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Food security of households with access to subsidized rice in west Timor where maize is the traditional staple

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Abstract The impacts of the Indonesian government subsidized rice program, RASKIN, were assessed in two rural villages in West Timor, eastern Indonesia, where traditionally the staple food is maize. The RASKIN program aims to make subsidized rice available to poor households, the allocation estimated to be a third of household requirements. All of the households interviewed bought subsidized rice when it was first available in this area in 2005, however about 30 % of households did not buy subsidized rice again, mainly because of a preference for maize over rice. Of the households that continued to buy subsidized rice, about half did not have enough cash to buy subsidized rice frequently, suggesting a targeting error of failure to benefit poor households. Households that bought subsidized rice consumed the rice with instant noodles and fewer nuts and beans (traditionally grown and eaten with maize), leading to a potentially lower nutrition intake. The practices of households selling their own produce, such as maize, beans and chickens, to purchase subsidized rice may constitute perverse outcomes, including future food shortages.

Keywords Subsidized rice · Food security · Eastern Indonesia

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Introduction

In response to the 1997 Asian financial crisis, the Government of Indonesia launched social safety net programs to assist both the traditionally poor and those experiencing poverty as a result of the crisis (Suharjo et al. 2009). These social safety net programs (*JPS, jaring pengaman sosial*) were launched in 1998 and aimed to mitigate a range of social impacts of the crisis, including hunger, malnutrition, poverty, unemployment, children dropping out of school and reduced accessing of health care. Hunger was addressed directly by making subsidized rice available to poor families through the Special Market Operation (OPK) program. This program was modified, and renamed to emphasize the targeting of the poor, to the RASKIN (an abbreviation of *beras miskin*, rice for the poor) program in 1999. Employment creation was the focus of labour intensive programs in government departments and block grants to villages for public works. Education was addressed by the provision of scholarships for poor families and block grants to selected schools. Health was addressed through free health care for poor families and grants for public health programs.

Eligibility for the subsidized rice, health care and, in part, the scholarships was based on the classifications of the National Family Planning Coordinating Agency (BKKBN). Households were eligible if they were classified[1] as "pre-prosperous" (Pra-S) and "just prosperous" (KS1) and government employees (who receive allocations of rice as part of their employment) were excluded from the program. This classification was not originally intended as a basis for targeting the safety net program and there is little correlation

[1] Definitions of the classifications "pre prosperous" (Pra-S) and "just-prosperous" (KS1) include frequency of eating, ability to follow religion, access to medical care and basic clothing needs, and are given in Tabor & Sawitt (2001).

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between this classification and consumption based poverty measures (Suryahadi et al 1999). The rice subsidy program replaced a broader set of price subsidies by the Indonesian government including subsidies on fuel and cooking oil, and was restricted only to the purchase of subsidized rice by poor households (Daryanto 1999). The program administration broadened the eligibility by allowing local leaders to include additional households not captured by the BKKBN criteria and based on local knowledge (Tabor and Sawit 2001). A comparison of coverage and targeting of the components of the social safety net programs (JPS) showed that the subsidized rice program had relatively high coverage (reaching 40 % of target households) and moderate targeting with 25 % of households in the wealthiest quintile also benefitting (Sumarto et al. 2002).

Tabor and Sawit (2001) suggested that the Indonesian subsidized rice program can be considered a major household food security component of an on-going national social protection system, despite originating as part of an emergency response to a severe El Nino drought and an economic crisis. This paper investigates the impacts of the RASKIN program on aspects of food security in eastern Indonesia where rice is not the traditional staple food. Food security may be defined as a situation where there is enough food for an active, healthy life, including ready availability of nutritionally adequate and safe food that can be acquired in socially acceptable ways (Anderson 1990), and comprises the four pillars: availability, access, utilization, asset creation (Renzaho & Mellor 2010).

Rice was targeted for subsidy by the Indonesian government because rice is a major part of the diet of the majority of the Indonesian population and, for lower income groups in Indonesia generally, rice constitutes about 40 % of total expenditure on food (Tabor and Sawit (2001) quoting national SUSENAS data for 1996). However, rice is not traditionally a staple food in much of eastern Indonesia. For example, maize and cassava are traditional staple foods in East Nusa Tenggara Timur (NTT) province, and sweet potato and yams are traditional staple foods in Papua province. The eastern provinces of Indonesia comprise about 13 % of the total Indonesian population (Yudhistira 2010).

