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The Impact of ‘Rice for the Poor’ on Household Consumption

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Contributed paper prepared for presentation at the 56th AARES annual conference,
Fremantle, Western Australia, February 7-10, 2012

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The Impact of ‘Rice for the Poor’ on Household Consumption

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Abstract

This study investigates the impact of the 'Rice for the Poor' program - an almost universal program of Indonesian Social Safety Net (SSN) Programs launched in 1998. The general aim of the program was to mitigate the decrease of household nutrition well-being. The program has provided highly subsidized rice for poor households. Using the Indonesian Family Life Survey, this study implements propensity score matching combined with difference in difference method. It is revealed that the program has increased households' consumption on nutrient-rich, animal source food though aid-fungibility was also present.

Keywords

Impact evaluation, ‘Rice for the Poor’, nutrient-rich food

Introduction

As the Asian financial crisis spread throughout Southeast Asia in 1997, the Indonesian economy was also affected. It is reported that the crisis raised the poverty rate to 40 percent from around 12 percent just before the crisis (Solomon 1998, Thoenes 1998). Indonesia recorded the highest inflation in recent history with the exchange rate of around 15 thousand rupiahs to one US dollar. Many experts claimed that the collapse of the Indonesian economy was not merely due to the regional financial crisis, but rather due to failed economic policies developed under ORBA. During the Soeharto administration, the Indonesian economy was characterized by imprudence and poorly monitored domestic financial systems, high levels of corruption, and nepotism or patrimonial relations between governments and business (Krugman 1998, Pincus and Ramli 1998, Stiglitz 1998). The crisis indeed dampened the national economy and deteriorated the living standards of Indonesian households.

Before the crisis, government anti-poverty programs were focused on social services spending such as education, health and family planning, and development programs featuring infrastructure. Consequently, anti-poverty programs intended to protect the chronic poor and the newly impoverished due to the economic crisis were almost absent before the crisis period. In order to protect Indonesian households from the economic crisis, the national government launched social safety net (SSN) programs in 1998. The SSN effort consisted of five major programs: food security (*Operasi Pasar Khusus* [OPK]), employment creation (*Padat Karya*), education scholarship, health programs, and community empowerment.

Each of the SSN programs had a specific purpose. The ‘Rice for the Poor’ program provided poor households with highly subsidized rice and became the main component of the SSN program. The ‘Rice for the Poor’ program also absorbed a more sizeable share of the government budget compared to the other SSN programs. Officially, the ‘Rice for the Poor’ program was named *Operasi Pasar Khusus Beras* (OPK) or “rice special market operation”. The purpose of this program was to ensure that poor households were able to access basic food at affordable prices (Sumarto 2006). Eligible households were selected based on *Badan Koordinasi Keluarga Berencana Nasional* (BKKBN), or the National Family Planning Agency in Indonesia. Tabor and Sawit (2001) mentioned that the program authorities were aware that BKKBN welfare criteria were not designed to identify food insecure households.

The impact evaluation conducted in this study examines the effectiveness of the ‘Rice for the Poor’ program to improve household consumption. Previous efforts have evaluated this project at the aggregate level and were limited to program implementation (Tabor and Sawit 2005, Hastuti 2008). Evaluating the impact of the ‘Rice for the Poor’ program only at the program implementation stage might fail to capture the real impact of the program. Moreover, given the government’s limited resources, a credible impact evaluation is needed to determine whether the resources were used effectively. Accurate evaluation is important to clearly understand whether the program has helped Indonesian households in an efficient manner. Therefore, the findings of this study will provide feedback to the government and a basis to propose appropriate strategies for future food policy.

Methods

Data and Variables

The data used in this study are from 1997 and 2000 waves of the Indonesia Family Life Survey (IFLS) which capture periods before and after economic crisis and the implementation of the 'Rice for the Poor' program¹. IFLS covers 13 out of 27 provinces in Indonesia in that period. The first wave of IFLS interviewed 7,224 households and around 22,000 individuals from those households. The follow up rate of IFLS was considerably high (95 per cent).

