WHO IS POOR? One Question, Many Answers and Their Implications: A Comparison of Alternatives to the Monetary Approach of Poverty Assessment in Rural Yunnan, China

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Abstract

This paper raises critical questions about the epistemology, methodology and policy of poverty assessment and challenges the current domination of monetary measures of poverty in developing countries and international organizations. Using the same data set from 473 households in rural Yunnan, China, we compared four approaches to poverty assessment: the Monetary Approach, the Participatory Poverty Assessment, the Multidimensional Poverty Indicators and China's Official Poverty Identification method. We found that these approaches generate different aggregate poverty incidences and identify households with different characteristics as poor. The overlap and correlation coefficients between approaches was very low. This points toward important epistemology and normative differences between approaches to poverty. At the theoretical level, understanding of poverty should be broadened to incorporate multidimensional and multidisciplinary socioeconomic aspects. Relying solely on one approach could cause errors by neglecting households poor in non-monetary poverty. Multiple approaches can capture multiple dimensions of poverty and avoid leaving some poor out. There is a need to shift away from poverty reduction strategies that narrowly emphasize money or income generation. Instead, the focus should move towards a combination of short-term and long-term strategies to break poverty's interlinked structural causes.

Key Words – Monetary Approach; Multidimensional Poverty Indicators; Participatory Poverty Assessment; poverty assessment; poverty reduction; China; Asia
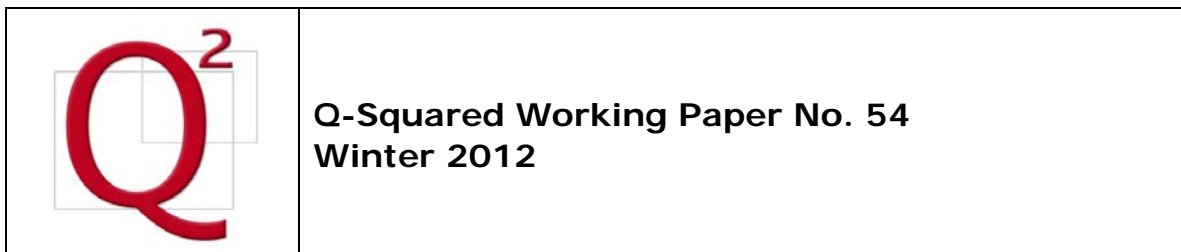
1. INTRODUCTION

Used as a standard tool, monetary measures dominate poverty assessment in developing countries (S Chen & Ravallion, 2007; S. Chen & Ravallion, 2010). International donors and development agencies (i.e. United Nations, United Nations Development Program, International Monetary Fund and World Bank) (C.R. Laderchi, R. Saith, & F. Stewart, 2003; UN, 2006; WB, 2000) all rely on income/consumption to assess poverty in the Millennium Development Goals, the Human Development Index and the Poverty Reduction Strategy Paper (R. Kanbur & Squire, 2001). Monetary analyses also play an important role in national development strategies and the allocation of development funds from international organizations (Notten, 2009). Poverty, however, is indisputably multidimensional and goes beyond purely 'economic' dimensions to include education, health, shelter, sanitation, vulnerability, participation and rights. While the meaning of poverty is expanding to include 'non-economic' factors, monetary measures remain the preferred assessment metric. The rural poor tend to have non-liquid assets and are more likely to be poor in terms of liquid assets. This highlights the contradiction between consensus over the meaning of poverty and the choice of methods to measure it (Sumner, 2007). A fundamental theoretical and empirical question is: Can the monetary approach alone serve as a proxy for other approaches to poverty assessment?

While there is debate about whether monetary approaches can serve the above purpose (McKay & Lawson, 2003, p. 434; Notten, 2009), some research shows that we cannot rely on