NTT province is one of the poorest provinces in Indonesia, and official data show that 70 % of the population depends on the agricultural sector (BPS 2009, from National Labor Force Survey). In NTT a short volatile growing season results in low food security, limited household incomes and a predictable annual hunger season (*musim paceklik*). More than half the households in some parts of NTT suffer from energy and protein deficiency (Riyadi & Ryadi 2008) and reports of food shortages have increased in recent years (Muslimatun & Fanggidae 2009). A study in west Timor (CWS-CARE-HKI 2008) showed high prevalence of household food insecurity (91 %), acute malnutrition in children (13 %) and anemia in non-pregnant women (36 %).

The West Timorese have a history of adjustment to change driven by external influences, including adopting maize as a staple food after introduction by the Dutch (McWilliam 1999). During the Green Revolution of the 1960s, the Indonesian government promoted rice consumption in eastern Indonesia, which has been interpreted as a symbol of prosperity. In more recent times the Indonesian government has promoted a return to the traditional staples, which can be produced in these regions. There has been a trend towards greater consumption of rice in NTT in recent years, particularly in urban populations: on average 60 % of per capita expenditure is on food and most of this is for buying rice (Muslimatun & Fanggidae 2009). In NTT, rice production is predominantly in irrigated coastal areas, and the trend towards a rice-based diet has created a dependence on rice imported by the province (Muslimatun & Fanggidae 2009). Rural households in NTT still depend on largely subsistence agriculture, and maize remains the most common staple food. Current government policy promotes a return to local staples and encouragement to reduce the national dependence on rice.

Generally, food constitutes a larger proportion of household expenditure for poor households than for higher income households in Indonesia (Arifin 2004). Consistent with this trend, in NTT average total household expenditure is lower but the proportion of household expenditure on food is higher, than for Indonesia as a whole (Fig. 1). This relatively high proportion of household expenditure on food is mirrored in relatively high expenditure on cereals (Fig. 1). Although rice is not a traditional staple in NTT, rice constituted about 80 % of household expenditure on cereals in NTT in 2010 (BPS 2010) and so there is potential for buying subsidized rice to benefit the rural poor of NTT.

The RASKIN (and predecessor OPK) program has been reviewed many times, focusing on coverage, targeting, implementation and cost-effectiveness (e.g. Suryahadi et al. 1999, Tabor & Sawit 2001, Sumarto and Suryahadi 2001, Hastuti and Maxwell 2003, Mawardi et al. 2008, Suharjo et al. 2009, Sirojuddin et al. 2010, Arif et al. 2012). Suharjo et al. (2009) showed that disbursement of RASKIN is across all income quintiles so there is almost no targeting to the poor. Mawardi et al. (2008) listed criticisms of the program including: poor socialisation and transparency, inaccurate targeting, poor delivery, high program management costs, ineffective monitoring and evaluation, and the lack of an effective complaints mechanism. In a study that included villages in NTT province, Arif et al. (2012) found that the main benefits of RASKIN were increased household consumption and increased certainty of livelihoods, and the main dissatisfaction with RASKIN was the small amounts of subsidized rice received.

Our study investigated the impacts of the RASKIN program in NTT on household food security: availability, access, utilization and asset creation (Renzaho & Mellor 2010). For

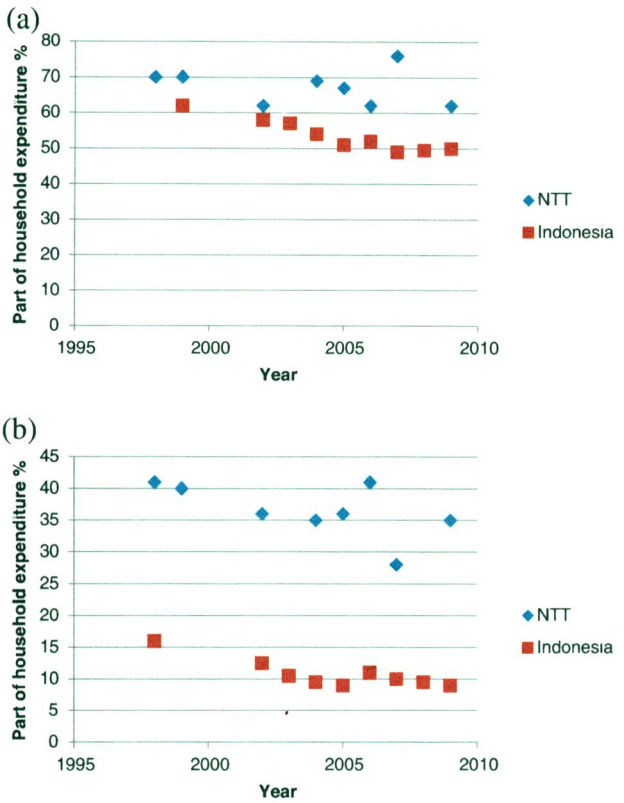

Fig. 1 The proportion of average monthly household expenditure on (**a**) food and (**b**) cereals for the province of NTT and for Indonesia. Data from Dalam Angka reports for NTT and Indonesia for the years indicated in the figure