IFLS collects longitudinal data on household characteristics, the communities in which they live, and the health and education facilities they use. Furthermore, information on community characteristics and the 'Rice for the Poor' program are available. IFLS round 2000 provided a particular section of SSN program in community questionnaire. The rich information on the 'Rice for the Poor' program from community questionnaire enables this study to observe the program implementation and distribution. The sample is restricted to panel households and excluded split off households since they might have different characteristics compared to their status in the original households. The final IFLS sample used in this study is 7178 households.

Dependent Variables

To assess the impact of the 'Rice for the Poor' program, certain outcomes are measured. The outcomes are household food and non food expenditures and. In particular, food expenditures are broken down into staple food, rice, meat and fish, dairy products, and adult goods expenditures. Non-food expenditures focus on two vital expenditures: medical and education. The outcomes variables are examined in current monthly food and non food expenditures of post exposure period and also change in those expenditures. Information on food and non-food expenditures are derived from expenditure module and all expenditures adjusted to 2000 prices so that the real expenditure values between two waves are comparable².

¹ IFLS 2 was fielded before the crisis hit the Indonesian economy. IFLS 2+ conducted in 1998 was aimed to capture the immediate effect of the economic crisis. IFLS 2+ only sampled around 25 per cent of total IFLS sample.

² The detail calculation of deflators is available at Strauss et al. (2004).

Table 1

Household Food Consumption of Post Exposure Year (in log term)

	Recipient		Control	
	Mean	Std. Deviation	Mean	Std. Deviation
Total Food Expenditure	12.96	0.70	13.27	0.75
Rice	10.30	3.36	9.32	4.65
Staple	11.01	2.30	10.71	3.05
Dairy Product	7.29	4.61	8.46	4.27
Meat	9.66	2.97	9.18	4.09
Fish	8.27	3.94	9.04	3.98
Adult Goods	7.70	4.85	7.08	5.35
Non Food Expenditure	12.39	0.83	12.93	1.04
Medical	7.24	3.44	7.45	3.84
Education	6.81	5.22	7.78	5.31
N	2729		4449	

Table 1 reports selected outcomes of “post-exposure period” between the ‘Rice for the Poor’ program recipients and their counterpart. Based on IFLS sample, there are 2729 households reported that they received the program. The outcomes of recipient group are higher than the control one for rice, staple food, adult goods and meat expenditures. This means that recipient households consume cheaper calorie sources as indicated by higher expenditure of rice and staple food. Medical and education expenditure are lower compared to other food expenditures. The higher expenditure on very basic food is also a strong indication that the recipient households are less prosperous than the control households. Non food expenditures of the program households are even lower than adult goods expenditures.

Presumably, the ‘Rice for the Poor’ program allows household to save more resource which enables them to purchase nutritious but more expensive and ‘better tasting’ food (Banerjee and Duflo, 2011) such as meat-fish, vegetables and dairy products. In addition, the extra resource might also be invested to non food consumption such as education and health. The changing pattern of household consumption particularly from cheaper calorie to richer nutrient food is in fact an indication of welfare change. However, when the income effects are transferred to non- ‘human capital investment’, it is a strong sign of aid-fungibility, a situation where aid is used for purposes unexpected by the program. The aid-fungibility presents when the rice for the poor program have positive effect on the share of less nutrition food items, such as tobacco and alcohol, oils, sugar and which might prevent households to eating well. Based on table 1, the present of aid-fungibility should be concerned as the recipient’s expenditures on adult goods (alcohol and tobacco) in the post-exposure period surpass that of control counterpart.

