
*Challenges in identifying the poor:
An assessment of household eligibility for Health
Equity Fund after four years of pre-identification in
Oddar Meanchey, Cambodia*

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Abstract

In developing countries, waivers and exemptions of user fees often fail to preserve equitable access to health services. In Cambodia, Health Equity Funds (HEFs) have been successful in addressing the failure of waivers to improve access to government health services for the poor. In this study, household eligibility for HEF in Oddar Meanchey was evaluated, based on data collected from a household survey conducted four years after pre-identification. Three tools were used to assess the level of HEF eligibility for each household: a scoring tool that replicated the one used at pre-identification, an assessment by interviewers and a SES index, constructed through principal components analysis. In Oddar Meanchey, the targeting errors that resulted from all the tested tools were high. It seems that the HEF entitlement status of households as it was granted through pre-identification four years earlier does not reflect the real current poverty situation of households anymore. We outline several reasons for this phenomenon and recommend ways to minimize targeting error in the future. Regular updates of pre-identification in combination with post-identification should be considered.

Introduction

In low- and middle-income countries where the public funding of health services is deficient and social health insurance is underdeveloped, access to affordable and effective health care remains a major problem. A large share of health care costs is paid directly out-of-pocket by users, which is a major

cause of impoverishment (Whitehead *et al.* 2001; Meessen *et al.* 2003; Van Doorslaer *et al.* 2006). Furthermore, distribution of health service coverage within low- and middle-income countries is highly inequitable (Gwatkin 2004).

The poor and vulnerable groups often encounter numerous barriers to accessing health care from both supply and demand sides (Ensor and Cooper 2004; O'Donnell 2007). User fees are one of the main barriers to accessing government health services in low-income countries (Palmer *et al.* 2004). Waiver and exemption systems have been introduced to preserve equitable access to health services, but in practice, in most cases they do not work. One of the main reasons for the failure of waiver and exemption systems is the absence of proper tools and an accurate procedure to identify the eligible poor (Arhin-Tenkorong 2001; Tien and Chee 2002; Bitran and Giedion 2003).

Poverty is a multi-dimensional, dynamic and context-specific phenomenon. Despite many available approaches to measuring poverty, it remains a major challenge to determine who is poor and eligible for a targeted intervention, particularly in low-income countries where the majority of the population is illiterate, lives in rural areas and works in the informal sector and thus income criteria are often not reliable and feasible (Falkingham and Namazie 2002; Carr 2004; Coady *et al.* 2004). Waivers are a form of direct or individual/household targeting. Developing an effective mechanism for identifying the poor is crucial for the success of waiver systems, but it is difficult and faces many design issues, including (1) when should the waiver eligibility be determined, at the community before health care demand or when individuals seek care at the health facility; and (2) how often should eligibility be assessed (Tien and Chee 2002; Bitran and Giedion 2003).

In Cambodia, Health Equity Funds (HEFs) have been successful in addressing the failure of waiver systems to improve access to government health services for the poor. HEF is entrusted to a third party purchaser to identify the eligible poor and provide them assistance. HEF beneficiaries are identified according to a set of pre-defined eligibility criteria, either at the community before health care demand (pre-identification) or at the health facilities through interviews (post-identification) (Hardeman *et al.* 2004; Jacobs and Price 2005; Annear *et al.* 2006; Noirhomme *et al.* 2007). In 2007,

there were 27 hospital-based HEF schemes under operation in Cambodia. Some use exclusively pre- or post-identification while others use both. Choice between both methods is debatable; each has its advantages and disadvantages (MoH *et al.* 2006). The study by Hardeman and his colleagues (2004) showed that post-identification as a stand-alone strategy left many potential beneficiaries uncertain about their eligibility. Others argue that post-identification is easy to start and less expensive than pre-identification, while producing similar results. A comparative analysis of four HEFs in Cambodia showed that hospitalisation by the poor identified through post-identification in Sotnikum did not differ from the hospitalisation of those with pre-identification (Noirhomme *et al.* 2007).