one method as a proxy for others. For example, different approaches have identified dissimilar households as poor and have led to separate policies for poverty reduction (C.R. Laderchi, et al., 2003; Stewart, Saith, & Harriss-White, 2007). However, other studies demonstrate that one method can be used as a proxy for others (D'Ambrosioa, Deutschb, & Silberb, 2009, p. 30; Deutsch & Silber, 2005; Maltzahn & Durrheim, 2008). Research using alternative methods, however, tends to be based on theory, or conducted using separate populations at different times and in separate places, uses one or two indicators to represent an approach, or just employs household surveys with no correlation coefficients and regression analysis, thus rendering direct comparisons between approaches impossible (Baulch & Masset, 2003; Bradshaw & Finch, 2003; C.R. Laderchi, et al., 2003; Notten, 2009; Stewart, et al., 2007; Whelan, Layte, & Maitre, 2004). Until now, few empirical studies have used several methodologies on the same population at the same time with the same data set to determine whether different households are identified as poor. If different approaches identify the same households as poor, then dissimilarities among approaches might be unimportant. Any of these methods could be used as a proxy for others despite their theoretical differences (C.R. Laderchi, et al., 2003; Lu, 2010).

This paper empirically compares four approaches in poverty assessment in 473 households in four villages in rural Yunnan, China. The four approaches are: the Monetary Approach (MA), Multidimensional Poverty Indicators (MDI), Participatory Poverty Assessment (PPA) and China's Official Poor List (OPL). Our overall objective is to explore differences that might arise from the use of these four approaches to poverty assessment and to discuss the policy implications embedded in choosing a particular approach.

This paper raises critical questions about the paradigmatic selection of poverty assessment epistemology, methodology and policy. We document the empirical consequences of using different concepts of poverty assessment on the same population. Our results challenge the current dominant monetary approach in China and elsewhere, and we make an original contribution to poverty research as to how poverty is identified and understood using different epistemologies. This is an important question because monetary measures are so often used to target the poor and create government policy to reduce poverty.

2. OVERVIEW OF DIFFERENT APPROACHES TO ASSESS POVERTY

In poverty assessment, four approaches are very influential: Monetary Approach, Capability Approach, Social Exclusion, and Participatory Poverty Assessment.

(a) *Monetary Approach*

The monetary approach has conventionally been used to identify and measure monetary poverty (Booth, 1887; Rowntree, 1902). Using this approach, an individual is considered to be living in absolute poverty if s/he is unable to obtain the minimum necessities to maintain a physical existence (Rowntree, 1902). The most important component of a basic needs poverty line is the food expenditure necessary to obtain some recommended food energy intake and a modest allowance for non-food goods (Ravallion, 1992, pp. 25-26). The monetary approach measures well-being by income or expenditure. As such, it enables national and international comparisons to be made. Its strength is that it can generalize and standardize results to analyze poverty trends. However, this approach depends on external assessment and is often absolute, objective and arbitrary (Greeley, 1994). It results in a bias towards those lacking private

income in the identification of the poor for targeting purposes (Caterina Ruggeri Laderchi, Ruchi Saith, & Frances Stewart, 2003, p. 8) and has an implicit policy bias in favor of private income generation rather than public goods provision (Laderchi, 1997, pp. 345-360; A. Saith, 2005). This can produce a superficial and misleading understanding of the nature, causes and cures of poverty. It can lead to an equally narrow adoption of targeting, monitoring and evaluation criteria, thus reproducing the approach's many blind spots into operational phases of interventions (A. Saith, 2004, p. 26). The monetary approach focuses on improving the economic situation of the poor, so their income can be raised above the poverty line. Policymakers may interpret this as reason to emphasize economic growth and optimal distribution of monetary income (Caterina Ruggeri Laderchi, et al., 2003, p. 28). Results of monetary policies will often be short term, not long term and sustainable, if we fail to identify and tackle the root causes of poverty.

(b) *Capability Approach*

The capability approach defines poverty as the absence of function or failure to achieve 'basic capabilities' including the 'ability to satisfy certain crucially important functions up to certain minimally adequate levels' (Sen, 1993, p. 41). This approach uses indicators that revolve around the freedom to live a valued life. Sen's capability approach proposes that when we conceptualize or evaluate poverty or inequality, we should do so in the space of 'functionings' and capabilities (Sen, 1993). The approach conveys an ethical critique of mainstream development by rejecting the dominant belief that income is an adequate measure of human well-being (Sen, 1992, p. 101). Instead, human diversity is said to influence how a

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person can convert the characteristics of a commodity into a functioning. The strength of this concept lies in its multidisciplinary character and its focus on the plural or multidimensional aspects of well-being (Robeyns, 2005). The capabilities approach is reflected in, for example, the Human Poverty Index (HPI), which is a composite index of multiple dimensions of poverty and well-being. The implied policymaking focus is on the causes and environmental context that affect poverty. Associated anti-poverty measures therefore target not only incomes, but also other dimensions such as education and health care (Philipp, 1999).