Explanatory Variables

The explanatory variables are used to calculate the probability of receiving the ‘Rice for the Poor’ program in the matching estimator. Therefore, conditions that influence program

eligibility will be used to calculate propensity score matching. This study follows previous studies on SSN programs evaluation on education scholarship (Cameron, 2009) and health card (Johar, 2009) in choosing covariates which determine program participation. As mentioned earlier, program eligibility criteria are based on BKKBN welfare criteria including household's welfare conditions as indicated by housing characteristics and income. Hence, covariates involved in propensity score estimator are household head and housing characteristics since these variables are observed and influence program eligibility. In more detail, housing characteristics are observed from the type of walls and floors in the house, whether the house has piped water or house owners. Table 2 reports selected covariates based on the pre-exposure year. It is evident that the household characteristics vary between recipient and control groups where the control households seem more affluent with higher per capita expenditure and asset compared to their counterpart. The control groups are characterized by more educated and younger household head. The recipient households lived in lower quality houses. More than 20 per cent of recipient households dwell in dirt-floor and bamboo wall house and only 15 per cent have access to piped water. Interestingly, there are more households in the control group who owned health card. In fact, the health card was intended for poor households and the eligibility conditions also followed BKKBN welfare criteria.

In addition, village characteristics and provincial dummy variables are also included to control for regional heterogeneity. Village characteristic involved in the model include proxies of remoteness such as distance to nearest bus stop or terminal and distance to district capital. Table 2 reports that only 20 per cent of recipient households reside in a village with bus station. This means the program recipients were located in the area with limited access to four wheel vehicles. This finding is closely related to the fact that most of the recipient households live in rural areas (70 per cent) and less than two per cent recipient households reside in the district capital. To control for economic conditions in the community, major commodity prices such as rice and chicken price as well as average village per capita expenditure are entered in the matching estimator.

Table 2

Summary Statistics of Household Characteristics in Pre Exposure Year before Matching

	Recipient		Control	
	Mean	Std. Deviation	Mean	Std. Deviation
Household Head's Characteristics				
Age	49.281	14.310	47.333	13.948
Education (years of schooling)	4.068	3.703	6.693	4.808
Work	0.792	0.406	0.774	0.419
Male household head	0.800	0.400	0.848	0.359
Household characteristics				
Under 6 years	0.511	0.711	0.518	0.725
6 - 14 years	0.951	1.002	0.920	1.043
15 - 59 years (male)	1.188	0.918	1.306	0.979
15 - 59 years (female)	1.309	0.799	1.447	0.945
60 years and over (male)	0.204	0.405	0.166	0.376
60 years and over (female)	0.241	0.437	0.192	0.411
HH size	4.404	1.975	4.549	2.100
Ln PCE	11.165	0.712	11.550	0.848
Ln Asset	15.200	1.659	15.825	2.060
Fridge	0.027	0.162	0.167	0.373
Health Card	0.082	0.275	0.123	0.328
Urban	0.348	0.477	0.512	0.500
Java	0.754	0.430	0.497	0.500
Housing characteristics				
Owner	0.865	0.342	0.766	0.423
Ceramic floor	0.038	0.191	0.132	0.338
Tiles floor	0.217	0.412	0.234	0.423
Dirt Floor	0.304	0.460	0.085	0.278
Bamboo wall	0.236	0.425	0.079	0.270
Brick wall	0.518	0.500	0.625	0.484
Piped water	0.156	0.363	0.300	0.458
Community Remoteness				
Nearest bus stop in the village	0.195	0.396	0.228	0.420
District capital in the village	0.012	0.108	0.027	0.161
Village Prices				
Rice price (per kg)	1156.974	143.198	1214.136	195.330
Chicken price (per kg)	4424.294	844.967	4657.458	1106.642
N	2729		4449	

Prices are in Indonesian rupiahs

Estimation Strategy

In the situation where randomized experiment is absent, more complex and careful methods are needed. An appropriate method is needed in assessing program's performance against a counterfactual situation (Ravallion 2009). In the observational studies setting, program evaluation should consider the issue of non-random selection which might not be found in the experimental studies. In the non-experimental setting, the appropriate methodology of impact evaluation depends on three factors: the type of information available, the underlying model and the parameter of interest (Blundell and Dias 2000).

This study employs the matching method. It is conducted by modeling probability of participation, estimating the propensity score of each individual and then matching individual with similar propensity score. Matching method works through constructing a comparison group of individuals with observable characteristics similar to those of program participants (Rubin and Thomas 1996, Rosenbaum 2002). The rich information contained in the IFLS supports this study to mimic experimental setting through propensity score matching (PSM) estimators. With sufficient data, PSM provides useful econometric tool (Smith and Todd, 2005). Moreover, employing panel data allows this study to combine PSM and difference in difference method (DID). Hence, PSM and DiD are used to examine the average exposure effect on the recipient unit (Johar 2009). Following Johar (2009), the exposure in this study is whether a household is a recipient of the 'Rice for the Poor' program or not.