In this paper, we will examine the pre-identification procedure for HEF in Oddar Meanchey province, assess the HEF eligibility status of households for years after the pre-identification, and draw some lessons on the strengths and weaknesses of pre-identification in targeting the poor.

In the next section of the paper, the background for this study is being explored, both in Cambodia and more specifically in Oddar Meanchey. A third section focuses on the methodology used in our survey and subsequent statistical analysis. The fourth part presents the results on the HEF eligibility of cardholders versus non-cardholders. Finally, the discussion section explores our research question, i.e. whether the HEF entitlement status (cardholdership) of households as it was granted through pre-identification four years before was still accurate now, several years later and what the use and merits of pre-identification, post-identification or potential other procedures are.

Background

THE CAMBODIAN CONTEXT AND HEALTH EQUITY FUNDS

Even with political stability and economic growth, Cambodia remains one of the poorest countries in the region and in the world. Thirty five percent of the Cambodian population are living under the poverty line and rural poverty accounts for almost 90%.

For the health sector, considerable achievements have been made. The utilization of the public facilities has increased. However, access to government health services remains difficult especially for the poor. The

health service provision is overwhelmingly dominated by the (mostly informal and regulated) private sector. Furthermore, health care in Cambodia is relatively expensive and relies heavily on private spending. Although the public spending on health care is increasing, more than two thirds of health expenditure is paid out-of-pocket by the Cambodian households. (For more information about the Cambodian context, please refer to the paper by Annear *et al.* in this issue). To address the above problems, many health financing mechanisms, including Health Equity Funds, have been developed.

Health Equity Funds (HEFs) are demand-side financing schemes to promote access to priority public health services for the poor in an environment where user fees are charged. HEFs act as a third party purchaser to identify eligible poor and pay for them fully or partially the cost of user fees, transport cost and other costs during hospitalisation. HEF beneficiaries are identified according to a set of pre-defined eligibility criteria, either at the community before health care demand (pre-identification) or at the health facilities through interviews (post-identification) (See also the paper by Jacobs and Price in this issue). Pre-identification is a snapshot screening of poor households in the community at one point in time. The eligible poor households were systematically assessed at their home based on a few observable proxy means-tests, prior to the episode of illness. Post-identification is performed at the point of use. It takes place in the hospital premises, when patients ask for it or when they are referred for financial assistance.

HEF pilots were initiated in 2000 and showed that the HEF effectively improved equity in access to health services and potentially protected the poor from high cost of health care. HEFs were also considered an efficient way to transfer resources to the poor, as it purchased the already-heavily subsidized public health services (Knowles 2001; Van Damme *et al.* 2001; Meessen *et al.* 2002; Hardeman *et al.* 2004). These convincing results drew attention from international agencies, donors and policy makers. Progressively, HEFs were replicated in many other places and produced similar results (Nguyen 2004; Jacobs and Price 2005; Annear *et al.* 2006; Noirhomme *et al.* 2007).

In 2003, HEFs became an integral component of the Health Sector Strategic Plan 2003-2007 and the National Poverty Reduction Strategy 2003-

2005 (see also Annear *et al.* in this issue). In September 2003, the Ministry of Health developed its first Strategic Framework for Equity Funds, laying out the guiding principles for design, management, and evaluation of HEFs. Building on past and current experiences and the lessons learned, and in an effort to translate the strategic framework into a concrete policy implementation tool, the Ministry of Health developed a National Equity Fund Implementation & Monitoring Framework.

In late 2006, the Ministry of Health and Ministry of Economy and Finance jointly issued a *Prakas* (directive) stipulating the allocation of state budget for subsidizing the poor when accessing public health services through reimbursement of user fees. This allowed the Ministry of Health to set up exemption reimbursement schemes in 6 national hospitals and 9 health districts, where there are no HEFs. They are labelled government subsidy schemes. In 2007, there were 27 hospital-based HEF and 15 government subsidy schemes under implementation in Cambodia.