rural households in NTT, food availability is determined largely by yield from a single harvest of staple foods and the preservation of food stocks in storage until the next harvest, with some borrowing and gifts within the community. Access to food is largely determined by purchasing power, and access to markets and RASKIN. Utilisation of food includes ability to absorb nutrients and cultural acceptance of, or preference for, foods that are available. Asset creation relates to ability to produce food in the long term and to purchase food. For poor households in NTT, the RASKIN program has potential to increase the availability of staple food but may exclude those households with low purchasing power or a strong preference for maize. Addition of rice to diets may be associated with other changes to diet that affect nutritional balance.

Study sites and methods

Study sites

The case study villages were selected under purposive sampling, based on the following criteria: location at least 10 km from the capital city, villages with a minimum of 100 households, and low per capita income based on the SUSENAS national household economic survey. The villages selected were also classified as 'critical' according to the Indonesian government's agro-ecosystem classification, a classification that rates villages based on environmental potential for agricultural production. The study sites were two villages in West Timor: a coastal village, Desa Pesisir (not real name), located approximately 35 km south of the capital city of Kupang and an inland village, Desa Pedalaman (not real name), located approximately 17 km east of the capital city of Kupang (Fig. 2). The cultivable land associated with these villages is not irrigated, and is capable of producing only one crop per year.

We suggest that the case study villages, which are both located in Kupang district, are representative of rural villages in the Province of Nusa Tenggara Timur. Agriculture is the main occupation of people aged over 15 years, agriculture was the occupation of 75 % in Kupang district, from 56–89 % in all districts of NTT, excluding the city of Kupang, and 69 % overall for NTT province (BPS 2009). In both case study villages about 60 % of households were classified in the poverty classes Pra-S or KS1 (defined above), and this was similar for other villages in the district and NTT generally (BPS 2009). Irrigated rice cultivation occupies a small portion of land area: 2 % in Kupang district and 1–8 % in other districts of NTT (BPS 2009).

Water is a major limitation to land productivity in West Timor with an annual dry season of 6 to 8 months. Wet season rain is driven by north-westerly winds and there is variability in both the arrival of reliable rains and the length of the wet season (usually December to March). The topography is dissected by mountains, in places reaching elevations above 2,000 m. Annual rainfall varies with topography from over 1,500 mm in the highlands to less than 800 mm in the coastal areas (Kieft 2001). Soils are derived from marine sediments and lack volcanic material, so soil fertility is low compared with that of nearby volcanic Flores island (Monk et al. 1997).

In 2008, Desa Pesisir village had 250 households and a population of 989, and Desa Pedalaman village had 305 households and a population of 1,198. Agriculture was the basis of livelihoods for the majority of the population in both villages. Almost all families in both villages were dependent on farming for their basic needs, with some members of family groups having off-farm employment, including work as teachers, government officials, nurses, priests and labourers. The main crops were maize, cassava, pumpkin, peanut and various types of beans.

Food production practices, and consequently diets, vary with ethnicity of the households. In both study villages most of the population are Timorese, and Rotinese are also present in the coastal study village. For the Timorese, maize is the main staple food crop and there are local customs that ensure that the local people's first responsibility is to establish their maize crop before growing or tending other crops (pers

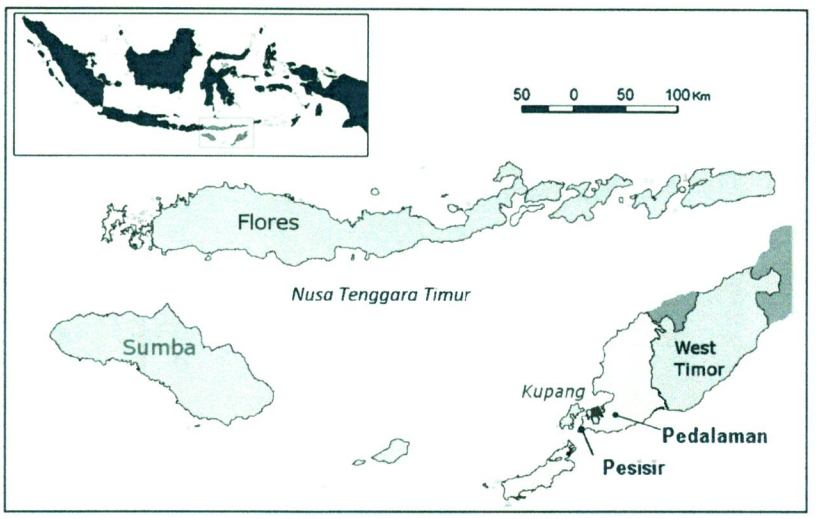

Fig. 2 The eastern Indonesian province of Nusa Tenggara Timur (NTT) showing the locations of the study villages within Kupang district, Kupang city (*black shading*), and East Timor (*dark grey shading*)