In choosing the covariates of matching estimators, there is no algorithm technique that automatically selects sets of variables X that satisfies the conditions. However, the covariates should include the key factors affecting program participation and outcomes. Therefore, clear understanding on the institution which governs the program is important to avoid bias estimates of matching estimators. In the implementation, a set of covariates which captures BKKBN welfare criteria and geographical aspects which affect program placement enter in the program participation model. In conducting the average treatment effect, this study employs Kernel method, following Gilligan and Hoddinott (2007), Abebaw et al. (2010) and Kadiyala et al. (2011). Further, bootstrapping of standard errors procedures may not be appropriate for other matching method such as nearest neighbor matching due to non-smoothness of the method (Abadie and Imbens 2006). The standard errors of the average treatment effects are given by bootstrapping with 150 replications.

Results and Discussion

Implementation of the 'Rice for the Poor' programs

Table 3 presents the 'Rice for the Poor' program distribution based on IFLS from 1998 to 2000. The program was launched in April 1998, but the timing of program disbursement varied across community due to different local capacity. Table 3 shows that the program coverage was lower in 1998 compared to the next years. Based on IFLS sample, there were only 78.46 per cent of communities received the 'Rice for the Poor' and the program was distributed more in rural communities in 1998. The program coverage expanded in 1999 in which 95 per cent of the IFLS communities were exposed to the 'Rice for the Poor' program. Interestingly, urban communities were exposed more to the program in the expansion period (1999 and 2000) though the difference is not much. Higher urban coverage might be associated with some findings that urban households suffered more due to the crisis than the rural counterpart (Suryahadi and Sumarto 2003).

Table 3

Distribution of the 'Rice for the Poor' program across Communities based on IFLS Sample

	Rural	Urban	Total
Community with 'Rice for the Poor' program (%)			
1998	80.92	76.67	78.46
1999	93.89	95.00	94.53
2000	85.50	89.44	87.78
Proportion of Recipient Households (%)			
1998	41.07	22.84	30.15
1999	41.78	25.49	32.01
2000	40.06	23.81	29.83

Even though the 'Rice for the Poor' program covered slightly more urban communities, recipient households were found to be more in rural areas (Table 3). The percentage of rural households received the program was almost double to the urban households. In addition, the program beneficiaries also increased in the second year of program implementation. This figure might associate to the expansion of the program particularly when BKKBN relaxed the eligibility criteria of program beneficiaries to pre-prosperous and prosperous I households. The number of beneficiaries then decreased in 2000 where most of households have been able to recover from the economic crisis.

Table 4 reports the targeting performance of 'Rice for the Poor' program. The effectiveness of targeting of the program is assessed by looking at the income distribution patterns and regional dimension of program participants. It indicates failure of 'Rice for the Poor' program in meeting the targeting accuracy though the number of households receiving the program decreases as the household per capita expenditure rises. Program distribution patterns across income and Java-outside Java residency. Almost 30 per cent of 'Rice for the Poor' program beneficiary households are among the poorest 20 per cent and 55 per cent among the poorest 40 per cent of all households in the income distribution. The targeting performance was slightly better in outside Java where almost 60 per cent of the program beneficiaries are among the poorest 40 per cent of households in the income distribution. It is shown that a number of households in the highest income quintile also enjoyed the program though it was already known that the program was intended for the poor. The program leakage is also more evident in Java where almost ten per cent of the richest 20 per cent of all household enjoyed the program. For the bottom quintile, almost 60 per cent households received the program and it is shown that the percentage of households receiving the program falls as households' per capita expenditure rises. Almost 20 per cent from the highest income quintile households are also part of the program. This result confirms previous study by Hastuti (2008) using SUSENAS data which finds that more than 10 per cent of the highest income quintile households also became beneficiaries of the 'Rice for the Poor' program. This finding is also in line with existing literatures on SSN programs where even rich households were benefiting from anti-poverty program (Sumarto et al. 2002, Cameron 2009). Improving targeting is indispensable for the Indonesian government since better-targeted program might give greater benefit for the poor.