CONTEXT IN ODDAR MEANCHEY, HEALTH EQUITY FUND AND PRE-IDENTIFICATION

Oddar Meanchey is a poor province in the North-West of Cambodia with a total population of 150,000. The poverty headcount in 2004 showed that between 45% and 60% of the population in Oddar Meanchey were under the national poverty line of US\$0.45 per day while the national average was 35% (World Bank 2006). According to the Cambodian Demographic and Health Survey 2005, more than two thirds of the population in Oddar Meanchey were located in the two lowest national poverty quintiles (NIPH and NIS 2006). There are 10 functional government health centres providing first line health services and a provincial hospital providing second level care, including general inpatient care and surgical interventions.

The Ministry of Health with technical and financial support from the Belgian Technical Cooperation (BTC) started a HEF in January 2005 in Oddar Meanchey provincial hospital. Both pre- and post-identification methods have been used to identify the eligible poor. We hereafter describe pre-identification.

Prior to the start of HEF, a systematic pre-identification of poor households was conducted in 2004 in the whole province of Oddar Meanchey. UNICEF helped develop a scoring tool and eligibility criteria to assess a household's socio-economic status. The tool consists of 9 proxy

socio-economic indicators. Each can be scored between 0 and 3 (Table 1). The households who get a total score of less than 8 are considered non-poor and not eligible for HEF. The households who get a score between 8-9 and 10-11 are considered poor and eligible for HEF support of respectively 50% and 75%. The households who obtain a score of 12 or above are considered very poor and eligible for HEF support 100%. In total, 8,084 households (30% of households in the province) were identified as eligible for HEF and given cards with two-year validity. The cards entitled all members of the households to HEF assistance.

The pre-identification was done by the local health authority and community with technical assistance from UNICEF. The process of pre-identification could be summarized in six steps as follows: (1) establishment and training of a pre-identification team composed of three members from the provincial health department and three from UNICEF and NGOs in the area. The team was responsible for all tasks related to the pre-identification, including training of the community representatives at health centres; (2) a workshop by the pre-identification team with community representatives at health centres to sensitize them and teach them the basics of the pre-identification, including the objective, benefit, procedure and tool and how to use the tool. A questionnaire sheet with the scoring tool was given to each of the community representatives to complete for those households they assessed as being poor; (3) collection of the completed questionnaire and calculation of the score for each household by the working team. Based on the score level, a list of the potentially poor households was made; (4) visits by the working team to all listed households who were informed in advance by village chiefs. During the visit, the team interviewed the households to verify the eligibility and took photos and found those poor households who had been overlooked by the community representatives. A temporary card was made on the spot and given to each eligible household with brief explanation about the benefit and use of the temporary HEF card; (5) data entry and card development by the working team. All the household data were systematically entered in the computer using MS Access and a HEF card was printed; and (6) distribution of HEF cards and further explanation about the entitlement, benefits and some instructions for use.

Table 1. Scoring tool developed by UNICEF for pre-identification

	Score 0	Score 1	Score 2	Score 3
Status Head of Family	Married	Divorced, widow, single		
Professional Occupation	Yes regular	Irregular	None	
Children under 18 years	None	1 - 2	3 - 5	> 5
Dependent elderly	None	Yes		
Housing	Concrete, wood	Leaves, thatch, clay	None	
Transport means	Motorcycle	Bicycle, oxcart	None	
Rice Land	> 2 hectares	1 - 2 hectares	<1 hectare	None
Cows and buffaloes	3 or more	1 - 2	None	
Pigs	2 or more	1	None	

Despite pre-identification, many patients without HEF cards still claimed that they were poor and applied consequently for HEF assistance when in need of hospital care. Post-identification was therefore introduced in the hospital as a complement to the pre-identification. Since the beginning, the HEF supported rate among the total inpatients at the provincial hospital has been high with an increasing number of HEF beneficiaries being post-identified at the hospital, which raised an obvious concern about the validity of the cards and the necessity of pre-identification. In 2007, since most of the given cards were expired by then, the BTC had to decide whether to update the pre-identification procedure or cancel the cards altogether and let the HEF beneficiaries be exclusively post-identified. Before making such a critical decision, BTC commissioned an assessment of HEF eligibility among card and non-cardholders.