The capability approach has some challenges. For instance, there is no definitive list of relevant capabilities (Nussbaum, 2000), and selection of the relevant functionings is difficult as is measurement of functionings at the individual level. Theoretical and practical challenges are also presented in aggregation of these functionings into a composite (scalar) measure of individual welfare and in aggregation of individual welfare to societal welfare (Kuklys & Robeyns, 2004; Ysander, 1993). The approach has been called too individualistic (Deneulin & Stewart, 2002), not operational (Roemer, 1996; Srinivasan, 1993; Sugden, 1993) and unpractical (Sugden, 1993, p. 1953). Srinivasan (1993) finds the Human Development Index (HDI), to be empirically weak with serious problems of non-comparability over time and space. This approach cannot scrutinize the household or individual level because some capability indicators are group measures or stock variables which change very slowly over time. This limits their usefulness for short-term and medium-term poverty monitoring (Lok-Dessallien, 2004). The capability approach suggests poverty reduction policy on

investments in extending and exercising basic capabilities through provision of monetary income and improved allocation of social goods to achieve education, health and other goals.

One important policy assumption for both the monetary approach and the capability approach is that growth is good for the poor. Distributional issues are less relevant in this type of poverty reduction (Caterina Ruggeri Laderchi, et al., 2003, p. 27). Both approaches largely fail to directly capture the fundamental causes and dynamics of poverty. The solutions they propose to poverty may therefore be misleading.

(c) *Social Exclusion*

Social exclusion (Lenoir, 1974) refers to those people unprotected by state welfare state and considered to be social misfits. The European Foundation defines social exclusion as 'the process through which individuals or groups are wholly or partially excluded from full participation in the society within which they live' (Haan, 2001, pp. 25-26). The social exclusion approach to poverty focuses on the multidimensionality of deprivation and the relations and processes that cause deprivation (Haan, 2001, pp. 25-26). Atkinson summarizes three main characteristics of social exclusion: *relativity*, *agency* and *dynamics* (Atkinson, 1998). This approach shifts from 'income' or the narrow monetary dimension, to embrace social, political and cultural dimensions as well. It looks at relational aspects, emphasizing social relationships, relative conditions and dynamic processes, rather than absolute deprivation and static states.

Critics of the social exclusion approach point to its definitional problems, both social and economic. The major conceptual weaknesses of social exclusion are its vague and diffuse

definition (Farrington, 2004, pp. 5-6; Haan, 2001; Li & Pinel, 2004), its broad framework and societal specificity (Caterina Ruggeri Laderchi, et al., 2003, p. 28), its relative nature, and its focus on dynamic processes and relational roots and aspects (Sen, 2000, p. 45). This means it is susceptible to many interpretations and is difficult to use for quantifications and comparisons.

Economic growth may never eliminate social exclusion. Redistribution policies are a priority choice to remove imbalances and improve the overall situation of those deprived. Groups rather than individuals are targeted by social exclusion policies, such as eliminating discrimination and affirmative action (Caterina Ruggeri Laderchi, et al., 2003, p. 21). Policies can also target the causes, processes and results of exclusion. Such measures are interpreted to foster inclusion in markets and social processes, with particular emphasis on the formal labour market (Caterina Ruggeri Laderchi, et al., 2003, p. 28)，greater participation, and promoting community and social capital.

(d) *Participatory Poverty Assessment*

PPA was developed to reflect the perspectives of the poor in understanding the multidimensional nature of poverty. Researchers using this approach criticize the other three methods as being externally imposed and failing to take into account the views of poor people (Chambers, 1994a, 1994b; 1995, pp. 17-18). The participatory approach involves the views and perspectives of poor people themselves in defining poverty (Chambers, 1994a, 1994b; 1995, pp. 17-18; 2002). The aim of the participatory approach is to get people to take part in decisions about what it means to be poor and the magnitude of poverty. PPA has been scaled