Table 4

Distribution of ‘Rice for the Poor’ program Beneficiary Households by Income and Region

Income quantile	Percentage of households		
	Java	Outside Java	All
1 st (lowest)	28.58	32.59	29.56
2nd	25.33	26.91	25.71
3rd	19.99	21.52	20.37
4th	16.55	12.56	15.57
5th (highest)	9.56	6.43	8.79
Total	100	100	100

Matching Results

This section describes the results from propensity score matching. As previously mentioned, matching method is used to estimate participation and select comparison group for each recipient household based on propensity score. Beside propensity score, balancing property test is also conducted. In this case, balancing property test ended up with eight blocks of propensity score. The figure shows overlapping areas of common support. The overlap regions of common support are encouraging for propensity score matching. Considering ‘Rice for the Poor’ program is a targeted program, less significant area of overlap is common since the program selection is based on certain criteria. The mean propensity score of control and recipient groups are 0.26 and 0.59 respectively. This means that conditional on covariates, the control group has less probability to receive the program. The test of equality of mean value of recipient and control group could not reject the equality of all covariates. PSM does not yield identical means for all covariates unlike the case of covariate matching (Johar, 2009). This result is not surprising since ‘Rice for the Poor’ program is a targeted program.

Covariates involved in program participation are based on BKKBN eligibility criteria and geographical characteristics (Johar 2009, Camerons 2009). The program selection is estimated using Probit model. Based on the sample, about 38 per cent of households are recipients of ‘Rice for the Poor’ program. There are big differences between program recipient and non recipient. The results from program participation are presented in Table 5. It is revealed that urban and household farm dummy has negative and significant impact on program participation. This finding confirms the descriptive statistics where the higher proportions of beneficiaries are rural households. Household income category also has a significant effect on program participation. The higher the income the less likely the household participates in the program. Low housing quality as indicated by dirt-flooring type has a positive and significant effect on program participation. The regional factors as shown by provincial dummy has significant effect on program participation and provinces in Java are more likely to receive the program. Households in Lampung and West Nusa Tenggara were more likely to become program recipients. Community characteristics as measured by remoteness from public transportation (bus station) and district capital, average per capita expenditure and rice price indicate a significant impact. Program tends to be placed in a relatively remote area and poorer community. The community with higher rice price also tends to receive the ‘Rice for the Poor’ program.

Table 5 Results for the Matching Estimator

	Coefficient	Std. Error
Household Head's Characteristics		
Age of household head (in years)	-0.0055**	0.0027
Education (in years)	-0.0369**	0.0054
Work (dummy, working=1)	-0.0263	0.0681
Gender (dummy, male=1)	-0.0632	0.0774
Household characteristics		
Under 6 years	0.0132	0.0367
6 - 14 years	0.0384	0.0246
15 - 59 years (male)	0.0543***	0.0217
15 - 59 years (female)	0.0275	0.0225
60 years and over (male)	0.0657	0.0820
60 years and over (female)	0.1162*	0.0587
Income category	-0.2355***	0.0378
Health Card	0.3466***	0.0605
Urban (dummy)	-0.1199*	0.0651
Java	0.3848***	0.1240
Housing characteristics		
Ceramic floor	-0.3584***	0.0724
Dirt Floor	0.2610***	0.0808
Bamboo wall	0.0657	0.0878
Community Remoteness and Village Economy		
Nearest bus stop in the village	-0.1259**	0.0538
District capital in the village	-0.1966	0.1835
Rice price (per kg)	0.0006***	0.0001
Chicken price (per kg)	0.0000	0.0000
Community Average Per Capita	-0.3718***	0.0837
Provincial Dummy		
North Sumatra	-0.9669***	0.1576
West Sumatra	-0.7845***	0.1538
Lampung	1.1732***	0.1218
West Java	0.3862***	0.1076
Central Java	1.0718***	0.1136
Yogyakarta	0.7227***	0.1208
East Java	0.6555***	0.1128
Bali	-0.3853***	0.1464
West Nusa Tenggara	0.7404***	0.1120
N	7178	
Pseudo R-squared	0.2594	

Note: Standard errors are in parentheses.