Methodology

A household survey was conducted in mid 2007 in Oddar Meanchey province, about four years after pre-identification had been implemented. We randomly selected 200 households. Of them, 99 were households with HEF cards (Cardholders) while 101 households had no HEF cards (Non-cardholders). The 99 cardholder households were selected from the list of

HEF beneficiaries, using systematic random sampling while the 101 non-cardholder households were randomly identified in the village from the neighbours of the selected cardholders.

A structured questionnaire was administered to the head of household or his/her spouse of the selected households by two independent and trained surveyors, after an informed consent was obtained. Data were collected on characteristics of the head of household (gender, marital status and job status), HEF cardholdership of household, household composition, housing condition, household socio-economic indicators (ownership of agricultural land, ownership of durable assets, ownership of animals, basic income and expenditure, social capital, indebtedness), perceived change of living condition, and household migration status. The collected data were handled with MS Excel. Both the data collection and entry were supervised by a trained researcher. To allow comparison, the two interviewers were asked to give their assessment whether the household was better-off/non-poor, poor, or very poor, using their subjective criteria, at the end of each interview. The assessment depends very much on the experience and capacity of the interviewers and is based on all the information they have obtained during the interview.

The data analysis was done by the authors of the report, using SPSS version 16. Based on information collected from interviews, we made use of the UNICEF scoring tool (Table 1) to define HEF eligibility for each household. We also calculated a socio-economic status-index, after applying principal components analysis (PCA) on a number of asset-items. Nine items were eventually selected to make up this Socio-Economic Component.¹ This socio-economic status (SES) score was divided into terciles: the lowest category with the poorest, a middle category with the poor, and the highest category with the non-poor. Obviously, just as is the case with the UNICEF tool, there is some arbitrariness in our computed PCA-SES score in terms of the cut-off points and even the respective size of these three categories. Using terciles (or quintiles) is however common practice in this kind of research (For a more detailed overview of the application of PCA on household-asset

¹ The 9 items that were selected, after PCA, were: 'have a motorcycle', 'have a television', 'have a tape recorder or radio', 'have a mobile phone', 'have a *Kouyun*', the amount of riceland, the job status of the household head, the marital status of the household head, and the quality of the housing.

items, see also the paper by Meessen *et al.* in this issue). We then matched these indices and tools with the assessment made by the interviewers and with the cardholdership.

The assessment of HEF eligibility status of the households was made in two stages. First, we assessed the HEF eligibility within two categories of households: the group eligible for HEF and the group not eligible. Second, we subdivided the group eligible for HEF in two sub-groups (the near-poor/poor and the very poor) for the classification by interviewers, three sub-groups (50%, 75%, and 100% eligible) for the classification by UNICEF tool and two sub-groups for the PCA score (lowest tercile; middle tercile). The assessment focused on the very poor, on the 75% & 100% eligible sub-group or on the lowest tercile. This second stage assessment allows us to find out what the targeting outcomes of the HEF would be if it only targeted the poorest or destitute.

Targeting errors, a sum of inclusion and exclusion errors, were estimated based on the HEF eligibility status of the total sample of 200 households. We define inclusion errors as the proportion of households not eligible for HEF among 99 HEF cardholder households and exclusion errors as the proportion of non-cardholder households among those who are eligible for HEF.