up by the World Bank (Narayan, Chambers, Shah, & Petesch, 2000; Narayan, Patel, Schafft, Rademacher, & Koch-Schulte, 1999; Narayan & Petesch, 2002). However, the World Bank's use of this assessment tool is quite instrumental and there is little self-determination and empowerment involved (Caterina Ruggeri Laderchi, et al., 2003, p. 24). The major advantage of PPA is its departure from externally imposed standards of poverty; the poor prioritize the dimensions that affect them and then offer solutions (M. Qizilbash, 2004). The poor's involvement in policy and program design and implementation is said to empower them (Mozaffar Qizilbash, 2003, p. 2), and build more inclusive and transformational practice (Cornwall, 2003). But this approach has limitations due to its subjectivity, relativity and representativeness, and lack of generalizability and comparability of findings across regions and countries. There are also respondent, investigator and seasonal biases and sampling bias (Norton, Bird, Brock, Kakande, & Turk, 2001).

There are differences between all four approaches to poverty in epistemology and normative theory. These differences are manifest in the information collected on population, coverage, involvement, inference methodology, and disciplinary frameworks. Differences are derived from epistemology; herein lies the distinction in social science between empiricism/positivism, hermeneutics/interpretive approaches, and critical theory/critical hermeneutics (Braybrooke, 1987; Brian Fay, 1975; Ravi Kanbur & Shaffer, 2007, p. 185). Normative theory matters in poverty analysis because different theoretical traditions favor different concepts and indicators of poverty. Researchers are currently questioning whether approaches to poverty should cover different 'spheres of concern' (CPRC, 2004; Foster, Greer, & Thorbecke, 1984, pp. 5-6; Hulme & Shepherd, 2003), and studies are emerging

about whether 'poverty' definitions should be confined strictly to material circumstance or include social, cultural, and political elements, utilities, resources, and life choices (C.R. Laderchi, et al., 2003).

3. METHODOLOGY

(a) *Study Site*

Our study site was located in Wuding County, one of the 592 nationally designated poor counties in Chuxiong Yi Nationality Autonomous Prefecture, Yunnan. Nine villagers' groups in four natural villages with more than 50 households were selected from eleven villager's groups. All the households in the chosen groups are included in the research. Yi and Miao ethnic minority households make up 48.2 per cent of the total households. Household surveys were done with 473 permanent resident households with a total population of 1,798. Seven per cent were female-headed with women registered as the household head. The gross dependency rate[1] of the permanent households was 51 per cent. The average years of education of household members were 4.24 years. The main sources of income are potato production and sale, labour exportation, compensation from the government-sponsored sloping land conversion program, animal husbandry, mushroom collection and small business.

(b) *Data*

Data was collected from May 2005 to March 2006 and again in February and December 2010. PPA exercises including focus group discussions (n=21) and interviews (n=76) were

undertaken with villagers to assess local people's perspectives on poverty, village household stratification, wealth ranking in all households, etc. A household survey (n=473 households) was conducted. Lists of the official state-defined poor population were collected. This study uses the adult equivalence scale, economies of scale, resident equivalence scale in households expenditure and income calculation for household income and expenditure (Lu, 2010). Data were analyzed using STATA software. Four poverty assessment methodologies were investigated: The Monetary Approach, PPA, MDI and The Official Poor List.

Four data sets from these approaches were used for comparison:

1. Different monetary poor household lists based on various cut-off points like the national poverty line (NPL), low income line, actual price-based poverty line, local people's poverty line, World Bank 1.25 USD/day and 2 USD/day in 2005 PPP from The Monetary Approach

2. Participatory wealth ranking results from PPA

3. Multidimensional poverty indicator lists

4. Government official poor lists.

(c) *Correlation and Regression Analysis*

Poverty incidence was calculated and compared based on these four approaches. First, pair-wise Pearson correlations and partial correlation were conducted to analyze the strength (and direction) of the relationship between the different poverty assessment approaches and household socioeconomic features. Second, stepwise backward regression, starting with all candidate explanatory variables and sequentially removing the least significant variable

(*t*-statistic) until all remaining predictor variables were significant at $p \leq 0.05$, was conducted to build a parsimonious model. Checks were conducted to ensure that the remaining predictor variables were not collinear (Pearson ≥ 0.7). The resulting multiple linear regression models were used to identify relationships between different approaches and household socioeconomic characteristics:

$$y=a+b_1x_1+b_2x_2+b_3x_{3+}\ldots\ldots\ldots b_nx_n \qquad (1)$$

Where *y* is the dependent variable. *a* is intercept constant. $b_1,b_2,b_3...b_n$ are the regression coefficients for household socioeconomic characteristics $x_1,x_2,x_3...x_n$. *n* is the total number of observations. Third, the number and percentage of households that overlapped by four, three, two, one and any one of the approaches were calculated. Fourth, rank correlations between the four poverty indices were assessed using Spearman correlations.

