumption by 10 percent for the non-recipients.

Rotating Savings and Credit Associations (RoSCAs)

The important social capital indicator used in this study is Rotating Savings and Credit Associations (RoSCAs) or known as "Arisan". As one form of activity that was encountered in several developing countries (including Indonesia), Arisan activity has long been a concern of experts to examine the determinants and implications of these activities. So far three studies regarding RoSCAs have been conducted in Indonesia. Initial study conducted by Geertz (1962) results in an investigative field survey taking place in the area of East Java from May 1953 to September 1954. According to the study, information was obtained that person's participation in the activities of gathering was not motivated by the money that would be accepted but by the desire to create harmony in society. Although researches have been conducted in some places, the puzzle of Arisan cannot be identified completely. By using the results of several previous studies, Ambec and Treich (2003) proposed an alternative theory related to the RoSCAs. The theory is constructed by using the model of social pressure. Ambec and Treich (2003) hypothesized that an individual's participation in RoSCAs was intended to avoid the social obligation to share revenues.

METHODOLOGY

i. Model

Suppose individual i with income level y faces the decision to participate in a sum m of money in Arisan. It is assumed that there is a social gratification if the individuals take part in Arisan. If the individual utility is expressed as $u(\cdot)$, then the optimal point will be achievable due to paying a sum of m only and only if:

$$u_i(y_i - m_i) + \delta_i > u_i(y_i) \quad (1)$$

There is a social gratification or social sanction that exists in society. With the assumption that the utility $u(\cdot)$ is an increasing function and concave, the individuals with the lowest income levels will not reach optimal to spend some money m . For individuals with low income levels, coefficient is zero.

$$u_i(y_i - m_i) < u_i(y_i) \quad (2)$$

Along with the increase in income, the individual would receive social gratification if he or she gives the contributed m . It should be noted that there will be a level of income y which will make the individuals be in the same position (indifferent) between giving m money or not. Mathematically, this position can be expressed as follows:

$$u_i(\underline{y}_i - m_i) + \delta_i = u_i(\underline{y}_i) \quad (3)$$

Thus, the utility of an individual can be expressed as follows:

$$u_i(y_i) = \begin{cases} u_i(y - m_i) & \text{if } y > \underline{y}_i \\ u_i(y) & \text{if } y \leq \underline{y}_i \end{cases} \quad (4)$$

For basic estimation, this study employs Cameron and Shah's modified model (2011). Variable of Community Participation (RoSCAs) is explained by the explanatory variables such as the level of household income, consumption and policy.

$$RoSCAs_{ivt} = \alpha_0 + \alpha_1 X_{ivt} + \alpha_2 INS_v + \alpha_3 BLT_v + \pi_i + \mu_d + e_{ivt} \quad (5)$$

RoSCAs is a member of the household participation in social gathering activities; X is a vector of household characteristics; INS is the vector characteristic of institutions; BLT is the policy variable; π is the unobserved variables in household level; μ is the variable that represents the characteristics of the district and e is a random error term.

The main problem in the estimation of the model (5) is the presence of unobserved factors that affect the participation of society as well as targeting BLT. If we assume that the unobserved character is time invariant, then the use of the techniques of First Difference (FD) can isolate the impact of the fixed variables. Differencing process will result in the following equation:

$$\Delta RoSCAs_{iv} = \alpha_1 \Delta X_{iv} + \alpha_2 INS_v + \alpha_3 BLT_v + \mu_d + e_{iv} \quad (6)$$

The use of FD will isolate the effects of household-level factors that are time invariants. Household-level variables are represented by the variables of household income and household status that either acquire or do not acquire the BLT. Meanwhile, the village institutions are village facilities such as the existence of a terminal, market, school and post office. The main variable is the BLT that includes a variable percentage of leakage and under coverage. Variations institutions may not only be limited to the level of rural areas. Certain conditions in the district or city/ county may severely affect the estimation results. To overcome these problems, the estimation technique used Fixed Effect (FE) level of city/ county. The estimated model will briefly be as follows:

$$\Delta RoSCAs_{iv} = \alpha_1 \Delta X_{iv} + \alpha_2 INS_v + \alpha_3 BLT_v + e_{iv} \quad (7)$$