Results

GENERAL DESCRIPTION OF THE SAMPLE

Among the 200 interviewed households, 99 are HEF cardholders and 101 are non-cardholders. In the total 200 households, there are 1,052 individuals. The mean size of the household is 5.25 (Std. Deviation = 1.996).

According to some basic socio-economic indicators (Table 2), on average our sample seems to be poorer than the sample of the Cambodia Demographic and Health Survey (CDHS) conducted in 2005. But these socio-economic indicators appear not significantly different for cardholders and non-cardholders (Table 3).

One hundred forty one (71%) of the interviewed households reported that the standard of living of their household has changed compared to four years ago; there is no significant difference between the cardholders and non-cardholders. About 39% (39.4% for cardholders versus 37.6% for non-

cardholders) of them claimed their standard of living was actually better than four years before while around 32% of households (30.3% for cardholders and 33.7% for non-cardholders) assessed their standard of living as worse than before. The three main reasons for an improvement in a household's standard of living were selling land,² better crop production and having good business while the three main reasons stated for worse living conditions were being jobless, having (a) chronically ill person(s) within the household and having too many children.

Many households reported that they had adopted risky coping strategies, such as selling productive assets and borrowing from money lenders, to pay for health care. The incidence of selling assets and borrowing for health care over the last 12 months is not significantly different for cardholders and non-cardholders. Among the total 200 households, 14% (12.1% for cardholders and 15.8% for non-cardholders) reported that they had sold assets, including land, and 19% (23.2% for cardholders and 14.9% for non-cardholders) reported that they had borrowed money due to health care costs. 18% of the loans were taken from moneylenders with relatively high interest.

Among the interviewed households, 67 (33.5%) migrated from other places. 55.2% of the migrant households were non-cardholders and have been living in the village for less than four years (Table 3).

² In some areas of the site, the price of land has increased considerably. Some households sold part of their land and made quite some money that could make them wealthy, at least for the short-term.

Table 2. Some basic household socio-economic indicators

Indicators	Oddar Meanchey Study sample 2007 (N = 200)	Cambodia CDHS 2005
Mean size of households	5.2	5.0
% of households having a bicycle	62.5	68.3
% of households having a motorcycle	34.5	34.6
% of households having a car	0.5	3.6
% of households having a tape recorder or radio	28.5	49.6
% of households having TV	32.5	55.2
% of households having a telephone/cell phone	20.0	20.1
% of households owning farm animals	49.5	73.1

Table 3. Some basic household socio-economic indicators
(cardholders versus non-cardholders)

Indicators	Cardholders (N = 99)	Non-cardholders (N = 101)	P-values
Number of households having a bicycle (%)	63 (63.6)	62 (61.4)	.742
Number of households having a motorcycle (%)	32 (32.3)	37 (36.6)	.521
Number of households having a car (%)	1 (1.0)	0 (0)	.321
Number of households having a tape recorder/radio (%)	27 (27.3)	30 (29.7)	.703
Number of households having TV (%)	32 (32.3)	33 (32.7)	.958
Number of households having a telephone/cell phone (%)	14 (14.1)	26 (25.7)	.040
Number of households owning farm animals (%)	56 (56.6)	43 (42.6)	.048

Indicators	Cardholders (N = 99)	Non-cardholders (N = 101)	P-values
Number of households owning agricultural land (%)	80 (80.8)	78 (77.2)	.534
Number of households having an oxcart (%)	18 (18.2)	14 (13.9)	.405
Number of households having a <i>Kouyun</i> ³ (%)	13 (13.1)	24 (23.8)	.053
Number of households having a better standard of living four years after pre-identification (%)	39 (39.4)	38 (37.6)	.726
Number of households with at least one day not enough to eat in the last 12 months	81 (81.8)	68 (68.0)	.025
Number of households carrying debts (%)	71 (71.7)	64 (63.4)	.207
Number of households ever borrowing to pay for health care within the last 12 months (%)	23 (23.2)	15 (14.9)	.207
Number of households ever selling assets to pay for health care within the last 12 months (%)	12 (12.1)	16 (15.8)	.448
Number of households being migrants (%)	30 (30.3)	37 (36.6)	.343