comm. H. Ataupah). Maize is traditionally intercropped with vegetables, a system known as *selot*, and a common meal of the Timorese is a vegetable stew, called *jagung bose*, which is a combination of maize, beans and other vegetables. Some farmers (especially Rotinese) cultivate some dry land rice. Rotinese people (present in the coastal study village) consume products from the lontar palm (Fox 1977), and a sweet drink derived from the sap of the palm (*gula air*) or red sugar discs (*gula merah*) can replace a meal during times of food shortage.

Mainland West Timorese people (Meto and Helong) generally do not fish in the open waters or in marine environments far from the coast due to unfamiliarity with, and in some cases fear of, the sea. However some West Timorese do fish for a variety of seafood during periods of low-tide (*makamiting*). In contrast, the Rotinese will traverse the open seas in order to obtain fish and other seafood.

The study villages first had the opportunity to purchase subsidized rice in 2005, at a price of Rp1,000/kg and when market price was about Rp3,000/kg. In 2009 the price of subsidized rice increased to Rp1,600/kg and the market price of non-subsidized rice was Rp6,000–8,000/kg. A three-monthly allocation (30 kg) of subsidized rice was consumed by a household in 8–15 days. By the time the study villages had an opportunity to buy subsidized rice the monthly allocation was 20 kg/month which was assumed to be about a third of the rice consumption of an average poor household[2] (Tabor and Sawit 2001).

[2] SUSENAS survey for NTT province in 2005 showed that rice consumption was about 2 kg per person per week. For NTT with an average of 4.9 people per household, rice consumption would be expected to be about 42 kg/household/month. Kieft & Soekarjo (2007) quote an average rice consumption of 12 kg/person/month which translates into 59 kg/household/month.

Methods

A mixed methods approach was taken, with quantitative and qualitative data collected simultaneously. A positivist approach underpinned structured questions, which provided a measure of the prevalence of particular responses to the RASKIN program within the community. A constructivist approach underpinned open-ended questions, which provided insights into the reasons for these responses.

All the households interviewed had used the RASKIN program at least once. The household interviews investigated the reasons for choosing whether or not to continue purchasing subsidized rice. For those households that utilized the program more than once, there was an investigation of substitution effects (maize partially replaced by rice as a staple food) on diet, farming practices, household economy, and food security.

Data were collected in structured and semi-structured interviews, focus group discussions (FGD) and direct observation (Patton 2005) two to three months after the maize harvest (i.e. during May and June) in 2009 and 2010 as follows:

a. Semi-structured interviews with key informants (head and cultural leaders of village).

b. Semi-structured interviews and direct observation of households. Household interviews were conducted in randomly sampled households. The numbers of households interviewed were, respectively in 2009 and 2010, 21 and 68 in the inland village, and 19 and 57 in the coastal village. As a percentage of all households in each village, these samples were 8 % in 2009 and 23 % in 2010.

c. Focus group discussions and participatory social research with community groups. Focus groups comprised only women and only men at both villages to ensure freedom of comment about management of household resources by women and men. A separate group of young people was consulted at

the coastal village because there were indications that this generation had developed a preference for rice over maize

d Questionnaire of households regarding household food shortages This questionnaire included questions about frequency of eating, missing meals and experiencing hunger for adults and children in the family, producing adequate food, eating balanced meals, and worry about sufficient food and capacity to provide food (Usfar et al (2007)

The information collected in interviews and FGDs was related to demography, food production, food consumption patterns before and after the introduction of the rice subsidy program, coping mechanisms in times of food shortages, and perceptions of rice as a staple food and rice subsidies The interviews conducted in 2010 sought to check conclusions derived from the 2009 data and to gain more information about the economics of selling food stocks to purchase subsidized rice Information from household interviews, FGDs with community groups and key informant interviews were triangulated and, where possible, cross-checked through different lines of questioning Ethics clearance was granted by CDU Human Research Ethics Committee (#H09008)

Data were collected from notes taken by the data collectors at the time of the interviews and focus group discussions and the responses were recorded, and later transcribed and analysed to identify themes relating to the components of food security (availability, access, utilisation and asset creation) and impacts of, and responses to, the RASKIN program Information from transcripts was coded according to thematic content