* Denotes statistically significance at 10% level.

** Denotes statistically significance at 5% level.

*** Denotes statistically significance at 1% level.

Impact on Food and Non Food Expenditures

In general, the evaluation conducted in this study investigates the impacts of ‘Rice for the Poor’ program. The outcomes are food and non food expenditure. The food expenditure is broken down into rice, staple, dairy products, meat and fish and adult goods expenditure. Non food expenditure is focused on education and health expenditure. In fact, the program enables household to have extra resource which allows household to allocate this extra resource into ‘human capital investment’ such as better nutrient food, education and health expenditure. Matching estimators and difference in difference are applied to examine the program effects.

The average treatment effects are evaluated based on IFLS 2000 data only which captures post-exposure period only as well as panel data which measure the change of consumption before and after the program. The results are presented in Table 6. The second column presents the average treatment effect of ‘Rice for the Poor’ program on household food consumption of post-exposure program while the third column reports program impact on change in household food consumption. The results show that the program has no impact on both ‘total’ food and non food consumption and consumption change, but it indeed helps the program recipients in smoothing within food consumption, particularly for them to afford meat, fish and dairy products.

In a more detailed analysis, ‘Rice for the Poor’ program has a positive and large effect on rice and staple food expenditure based on post-exposure data. This means that in the post exposure period, the program does help the recipients to cover their basic food need though this is an evidence of a fly-paper effect of the program³. Extra resource from ‘Rice for the Poor’ program is not a perfect substitute for rice and staple expenditures; rather it acts as a complement. Based on post exposure data, it is also revealed that ‘Rice for the Poor’ program has positive and substantial effect on meat and fish expenditure. Furthermore, the program also has a positive influence on medical expenditure though overall impact on non-food expenditure is negative. The impact of ‘Rice for the Poor’ program is even larger than the health card impact. Johar (2009) revealed that health card program had very limited impact on the consumption of primary health care. There is a possible explanation for the negative impact of food security on non-food expenditure. Recipient of ‘Rice for the Poor’ program had to increase their food expenditure to meet their basic need and put aside non-food expenditure.

However, the post exposure data shows that there is also unintended effect. The extra resource as a result of the ‘Rice for the Poor’ program is also transferred into adult goods consumption and the effect is substantial and even larger than meat and fish expenditure. It has been a long debate that the government support has led to aid-fungibility in Indonesia. The Indonesian Consumer Foundation reported that there was a misuse of direct cash aid from government. Instead of transferring into more ‘human capital’ related expenditure, more than 50 per cent of the direct cash aid was spent for smoking (Kompas, 2009). In this case, the aid fungibility is evident.

³ Borrowing from Arthur Okun’s term, it is found that the government program sticks where it hits (Hines and Thaler 1995).

Table 6

Average Treatment Effect on Food and Non Food Consumption

	Post-exposure	Consumption change
Total Food Expenditures	-0.010 (0.027)	0.037 (0.026)
Rice	0.367** (0.141)	0.036 (0.168)
Staple	0.138* (0.083)	-0.037 (0.112)
Dairy Product	-0.004 (0.167)	0.383** (0.195)
Meat	0.308** (0.120)	0.244* (0.142)
Fish	0.454** (0.159)	0.344* (0.188)
Adult Goods	0.466** (0.178)	0.262 (0.193)
Non Food Expenditure	-0.087** (0.029)	0.027 (0.037)
Medical	0.274** (0.142)	0.387** (0.187)
Education	-0.139 (0.195)	0.008 (0.188)

Note: Standard errors are in parentheses.

* Denotes statistically significance at 10% level.