HEF ELIGIBILITY STATUS

In the bivariate analysis, we first match the eligibility status of the diverse (objective and subjective) tools with cardholdership. So, respectively the (objective) UNICEF tool, the PCA index and the (subjective) assessment by the interviewers are being matched with cardholdership, using a two-by-two table. As for the UNICEF tool and the interviewer assessment, the

³ It is a locally made car, which can be used for plough and transportation.

eligibility status is more or less straightforward. For the PCA index we assume, admittedly, in a rather arbitrary way, for these first tables, that the two lower terciles are eligible for HEF.

According to the eligibility classified using the UNICEF tool, 43 of the total 99 cardholder households (43.4%) are not eligible for HEF (inclusion errors) and 44 non-cardholder households (44%) are eligible for HEF (exclusion errors). In total, 87 of the total 200 households (43.5%) are wrongly included and excluded from HEF (Table 4). According to the classification by interviewers, 26 cardholder households (26.2%) are not eligible for HEF (inclusion errors) and 57 non-cardholder households (43.8%) are eligible for HEF (exclusion errors). In total, 83 households (41.5%) are wrongly included or excluded from HEF (Table 5). Finally, as we can see from Table 6 (PCA-SES score), the arbitrariness of cut-off points does not lead to a result much different from the interviewer assessment, in terms of inclusion errors; 28 cardholder households (28.3%) are not eligible for HEF (inclusion errors). But the exclusion error is higher than for the interviewer assessment; 62 non-cardholder households (46.6%) are eligible for HEF. Our rather arbitrary criterion (the two lower terciles) proves too wide. Eligibility for HEF can not be granted to 66.5% of the households.

Table 4. HEF eligibility classification by UNICEF tool

	Cardholders	Non-cardholders	Total
Not eligible for HEF	(43.4%) 43	57	100
Eligible for HEF	56	(44.0%) 44	100
Total	99	101	200

Table 5. HEF eligibility classification by interviewers

	Cardholders	Non-cardholders	Total
Not eligible for HEF	(26.3%) 26	44	70
Eligible for HEF	73	(43.8%) 57	130
Total	99	101	200

Table 6. HEF eligibility classification by PCA-SES score

	Cardholders	Non-cardholders	Total
Not eligible for HEF	(28.3%) 28	39	67
Eligible for HEF	71	(46.6%) 62	133
Total	99	101	200

In a second stage of the assessment, we will restrict the HEF eligibility somewhat for all these three indices. In the group eligible for HEF, there are two sub-groups (near-poor/poor and very poor) for the classification by interviewers, three sub-groups (50%, 75% and 100% eligible) for the classification by UNICEF tool and two sub-groups for the PCA score (lowest tercile; middle tercile). The very poor group and the lowest tercile are clearly eligible for HEF while the picture of the near-poor/poor group, the 50% eligible group and the middle tercile is more blurred though.

If we do not consider (for the UNICEF tool) the 50% eligible group for classification and (for the interviewer assessment) the near-poor/poor group, while (for the PCA scores) only the lowest tercile is being considered eligible for HEF, then the exclusion errors become smaller, 21 of the total 52 HEF eligible households (40.4%) for the UNICEF measure, 28 of the total 72 HEF eligible households (38.9%) for classification by interviewers and 28 of the total 66 HEF eligible households (42.4%) for the PCA-SES index (Table 7). This suggests that with any identification tool, targeting outcomes would be much better if the pre-identification focused on the extremely poor or destitute.