Results

Availability of food

Food shortage was more commonly experienced in the inland village, Desa Pedalaman, than in the coastal village, Desa Pesisir (Table 1), partly due to lower agricultural productivity on the shallow, rocky soils and drier conditions at the inland site

Key informants identified the period of greatest food shortages as the months of January and February, shortly before the maize harvest when stored household food stocks were usually low The year 2003 was recalled as one of severe food shortages because of crop failure Past crop failures were attributed by farmers to lack of rain (particularly when the start of the rainy season was late) and to pests and diseases Households generally intercropped maize with other crops with the stated purpose of increasing the chances of yields even if one crop failed Other coping strategies for times of food shortage were selling assets, a household member in paid work off-farm, or skipping meals (Table 1) When food was borrowed, it was repaid at the next harvest, and borrowed cash was repaid within 7 to 60 days

Access to RASKIN

All households interviewed had access to RASKIN This was despite only two thirds of the households in the study villages being deemed eligible according to the government classification of household poverty (i e households classified as either "pre-prosperous" or "just prosperous") Under RASKIN, local leaders were given some freedom to determine eligibility In both study villages, the head of the village (*kepala desa*), in consultation with the cultural head of the village (*tokoh masyarakat*) and other prominent community members, decided that all households (except government employees) would be allowed to buy RASKIN The key informants adopted this practice to ensure all of the RASKIN allocation to each village was sold (also observed by Olken et al 2001), and to ensure the continued participation of households in village *gotong royong* (mutual assistance) (also observed by Arif et al 2012)

To supply the extra households, the quota for subsidized rice was reduced from the official 45 kg per three months to 30 kg per three months Distribution of subsidized rice was the responsibility of the head of the subvillage (*kepala dusun*) The process began with the collection of cash by the village coordinator for the purchase of subsidized rice for a three-month allocation Rice was delivered two to four weeks after cash was paid by the villagers When some households chose not to buy their allocation, other households were allowed to purchase additional subsidized rice This practice of making RASKIN available to all households appears to be widespread

Table 1 Percentage of households that had experienced food shortages according to a questionnaire described by Usfar et al (2007) and percentages of households that used various coping mechanisms at times of food shortages

	% households experiencing food shortages	Coping mechanisms				
		Sell assets	Borrow cash	Borrow food	Skip meals	Paid work
Desa Pedalaman	81	100	8	22	45	85
Desa Pesisir	64 5	100	14	19	65	79

because, contrary to the design of the RASKIN program which was 20 kg per month per household for 9 million households, RASKIN rice purchases averaged about 5 kg per month per household for 12 million households in 2004 (Suharjo et al , 2009, from SUSENAS data) This practice was found to be common in discussions with village heads in other districts in west Timor during 2011 (unpublished data)

In Desa Pedalaman, the inland study village, about half (52 %) of the households purchased subsidized rice immediately after the maize harvest and about two thirds (67 %) of households purchased subsidized rice in the season of food shortage before the maize harvest Also, 19 % of households took advantage of the opportunity to buy additional subsidized rice (above their quota) after some eligible households did not purchase all of their allocation In Desa Pesisir, the coastal study village, after the maize harvest, 63 % of the householders interviewed purchased subsidized rice, while only marginally more (68 %) purchased subsidized rice in the season of food shortage before the maize harvest Almost one third of the households interviewed bought additional subsidized rice above their basic quota

Utilisation - Preference regarding staple foods and nutrition of diet

The staple foods, four years after the introduction of RASKIN, were maize, rice, cassava and pumpkin in the inland village, Desa Pedalaman, and maize, distilled palm syrup *(arak)*, and rice in the coastal village, Desa Pesisir (Table 2) In Desa Pedalaman, all households were Timorese and exclusively famers In Desa Pesisir, 75 % were Timorese farmers including several who also engaged in shallow water fishing, and 25 % were Rotinese, engaged in fishing in open water, farming (including growing rice) and making *tuak*.

Since the introduction of RASKIN, rice was added as a new staple food in Desa Pedalaman, and rice consumption increased in Desa Pesisir Previously, villagers consumed mostly locally grown foods, and rice was a minor component of diets in some Timorese households and a staple in the diets of Rotinese households (Wiendiyati et al 2010) However, four years after the introduction of the RASKIN program, non-local rice and instant noodles were bought (Table 3) In both villages there was no perceived change to the types of crops cultivated in the past ten years, the main foods grown being maize, pumpkins and cassava, with minor crops of nuts and vegetables However, the diversity of foods consumed with rice was less than that consumed with maize