(d) *Methods*

i) *Monetary Approach*

Several poverty lines were applied using household survey data that originated from the monetary approach (Booth, 1887; Rowntree, 1902).

1. The NPL of 668 Yuan and Low Income Line of 924 Yuan in 2004. Here, food consumption is assumed to comprise 60 per cent, and non-food consumption 40 per cent of poor people's expenditures in all poverty lines. In all the low income lines, food consumption makes up 40 per cent and non-food consumption 60 per cent of the expenditure of the poor.

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2. The Actual Price-Based NPL of 1,296 Yuan and Low Income Line of 1,945 Yuan based on the same consumption items in the food bundle issued by the Chinese government, multiplied by the actual price of these items in the Jiankang area (Lu, 2011).

3. The Local People's Poverty Line of 2,315 Yuan and Low Income line of 3,475 Yuan based on local people's definition of the poverty line in terms of consumption (Lu, 2010) were also applied.

4. World Bank 1.25 USD/day, which is 1,865 Yuan, and World Bank 2 USD/day which is 2,983 Yuan in 2005 PPP, were also applied.

ii)   Participatory Poverty Assessment

The methodology adopted the PPA (Chambers, 1994a, p. 91) exercise that includes the following sections: Focus group discussions (n=21, 4-12 individuals in each group) were conducted with men's, women's, elderly and ethnic groups. Discussions began with the history of the village and included topics such as the villagers' understanding of poverty, causes of poverty, and potential solutions. A participatory wealth ranking (PWR) was performed by creating categories of households according to criteria presented by the villagers. All households were divided into poor, average and non-poor households. Participants used a stack of cards to represent the number of households belonging in each category. Reasons for households falling into or rising out of poverty were discussed.

iii)   Multidimensional Poverty Indicators

MDI originated from the Indian Below Poverty Line approach (Sundaram, 2003), but was refined by the authors for work in China using the following steps.

We determined which indicators and how many to select based on priorities expressed by the villagers during the PPA exercise, household survey data, personal experience and a thorough review of the literature on rural poverty. Suitable indicators were selected based on these criteria: data availability, reliability, applicability, comparability, accuracy, quantification, logic and inclusion of households. (2) Correlation of the above indicators was done with PPA results, average expenditure, and average income to determine relationships. Eight indicators were selected that have negative or positive relationships with all of them in five dimensions. (3) After formalizing the indicators, they were situated in the appropriate dimensions. Dimensions were weighted equally regardless of how many indicators they included: a) demography: household size (+), average age of family members (-); b) human development: average education index (AEI) (+); c) employment (migrant): average number of migrants and formally employed household members per household (+); d) assets: average amount of durable assets (+), average number of cattle and horses (+); e) expenditure: average transportation and communication costs (+), average electricity cost (+). (4) Each indicator was transformed into a number ranging from 0 to 4. Each score is based on the approximate number of households in each category determined by the PPA discussions. A rank of 0 represents maximum deprivation; a 4 is minimum deprivation. The score for all of the eight indicators in the five dimensions for a household is between 0 and 20.

iv) The Official Poverty Identification Method

China's State Leading Group of Poverty Alleviation and Development launched the Official Poor List/Poverty Identification method in the late 1990s to identify the poor and where they are located based on the NPL. This method is implemented by the Poverty Alleviation and Development Office (*fupinban*) by asking the villages and village groups to submit a list of

poor and low-income households and population. The procedure has been implemented in the study area following these steps: (1) County government officials calculate the number of poor and low income households using rural household survey data, the total rural population and the number of households identified as poor in the past year to determine a quota. The quota is then allocated to the villages. (2) A list of poor and low-income households and population is produced by the village group leader and accountant or at a public village meeting according to the quota allocated. (3) The resulting list is made public at the villagers' group level and submitted to the Village Committee. (4) Depending on their category, household questionnaire forms for the poor and low-income households are filled in. (5) The list is submitted to the township government. (6) The list is approved by the government and submitted to the State Leading Group of Poverty Alleviation and Development.