Table 7. HEF eligibility status defined by UNICEF tool, interviewers and PCA-SES score

Classification		Cardholders	Non-cardholders	Total
HEF eligibility classified by UNICEF tool	Better off/non-poor	(43.4%) 43	57	100
	50% eligible	25	23	48
	75% & 100% eligible	31	(40.4%) 21	52
	Total	99	101	200
HEF eligibility classified by interviewers	Better off/non-poor	(26.3%) 26	44	70
	Near-poor/Poor	29	29	58
	Very poor	44	(38.9%) 28	72
	Total	99	101	200
HEF eligibility classified by PCA-SES score	Highest tercile	(28.3%) 28	39	67
	Medium tercile	33	34	67
	Lowest tercile	38	(42.4%) 28	66
	Total	99	101	200

COMPARISON OF TARGETING OUTCOMES AMONG THE THREE ASSESSMENT TOOLS

Another question we explored is whether, if we assume that the interviewer assessment is our best guess at the current (real) eligibility status of a household - the *golden standard* - the UNICEF index leads to much inclusion and/or exclusion error. We tried to address the same question for the PCA-SES index (Table 8 and Table 9).

From the tables we can derive that - if we restrict inclusion and exclusion errors to movements between extreme categories⁴ - and we assume that the interviewer assessment is the golden standard, we find two inclusion errors and 13 exclusion errors for the UNICEF measure and no inclusion or exclusion error for the PCA-SES index. This indicates that the three tests

⁴ For example, the 'better off/non-poor' as they are being assessed by the interviewers, turn up in the 'very poor' category of UNICEF or PCA measure, or the 'very poor' turn up in the 'better off/non-poor' category of UNICEF.

result in rather similar targeting outcomes for extreme categories of poverty, although the UNICEF tool tends to produce relatively more targeting errors.

Table 8. Targeting outcomes between UNICEF tool and assessment by interviewers

		Classification by UNICEF tool			Total
		Better off/ non-poor	50% eligible	75% and 100% eligible	
Classification by interviewers	Better off/non-poor	58	10	2	70
	Near- poor/poor	29	22	7	58
	Very poor	13	16	43	72
Total		100	78	22	200

Table 9. Targeting outcomes between PCA-SES score and assessment by interviewers

		Classification by PCA-SES score			Total
		Highest tercile	Medium tercile	Lowest tercile	
Classification by interviewers	Better off/non-poor	50	20	0	70
	Near- poor/poor	17	33	8	58
	Very poor	0	14	58	72
Total		67	67	66	200

Discussion

In theory, a perfect targeting procedure does not omit any of those in the target group and does not include those outside the target group. In practice, targeting is seldom perfect. A programme that successfully targets the poor is a programme that can reach the maximum number of the eligible poor with minimum leakage to the non-poor, at low cost and in a transparent manner. It is in general a trade-off between accuracy and cost (Willis and Leighton 1995; Bitran and Giedion 2003; World Bank 2005; Hanson *et al.* 2006). A certain percentage of targeting errors can be accepted, depending on the availability of resources and political commitment and choice. The summary of country case studies on targeting through waivers by Bitran and Giedion (2003) showed that despite tremendous efforts to identify the poor, in many cases, coverage remained low and the leakage was high. The *Kartu Sehat* programme in Indonesia had a coverage of 11%, but the leakage was 39%. The coverage rates of Thailand's Low Income Card Scheme and Chile's National Health Fund were high at respectively above 80% and 90% with leakage of 45% and 50% respectively. In Oddar Meanchey, the HEF eligibility status of households assessed four years after the pre-identification showed that the targeting errors that resulted from all the tested tools were consistently high at about one half. Exclusion errors proved much bigger than inclusion errors. Are these results correct? If they are correct, why are the targeting errors so high? How can the errors be minimised?

The first question - whether the results are correct or not - is related to the limitations of the method used in this study. One can question the relevance of the above assessment tools and selection bias. To avoid bias, we used the same assessment tool of UNICEF which was used for the pre-identification together with an assessment by interviewers and a PCA-SES score. These three tools gave very consistent results of high targeting errors. Furthermore, the sample households were randomly selected to minimise selection bias, even though the sample size was relatively small. Therefore, we believe that generally speaking the above results of targeting errors are correct.