About 40 % of the households interviewed sold maize at some time in 2010 to buy subsidized rice Maize prices vary with season with the lowest price soon after harvest (Rp1000–1,500/kg in March-May) and the highest immediately before harvest (Rp2250–2,500/kg in December–February) Selling maize stocks to buy subsidized rice occurred mainly in December to February, however some households sold maize to buy rice at other times of year The amount of maize sold varied between 25 and 100 kg per household in a year Households never sold all their maize stocks, retaining at least some stock for seed to plant the next crop

Assets for purchasing RASKIN

Subsidized rice was bought with salaries from laboring work, selling chickens, eggs and garden produce, and from loans For up to 25 years before 2006, some farmers from Desa Pedalaman worked in rice fields in a neighbouring village, receiving a share of the rice harvest as payment for this work Since 2006, this no longer occurred because the removal of fuel subsidies and the consequent sudden increase in fuel prices made travel to these rice fields uneconomical

> "I don't have a fixed salary I can work in the informal sector in the city but the transport cost is expensive now and the wage that I will collect is not enough to pay the accommodation (transport and eating) so I decided it's better to do something in the village "

All of the households interviewed had purchased RASKIN rice at least once, however about a third stopped buying RASKIN after buying it once, about a third bought it

Table 2 Main foods consumed in 2009

Village	Ethnicity	Breakfast	Lunch	Dinner
Desa Pedalaman	Timorese	Rice porridge (for children) coffee sweet potato, banana, cassava maize	*Jagung bose* (i.e maize and vegetables) pumpkin pumpkin leaf cassava	*Jagung bose* or rice, instant noodles vegetables boiled banana
Desa Pesisir	Timorese	Coffee sweet potato banana, maize, rice porridge	*Jagung bose* fish (in fishing families) pumpkin cassava	*Jagung bose* or rice
Desa Pesisir	Rotinese	Unfermented *tuak (arak)* rice porridge some maize, banana, sweet potato, cassava	Rice, fish, vegetables (merunggai pumpkin cassava pawpaw flowers)	Unfermented *tuak* papaya

Table 3 Major foods and their source for villagers in 2009

	Own harvest	Own harvest and bought	Bought
Desa Pedalaman	Maize, nuts, cassava, pumpkin, yams[a]	Vegetables	Rice, side dishes (*lauk-pauk*[b]), instant noodles, betel nut, sugar, coffee, tea
Desa Pesisir	Maize, nuts, yams	Rice, vegetables, side dishes	Instant noodles, coffee, sugar

[a] yams were only consumed during the "hungry" season

[b] *lauk pauk* is a side dish. If the staple food is rice, the main ingredients of *lauk pauk* are instant noodles, vegetables or, in coastal areas, fish. If the staple food is maize, the main ingredients of *lauk pauk* are chili, vegetables and sometimes dried fish

sometimes and about a third bought it at every opportunity (Table 4). Most households paid for subsidized rice by selling produce (Table 4), selling tamarinds gathered in nearby forests, and selling farm produce, such as maize, eggs, chicken, and, at Desa Pesisir, peanuts and palm sugar. Of the households that chose not to buy subsidized rice after buying it once, most said they did not want rice, whilst of the households that bought RASKIN occasionally, lack of cash was the most common reason for not buying RASKIN (Table 5).

> "I would like to buy rice but I don't have cash available to pay."
> "I don't have any cash to pay for RASKIN because my farming produce is especially for family food stock. I can sell a little, one or two times only, not more, and the cash not more than Rp5000 – enough to buy *sirih pinang*, sometimes to buy fried oil, instant noodle or dried fish."
> "I have livestock (cow, pig, goat) for reserve cash but it's not always ready and it is primarily allocated for other important needs like schooling fees, home improvement, reserved for dinner party. While small livestock (chicken, eggs) are not always ready to get cash, sometimes I want to sell chicken to get cash but it can't be done if it still on going to produce eggs, so I sell eggs only and get not more than Rp7000."

Key informants confirmed that the main problems regarding RASKIN were the difficulty in raising cash, and a preference for maize over rice. They also mentioned the danger of depleting food stocks when these were sold to buy rice. Rice was considered to be an indication of social status and was used for special celebrations and guests.

> "Although I prefer maize, sometimes I would like to buy RASKIN because I will panic if I have guests while there is no rice stock at home. It's a custom here that rice is served to guests."
> "I need rice to hold dinner parties like weddings, funeral, or anniversary. Based on it, rice becomes a gift brought to fulfill the relative's invitation."
> "I feel increased status if my family consumes rice."

The majority of householders were Timorese farmers, many of whom claimed that maize sustained them whilst they worked in the fields but rice did not. For this reason, rice was mainly fed to children, largely as rice porridge (*bubur nasi*) for breakfast. Young people appeared to be developing a preference for rice over maize, as stated in the focus group discussion of young people at Desa Pesisir. The problems with RASKIN raised in FGD were: poor quality rice (37.5 %), no available cash to purchase subsidized rice (27.5 %), a reduction in the household store of maize in order to buy subsidized rice (20 %), and being unaccustomed to eating rice (2.5 %).