Following Cameron and Shah (2011), the leakage and under coverage calculations are done on the village level. By definition, leakage calculation is based on the portion of non-poor households that earn BLT in a village. Meanwhile, under coverage calculation is based on the portion of poor households that do not receive a BLT in a village. Determination of poor households is based on the criterion of average expenditure per month at level Rp175.000. Households with expenditure below Rp.175 thousand per capita per month were categorized as poor households. The calculations of leakage and under coverage in this paper follow the Poverty Line (PL) determined by the Government (Central Bureau of Statistics, 2008). Based on SUSENAS, BPS set poverty line for 2007 at Rp166.697 per capita per month. A more complete review of the research data can be found in the next section.

ii. Data

The data used in this research has been collected from the publication of the IFLS survey wave 3 (in 2000) and IFLS wave 4 (2007). In IFLS-4, specific questionnaire about government programs including direct cash assistance (BLT) has been available. A total of 12,979 households were surveyed; nearly 25 percent of households claimed to obtain BLT. By using limit expenditure per capita of Rp175.000 per month for the category of poor households, about 7 percent of households were included in the group

of poor households. Of the 2,901 households that earn BLT, as many as 2,436 households were excluded from the group of poor households (approximately 18.76 percent of the total households) while there were about 449 poor households not getting the BLT (approximately 3.4 percent of the total households). This shows that the case of leakage is more dominant than the under coverage case.

DATA ANALYSIS

i. Descriptive Statistics

TABLE 1. DESCRIPTIVE STATISTICS OF SELECTED VARIABLES

	Mean	Std. Deviations
<i>Household level</i>		
BLT (yes=1, no=0)	0,223	0,416
RoSCAs	0,479	0,746
Community Meeting	0,416	0,683
Cooperatives	0,058	0,265
Voluntary Working	0,491	0,768
Village Programs	0,367	0,654
Income (log)	13,92	5,861
Age of Household Head (year)	44,29	15,38
Female Household Head (yes=1)	0,184	0,388
Marital Status (married=1)	0,787	0,408
<i>Village Level</i>		
Leakages	0,179	0,117
Undercoverage	0,033	0,041
Terminal (yes=1)	0,258	0,438
Market (yes=1)	0,407	0,491
Telephon Access (yes=1)	0,702	0,457
Post office	0,190	0,392

Source: Indonesia Family Life Survey (IFLS)

Any household data that is related to this study can be seen in Table 1. Data used in this study basically consists of two units of analysis - household level and community level (village). A household level consists of data on the status of obtaining BLT (yes or no), income level, age of household head, household head gender and marital status (married or not). One of the important explanatory variables in this study is the leakage and under coverage. Leakage is calculated on the basis of the portion of non-poor households that earn BLT. Meanwhile, under coverage is the portion of poor households that do not obtain the BLT. Both major indices were calculated at the village level.

ii. Impact of Public Transfers on RoSCAs

Table 2 presents the results of the estimation model of community participation (Arisan) related to the status as BLT households. The estimation results are shown in four columns. The first column (1) and the second column (2) present the results of OLS estimates while the third column (3) and the fourth column (4) present the estimation results of the First Difference household level. The unit of analysis is the household. The dependent variable in this table is the number of household members who take part in Arisan during the last 12 months. Meanwhile, the independent variable of primary interest is a dummy variable that indicates the status of the household receiving BLT (yes = 1) or not receiving BLT (no = 0).

TABLE 2. IMPACT OF BLT ON ROSCAS (ARISAN)

	Dependent Variable: Participation in RoSCAs		First Difference ⁺	
	OLS		(3)	(4)
	(1)	(2)		
BLT (yes=1)	-0,106*** (0,016)	-0,081*** (0,015)	0,683*** (0,058)	0,432*** (0,066)
Age of Household Head	0,006*** (0,0004)	0,003*** (0,0005)	-0,007*** (0,002)	-0,009*** (0,002)
Female Household Head	0,100*** (0,017)	0,074*** (0,018)	0,070 (0,086)	0,103 (0,081)
Married of Household Head	0,165*** (0,017)	0,141*** (0,017)	0,070 (0,087)	0,054 (0,081)
Education of Household Head				
Primary	0,146*** (0,025)	0,098*** (0,025)	0,313*** (0,098)	0,198 (0,102)
Junior High School	0,252*** (0,031)	0,158*** (0,029)	0,255** (0,133)	0,159** (0,131)
Senior High School	0,300*** (0,029)	0,154*** (0,030)	0,114 (0,146)	-0,004 (0,138)
University	0,402*** (0,032)	0,198*** (0,033)	-0,014 (0,186)	-0,213 (0,167)
Household Member	0,070*** (0,004)	0,077*** (0,005)	0,203*** (0,017)	0,220*** (0,018)
Household Income	0,015*** (0,001)	0,014*** (0,001)	0,028*** (0,005)	0,024*** (0,005)
Constant	-0,598*** (0,040)	-0,356*** (0,051)	-1,965*** (0,035)	-1,878*** (0,022)
<i>Fixed Effect</i> Community (EA)	No	Yes	No	Yes
<i>R-Square</i>	0,091	0,084	0,044	0,041
<i>RESET test (F test)</i>	9,22	-	89,61	-
Observations	12,746	12,746	8,756	8,756

Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Estimated first column (1) is based on the data from IFLS-4 (2007), which includes data on participation in Arisan activities as well as the status of a number of important characteristics of BLT households. The estimation result in the first column indicates that BLT households are less likely to actively participate in the Arisan. All variables representing household characteristics have a significant relationship with a RoSCAs (Arisan) activity. Arisan will be followed by many households with older aged household head. Arisan is also more widely attended if the head of household is a woman. The level of education of household head has also systematically positive relationship with social gathering activities; the higher the educational level, the greater is the number of household members who join social gathering. The greater number of household members will certainly increase the likelihood of members of the household being engaged in gathering activities. This is supported by the empirical results of the review. Furthermore, the level of income has positive impact on Arisan activity. All factors tested in column (1) in Table 2 are the observed characteristics of a household level. As a form of social activity, social gathering activities would also be influenced by other factors at the community level. To control the effect of other factors on the community in question, the re-estimation is done using the approach of Fixed Effect (FE) village level with the results as presented in column (2). Control of the factors resulted in corrected community-level scale (magnitude) regression coefficients for almost all the independent variables in column (1). However, in terms of the level of significance, there is almost no significant change. It is concluded that the BLT program is negatively related to the number of household members who joint Arisan.

As it has been reviewed previously, merely controlling the observed variables may not be sufficient because the household's decision to participate in gathering is determined especially by such unobserved variables as social attitudes, motivations and habits of household members according to the particular underlying customs. To isolate the effect of unobserved factors, we used the first difference approach. All the variables in the study of Arisan activities like household characteristics, including age, gender, marital status and education of household head, are measured in terms of the difference (First Difference). The BLT variables remain as previously stated in the form (dummy) because in 2000 the program was not implemented. Differentiation on the program variables will produce the same value. Estimation of the models using an approach gathering of First Difference (FD) can be considered in column (3) and column (4) in Table 2. In contrast to previous results, the coefficient of the variable BLT was positive and significant to the level of 1 percent. This indicates that the BLT households are more actively involved in social gathering. The Number of household members who take part in social gathering is significantly positively correlated with the acceptance status of BLT. In other words, more BLT household members are involved in Arisan activities. FD approach clearly produces different estimates with previous estimates (OLS). This finding confirms that the decisive involvement of household members in public participation activities is more likely to be contributed by unobserved factors.

The age of head of household has a negative relationship with a gathering activity. The level of education of household head is also a determinant of social gathering activities and is found to be a significant determinant only at the level of secondary school education (junior high school). Household characteristics, i.e. the large number of members of the household and household income levels, are also important in determining the number of household members who join social gathering.

Both are positively related to RoSCAs activity. Estimation in column (3) is determined by either the observed or the unobserved internal characteristics of household. To control for other factors outside the household characteristics or in the community level in column (4), the same estimation technique with the presence of additional Fixed Effect level was performed. The use of FE village level scale corrected the coefficients of some important variables.