** Denotes statistically significance at 5% level.

From panel data DID and PSM estimation shows that food security has no impact on food and non food expenditure. In particular, the ‘Rice for the Poor’ program also has no impact on education expenditure. Notwithstanding, it is consistently revealed that the program has a positive and substantial effect on meat and fish and medical expenditure. Based on panel data, there is a significant effect of ‘Rice for the Poor’ program on dairy product expenditure and the impact is slightly larger than the impact on meat and fish expenditure. This means that the program does support the recipients and contribute to the main part of the income of the poor which enables the households to shift their consumption to more expensive nutrient sources. Accordingly, the program has enabled the program beneficiaries to invest in improving human capital.

Conclusion

The Indonesian economic crisis has hit the poor households and forced them to smooth the consumption. ‘Rice for the Poor’ program has provided access for poor households to purchase rice with highly subsidized price. The matching estimators show that the program had reached its target. Households characterized by low quality housing, who are less educated, residing in rural and Java areas, are most likely to participate in ‘Rice for the Poor’ program. Notwithstanding, the program was still subjected to many loopholes, particularly related with targeting since some households in a relatively higher income quintile also

received the benefits of the program. Geographical bias is also evident in the program implementation.

Using propensity score matching, this study reveals that 'Rice for the Poor' program has positive impact on selected food and non food expenditures. In particular, it is found that the program has enabled the program beneficiaries to increase expenditures on better nutrient food such as meat, fish and dairy products. The program also has positive impact on health expenditures. However, aid-fungibility is also evident since the extra resource resulted from the program also transferred to adult goods expenditure. The impact of 'Rice for the Poor' program on adult goods expenditure is even more substantial than meat and fish and dairy products expenditure.

To sum up, 'Rice for the Poor' program has supported the program participants to smooth their consumption in the period of economic crisis. It helped them invest in nutritious food items. In order to reshaping the program in the future, a certain condition in which the program are given to poor households in exchange for participating in nutrition extension to clearly understand the return of investment in rich-nutrient food is an example to create a desirable program effect.

References

- Abadie, A., and Imbens, G., 2006. On the Failure of the Bootstrap for Matching Estimators. Mimeo, University of California, Berkeley.
- Abebaw, D., Fentie, Y., and Kassa, B., 2010. The Impact of a Food Security Program on Household Food Consumption in Northwestern Ethiopia: a matching estimator approach, *Food Policy*, 35: 286-293.
- Asian Development Bank, 2007. Key Indicators 2007: Indonesia. Available at: http://www.adb.org/Documents/Books/Key_Indicators/2007/pdf/IND.pdf [Accessed March 12, 2008].
- Banerjee, A. V., and Duflo, E., 2011. *Poor Economics: A Radical Thinking of the Way to Fight Global Poverty*, PublicAffairs, New York.
- Block, S. A., Kiess, L., Webb, P., Kosen, S., Moench-Pfanner, R., Bloem, M. W., Timmer, P. C., 2004. Macro Shocks and Micro Outcomes: child nutrition during Indonesia's crisis, *Economics and Human Biology*, 2(1): 21-44.
- Blundell, R., and Dias, M. C., 2000. Evaluation Methods for Non Experimental Data, *Fiscal Studies*, 21(4): 427-468.
- Cameron, L., 2009. Can a Public Scholarship Program Successfully Reduce School Drop-Outs in a Time of Economic Crisis? Evidence from Indonesia, *Economics of Education Review*, 28: 308-317.
- Giles, J., and Satriawan, E., 2010. Protecting Child Nutritional Status in the Aftermath of a Financial Crisis, The World Bank Policy Research Working Paper No. 5471. The World Bank, Washington, D. C.
- Gilligan, D. O., and Hoddinott, J., 2006. Is There Persistence in the Impact of Emergency Food Aid? Evidence on Consumption, Food Security, and Assets in Rural Ethiopia, FCND Discussion Paper No. 209. International Food Policy Research Institute, Washington.
- Hastuti, 2008. The Effectiveness of the Raskin Program, Social Monitoring and Early Response Unit (SMERU), Research Report, Available at http://www.smeru.or.id/report/research/raskin2007/raskin2007_eng.pdf [Accessed March 23, 2008].
- Hines, J. R., and Thaleer, R. H., 1995. Anomalies: The Fly-paper Effect, *Journal of Economic Perspectives*, 9(4): 217-226.
- Johar, M., 2009. The Impact of the Indonesian Health Card program: a matching estimator approach, *Journal of Health Economics*, 28: 35-53.
- Kadiyala, S., Rogers, B., Quisumbing, A., and Webb, P., 2011. The Effect of Prime Age Adult Mortality on Household Composition and Consumption in Rural Ethiopia, Food Policy, [doi:10.1016/j.foodpol.2011.06.003](https://doi.org/10.1016/j.foodpol.2011.06.003)
- Khandker, S. R., Koolwal, G. B., and Samad, H. A., 2009. *Handbook of Impact Evaluation: a quantitative methods and practices*. The World Bank, Washington D. C.
- Kompas, 2009. *Uang BLT Habis buat Merokok* (Cash Transfer is Consumed Up for Smoking), Available at <http://bisniskeuangan.kompas.com/read/2009/02/26/19191949/Uang.BLT.Habis.buat.Merokok> [Accessed April 25, 2010].
- Olken, B. A., Nabiu, M., Toyamah, N., and Perwira, D., 2001. Sharing Wealth: how villages decide to distribute OPK Rice, SMERU Working Paper. SMERU Research Institute, Jakarta.
- Olken, B. A., 2001. Corruption and the Costs of Redistribution: micro evidence from Indonesia, *Journal of Public Economics*, 90: 853-870.