Farmer perceptions of RASKIN

No participants named RASKIN as their preferred form of aid. Other government assistance programs in the two villages were (1) *Bantuan Langsung Tunai* (BLT) or Direct Cash

Table 4 The percentage of households interviewed that purchased RASKIN at different frequencies, using cash from the sources listed, and had sold corn to purchase RASKIN

	Past purchase of RASKIN			Main source of cash to buy RASKIN				Households sold corn to purchase RASKIN
	Always	Some times	Once only	Sold farm produce	Salary	Paid off- farm work	Loan	
Desa Pedalaman	44	27	29	60	10	9	12	46
Desa Pesisir	31	37	32	61	9	30	0	33

All households interviewed had bought RASKIN at least once

Table 5 Of the households that bought RASKIN either once only or sometimes, the percentage of households that stated that lack of cash or not wanting rice as their reason for choosing not to buy RASKIN

Reason for not buying RASKIN	Households that bought RASKIN sometimes		Households that bought RASKIN once	
	Desa Pedalaman	Desa Pesisir	Desa Pedalaman	Desa Pesisir
Lack of cash	94	36	0	0
Did not want rice	0	0	53	79
Other	6	64	47	21

Assistance, through which every eligible family receives Rp100,000/month in 3-monthly payments, and (ii) *Program Pemberdayaan Masyarakat* or Community Empowerment Program. The latter program was implemented especially to support communities in livestock (pig and cattle) breeding through purchase of young stock. Every recipient farmer group (5 families) receives Rp 25 million and uses these funds to buy breeding stock, which is communally owned. As well as supplementing breeding stock, this program also supports the cattle-fattening program.

There was a preference amongst participants for the Community Empowerment Program over the BLT and RASKIN programs. With respect to BLT, the women expressed dissatisfaction with the direct cash assistance program because the cash was received by the men and so could easily be used for gambling and not be of direct benefit of the family. The Timorese fish gleaners (*makamiting*) wished to receive assistance to improve their equipment for collecting fish and crustaceans at low tide. Generally, although rice subsidies can be helpful, the households preferred to receive assistance in forms that increased their self-sufficiency.

Discussion

RASKIN was made available to all households (except government employees) in the study villages, creating potential for a targeting error of excessive coverage (E type error, Cornia and Stewart, 1993). We suggest that targeting the poor is fraught with difficulty, especially for households with largely subsistence livelihoods. First, assessing poverty is difficult, a challenge for the Indonesian government program of poverty mainstreaming (AKP, Analisis Kemiskinan Partisipatif) that aims to establish criteria to assess poverty through community workshops. Second, excluding households from the RASKIN program would undermine the system of cooperative actions and shared benefits that are central to the social capital of these rural villages. The management of shared resources has been traditionally achieved through working together (e.g. *gotong royong*, mutual assistance). Exclusion from government programs can result in refusal to cooperate in *gotong royong* (Mudita 2014).

Despite this potentially excessive coverage, about half the eligible households did not purchase the subsidized rice after doing so once, constituting a targeting error of failing to reach the poor (F type error, Cornia and Stewart, 1993). The main reasons for not buying subsidized rice were lack of cash and a preference for not eating rice, respectively, the access and utilisation components of food security (Renzaho & Mellor 2010). Adult respondents explained that they preferred maize because it sustains them longer while working in the fields. Maize has higher dietary fibre content than white rice: approximately seven times higher in cooked sweet corn than in cooked white rice (USDA 2001). Greater dietary fibre consumption is generally associated with increased post-meal satiety and decreased subsequent hunger (Howarth and Saltzman 2001, Slavin & Green 2007). Although some key informants claimed that households were attracted to rice for the higher social status that serving rice implies, there was not a preference for rice in these villages.