TABLE 3. IMPACT OF LEAKAGES BLT ON ROSCAS (ARISAN)

	OLS		First Difference ⁺	
	(1)	(2)	(3)	(4)
<i>Leakage of</i> BLT	-0,361*** (0,061)	-0,275* (0,147)	1,866*** (0,238)	1,771*** (0,477)
<i>Undercoverage of</i> BLT	-1,252*** (0,136)	-1,125*** (0,258)	6,531*** (0,542)	4,285*** (1,093)
BLT (yes=1)	-0,082*** (0,016)	-0,082*** (0,017)	0,487*** (0,062)	0,445*** (0,072)
Age of Household Head	0,005*** (0,0004)	0,002*** (0,0005)	-0,006*** (0,002)	-0,009*** (0,002)
Female Household Head	0,091*** (0,017)	0,067*** (0,020)	0,104 (0,085)	0,050 (0,079)
Married of Household Head	0,169*** (0,017)	0,137*** (0,019)	0,087 (0,086)	0,007 (0,087)
Education of Household Head				
Primary	0,115*** (0,025)	0,109*** (0,030)	0,307*** (0,097)	0,183* (0,109)
Junior High School	0,200*** (0,031)	0,173*** (0,036)	0,255** (0,132)	0,140 (0,141)
Senior High School	0,228*** (0,030)	0,186*** (0,034)	0,153 (0,145)	0,020 (0,151)
University	0,320*** (0,034)	0,238*** (0,037)	0,017 (0,184)	-0,127 (0,186)
Household Member	0,070*** (0,004)	0,075*** (0,007)	0,204*** (0,017)	0,226*** (0,023)
Household Income	0,014*** (0,001)	0,015*** (0,001)	0,028*** (0,005)	0,022*** (0,005)
Constant	-0,406*** (0,046)	-0,257*** (0,073)	-2,473*** (0,056)	-2,343*** (0,098)
<i>Fixed Effect</i> Community	No	Yes	No	Yes
Observations	12.746	12.746	8.756	8.756

Robust standard errors in parentheses

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

iii. Impact of Mistargeting Public Transfer on RoSCAs

Results of previous studies suggested that among several types of public participation activities tested, only two activities that had significant positive relationship with BLT were the Arisan and cooperative activities. Thus it can be said that the additional revenue in the form of public transfers is used by household members to participate in social activities. Meanwhile, social participation activities that only require the presence of an individual are not much affected by the presence of direct cash assistance.

Leakage and under coverage are indicative of the presence of the targeting error in cash aid. What is the impact of mistargeting on the participation of the community? Table 3 presents the estimation results. Table 3 essentially replicates Table 2 with two additional variables: leakages and under coverage. First Difference (FD) test results showed a positive association between leakages BLT and Arisan activities (column 3 and 4).

DISCUSSIONS

As discussed in the previous section, in general, this study supports the finding that there is a positive relationship between public transfers and social activity. With the experimental approach, Attanasio et al. (2008) found a significant relationship between public transfers and social activities. Results of interviews conducted by Ressler (2008) with Kenyan society also found evidence that reinforced the public transfer of existing social networks. Babajanian (2012) found that public transfers were positively related to the behavior of individuals in social activities. The same findings were also reported by Hidrobo et al. (2012).

Vanadharajan (2004) used cross-section data IFLS-2 (1997) while Lasagni and Lollo (2011) used the IFLS-3 (2000) and IFLS-4 (2007). Both researches on the social gathering in Indonesia did not anticipate the possibility that the effects of unobserved factors potentially produced biased estimator. Several explanations can be proposed to parse BLT relationship and the Arisan. Firstly, according to the findings of Geertz (1962), the Arisan is done to strengthen harmony among the members of society. The results of a qualitative study conducted by Hosain et al. (2012) found that the BLT to some community members inevitably caused social jealousy and could disturb the harmony of the local community. Social friction does not cause a significant increase in crime as suggested by the findings of the study by Cameron and Shah (2012). Secondly, as hypothesized in the model of social pressure and in Treich and Ambec (2003), social gathering can be used by individuals to anticipate the social pressure of "social obligation" to share the revenue

CONCLUSIONS

Based on the calculation of the estimated model of the social impact of the public transfer, it can be concluded that the BLT households are more likely to be actively involved in social activities. The finding of a positive correlation between BLT and Arisan should not be too surprising given that the two activities are more related to

cash flow, while other public participation activities such as community meetings and service projects require more physical presence so as not to be affected by the presence of cash transfers.

Regardless of the status of the poor or non-poor households, public transfers in the form of financial injection to some extent have intensified the effect of social activities such as social gathering. Leakage cash aid has become a fact. Nevertheless, the case of leakage does not necessarily weaken social solidarity. Leakages and under coverage case had nothing to do with the crime. Action in the form of anti-social disorder may be more relevantly related to socioeconomic inequality problem.

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