An obvious question is then: why are the targeting errors so high? Excluding the possibility of selection bias, several reasons could explain the errors. First, they could be caused by the errors of the pre-identification

procedure as it was implemented four years ago. During the pre-identification, the tool was applied by community representatives while in our survey the tool was handled by trained surveyors. Although community representatives could have better knowledge about the poverty in their area, administering such a tool to the households was not easy. Furthermore, conflicts of interests and fraud might happen (Conning and Kevane 2002). However, one can argue that the results would be substantially different if this assessment was done immediately after the pre-identification.

Second, the errors could be the result of socio-economic changes in the population. Poverty is not static but indeed a very dynamic phenomenon. The poor consist of those who have been poor for a long time (chronically poor) and those who move in and out of poverty (transiently poor) (CPRC 2004-05). Increasing evidence on poverty dynamics shows that the prevalence of transient poverty is significantly greater than that of chronic poverty. Substantial numbers of people in low-income countries move in and out of poverty from season to season and from year to year (Baulch and Hoddinott 2000; Thorbecke 2004). A five-year round panel data set for rural Pakistan showed that only 3% of the households were poor in all five years and half were poor in at least one period. Similarly, in rural South India, it was found in a nine-year panel survey that 22% of households were below the poverty line in each of nine consecutive years while almost 90% were poor in at least one of the nine years. In Cambodia, a 3.5-year panel survey by Cambodian Development Research Institute (CDRI 2006) showed that just over half of the studied households did not change their status while 48% moved in and out of poverty; 26% moved up and 22% moved down. Hence, identification of the poor at one point in time or pre-identification without regular updates may miss many of the transiently poor. This is particularly problematic if poverty identification is related to waivers of health care fees, as is the case here for HEF, because illness in the household is likely one of the most important factors for households dropping below the poverty line. In our study sample, more than one third of the interviewed households reported an improved living condition and about one third reported a worse living condition.

The socio-economic changes in the population in Oddar Meanchey could be caused by a variety of socio-economic factors. One of these factors could be the mobility of the population. 33.5% of the interviewed households reported to have migrated from other places and more than half

of the migrants had moved in the villages after the pre-identification. Another factor could be the impact of HEF on improving the household socio-economic status. Some evidence of HEF impact on household wealth is presented in two papers by Jacobs and Price and van Pelt *et al.* in this issue. In this study, we don't know to what extent HEF in Oddar Meanchey can affect the socio-economic changes. However, it seems that the HEF impact, if any, was limited because the exclusion errors among non-cardholders were not affected by HEF assistance. Moreover, the three main reasons for an improved living condition reported by one third of the households were selling land, better crop production and having good business.

This indicates that pre-identification, which is a snapshot survey, has some obvious weaknesses in identifying the poor, as it does not address the issue of poverty dynamics. However, it could be a very good approach to identifying the extremely poor or destitute. Evidence from a targeted programme in Mexico, the PROGRESA, showed that pre-identification was relatively more effective at identifying the extremely poor households but less so when it comes to selecting moderately poor households (Skoufias *et al.* 1999). In our sample, the errors, especially the exclusion errors can be minimised if we do not consider the near-poor and poor group. Therefore, to minimise the identification error, pre-identification should be implemented in combination with post-identification. The pre-identification targets the chronically poor or extremely poor while the post-identification targets the transiently poor (i.e. the less poor or the vulnerable group). For pre-identification, there is a need for regular updates of the entitlement (once every year or every two years).

Finally, we can conclude that HEF entitlement status of households, as it was granted through pre-identification four years ago in Oddar Meanchey, does not reflect the real current poverty situation of households anymore. The HEF eligibility should be updated regularly. If the authorities or donors want to continue to use the HEF cards, a systematic review should be considered. Another option is to cancel the cards and use exclusively post-identification.

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