Most households sold farm produce to purchase subsidized rice and with this practice there was a danger of household food stocks diminishing (Purwantini et al. 2002). Prices received for the assets sold varied with season while the RASKIN price remained constant. For example, when selling maize locally, the villagers can receive prices ranging from Rp1000/kg soon after harvest, up to Rp2500/kg before the next harvest. RASKIN rice remains at Rp1600/kg throughout the year. Thus, at the time of plenty (soon after harvest), selling 50 kg of maize would enable the purchase of only 31 kg of subsidized rice. Whereas in the season of greatest shortage of food (the 'hungry' season, before harvest), 50 kg of maize could be sold to buy about 78 kg of subsidized rice. Rice and maize have similar energy and nutrient content (USDA, 2001). Although selling maize to buy rice in the 'hungry season' may appear to represent a net increase in staple food, this study showed that rice is consumed quickly (a 3-monthly RASKIN allocation of 30 kg/household is consumed in just 10–14 days). Rice was provided for guests and during special ceremonies and also consumed by the household, especially by the children. Buying RASKIN would reduce the expense of providing rice for these special occasions. Selling maize stocks to buy rice when maize prices are relatively low could result in the depletion of household stocks of staple foods. Devereux (2002)

proposes that sustainable rural development should tackle vulnerability by sustaining assets as well as reducing poverty. In the study villages, the RASKIN program has potential to cause a reduction in assets if the villagers choose to sell assets to buy rice. Thus, their vulnerability to, and risk of, later food insecurity could be increased by the sale of assets to purchase subsidized rice.

Social safety nets in the developing world often focus on staple foods and the nutritional dimension may be neglected (e.g. Central America, Cespedes et al. 2011). Programs providing subsidized staple foods can intentionally increase nutrition by providing fortified flour (e.g. Fiedler et al. 2012). When households spend less on staples, they may spend more on non-grain foods and child nutrition may increase (e.g. Torlesse et al. 2003, Sari et al. 2010). However, subsidized food programs may have unintended negative impacts on food nutrition. A rice subsidy program in India was associated with a decrease in the proportion of nutritious coarse grains (*ragi*) and an increase in the proportion of polished rice in the cereal consumption of the poor (Olsen 1989). A nutritional issue of concern that arose from our West Timor study is that rice was most likely to be eaten with instant noodles, or as rice porridge, whereas, maize would be cooked with pumpkins, peanuts, beans, and vegetables, creating a more nutritious meal. Nuts and beans contain high levels of protein, minerals, vitamin B, complex carbohydrates, and fiber. If rice becomes a greater proportion of the staple diet, there is a risk that there will also be a reduction in the overall nutritional intake.

Changes to diets, and particularly changes to staple foods, in Indonesia are a concern both in terms of achieving national self-sufficiency in food production and in terms of environmental impacts. Rice has become a national food, with increased consumption in eastern Indonesia where staples have traditionally been maize (in West Timor), and cassava and sago (in Papua). An editorial in the Jakarta Post (Editorial Desk 2010) claimed that rice had become a staple in eastern Indonesia "because of our public policy promoting the planting of rice, throughout various programs, subsidies and protection from rice imports". Our study of the impacts of the RASKIN program showed that rice has been added as a staple in West Timor but has not completely replaced maize, and, in most households, maize is preferred to rice.

Current Indonesian government policy promotes a return to traditional staple foods other than rice in order to achieve self-sufficiency in rice by 2014. National policy for food security (KUKP 2010–2014) encourages a return to traditional staples appropriate to local agricultural conditions, and the State Minister for Research and Technology is quoted as saying "we should encourage these people [of eastern Indonesia] to go back to their traditional staple foods"(Anon 2010).

In 2002, the government of NTT formed a Food Security Council (*Dewan Ketahanan Pangan*) that aimed to coordinate a multi-sector response and intervention to address food problems in the province (Muslimatun & Fanggidae 2009). The council's stated policy goals were increasing availability and reserves of food, thus assuring the stability of strategic price commodities for producers and consumers, developing an effective food distribution system, developing dynamic food consumption patterns, empowering communities to overcome food insecurity, increasing the quality of government officials and farmers, and improving the distribution of technology and agricultural extension to remote areas. This policy recognizes that the staple crops of Timor are tolerant of local environmental conditions and that farmers in Timor have developed skills and ability to develop and conserve different varieties of staples crops which can cope with the long dry season and poor soils (Kieft 2001). Since the introduction of the RASKIN program, about half the households in the study villages have added rice as an additional staple food. This partial move away from their traditional staple food is contrary to current government policy objectives (Food Security Council), which encourage traditional consumption patterns and community participation in food diversification using locally grown foods.

Summary

The RASKIN program is a national program aiming to provide subsidized rice to poor households. Its effectiveness is reduced for poor households in West Timor, because cash is often not available to buy rice and, particularly for those of Timorese ethnicity, because rice is less desirable than maize. The purchase of subsidized rice by households in these communities is associated with patterns of consumption and household economics that could constitute reduced food security, due to potential reduction in nutritional intake and reduction of food stocks.

Alternative methods of assistance should be considered to assist Timorese experiencing food shortages. From the responses in this study it appears that these communities would prefer assistance in the form of loans, favouring support for self-sufficiency rather than subsidized rice that does not sustain people engaged in hard physical work.

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