- Ravallion, M., 2009. Evaluating Anti-Poverty Programs. In *Handbook of Development Economics* Volume 4, ed. T. Paul Schultz and John Strauss. North-Holland, Amsterdam.
- Rosenbaum, P. R., 2002. *Observational Studies*. Springer-Verlag, New York and Berlin.
- Rubin, D. B., and Thomas, N., 1996. Matching using estimated propensity scores: relating theory to practice, *Biometrics*, 52: 249–264.
- Smith, J. A., and Todd, P. E., 2005. Does Matching Overcome LaLonde's Critique of Non Experimental Estimators?, *Journal of Econometrics*, 125: 305-353.
- Solomon, J., 1998. Poor Indonesians are facing hunger as crisis mounts, *Asian Wall Street Journal*, July 10.
- Strauss, J., Beegle, K., Dwiyanto, A., Herawati, Y., Pattinasarany, D., Satriawan, E., Sikoki, E., Sukamdi, and Witoelar, F., 2004. *Indonesian Living Standard: before and after the financial crisis*, RAND Corporation, Santa Monica.
- Sumarto, S., Suryahadi, A., and Widyanti, W., 2002. Designs and Implementation of Indonesian Social Safety Net Programs, *The Developing Economies*, XL(1): 3-31.
- Sumarto, S., 2006. Social Safety Net: Indonesia, Policy Brief 6, Overseas Development Institute London. Available at: <http://www.odi.org.uk/resources/download/1071.pdf> [Accessed March 12, 2008].
- Suryahadi, A., and Sumarto, S., 2003. Evolution of Poverty during the Crisis in Indonesia. *Asian Economic Journal*, 17(3): 221-241
- Tabor, S. R., and Sawit, M. H., 2001. Social Protection via Rice: the OPK Rice subsidy program in Indonesia, *The Developing Economies*, XXXIX(3): 267-294.
- Tabor, S. R., and Sawit, M. H., 2005. RASKIN: A Macro-Program Assessment, Available at http://www.bulog.co.id/old_website/data/doc/20070321RASKIN_Executive_Summary_for_Distribution.pdf. [Accessed February 27, 2009].
- Taylor, R. J., Chatters, L. M., Hardison, C. B., and Riley, A., 2001. Informal Social Support Networks and Subjective Well-being among African Americans, *Journal of Black Psychology*, 27(4): 439-463.
- The World Bank, 1993. *The East Asian Miracle: economic growth and public policy*. World Bank/Oxford University Press, Oxford.
- Thoenes, S., 1998. Indonesia: the offshore borrowing trap, *Financial Times*, January 12.