4. RESULTS

(a) *Poverty incidences*

In our study area, poverty incidences ranged from 3.38 per cent (Chinese National Poverty Line (NPL)) using the Monetary Approach, to 32.77 per cent (Participatory Wealth Ranking (PWR)) from PPA, 33.82 per cent (MDI) derived from the Capability Approach and 38.27 per cent (the Official Poor List) from government measure (Table 1). Even when higher poverty lines were used, results were not greatly altered. Poverty incidence according to local people's poverty line was 59.61 per cent, much higher than the poverty incidences of PWR, Official Poor List and MDI. Low-income or average incidences (including both poor and average (low-income) households) ranged from 8.02 per cent (Monetary Approach), to 85.84 per cent (PWR), to 86.67 per cent (MDI), to 95.56 per cent official low income line (Table 1).

Empirical evidence thus suggests that different approaches generate significantly different poverty incidences.

Table

Table 1. *Comparison of Poverty (and Average) Incidences Using Different Approaches*

Approach		Poor (hh)	Average (hh)	Poverty Incidence (%)	Average Incidence (%)
	NPL	16	38	3.38	8.02
MA	Local price-based poverty line	85	200	17.97	42.28
	Local people's poverty line	282	411	59.61	86.88
OPL		190	473	38.27	95.56
PWR		160	405	32.77	85.84
MDI		160	410	33.82	86.67

*hh means household.

(b) *Socioeconomic characteristics*

Correlation coefficients of household socioeconomic characteristics showed that different identification methods and approaches identify different households as poor. The households identified do not even share the same socioeconomic characteristics for a given level of poverty, i.e. poverty profiles constructed according to each approach emphasize different socioeconomic characteristics (Table 2 and Table 3). Thus, if different approaches are used, households with different characteristics will be identified as poor.

Table 2. *Correlation coefficients of household socioeconomic characteristics with level of poverty according to different approaches*

Socioeconomic characteristics	Level of poverty			
	OPI	MA	PWR	MDI
Ethnicity (Miao, Yi, Han Chinese)	-0.1580	-0.1263	-0.0001	-0.1231
Sex of household head	0.1212	-0.0010	-0.0684	-0.2254
Households with migrants	0.0407	0.1862	0.0344	0.3701
No of formally employed members	0.0730	0.1366	0.1373	0.1351
Household size	-0.0433	0.1385	0.2712	0.6177
Age of household head	0.0942	-0.0368	-0.0011	-0.3788
Age of household members	0.0849	-0.1028	-0.0470	0.5813
Education years of household head	0.0306	0.1294	0.1861	0.4624
Average years of education of adults ≥15 age	0.0872	0.2094	0.2779	0.6658
Gross dependency rate	-0.0394	-0.0888	-0.0322	-0.0555
Average no of laborers	-0.0629	0.1359	0.0769	0.2415
Average no of students per capita	-0.0609	0.0594	0.0434	0.2194
Average no of Number of sick members per capita	-0.0178	0.0530	-0.1605	-0.2344
Average no of disabled members per capita	0.0162	-0.0401	-0.1129	-0.2248
Average medical cost	-0.0759	0.8143	-0.0284	0.0344
Average school cost	0.0468	0.0984	0.0214	0.1437
Average dry land area	0.0844	-0.0124	-0.1793	-0.3171
Average education index	0.0696	0.2129	0.2705	0.6818
Income	0.0634	0.2676	0.2329	0.4293
Expenditure	-0.0077	1.0000	0.1212	0.3163

Notes:– means negative correlation. FHH means female-headed households.

Table 3. *Summary Statistics of the four approaches and household socioeconomic characteristics*

Variable	Obs	Mean	Std. Dev.	Min	Max
Household ID	473	265.2748	149.8709	1	525
MA (Expenditure per capita)	473	2394.7	1756.565	0	25141.08
Official poor list	473	1.661734	.5597317	1	3
PWR	473	1.733615	.748495	0	3
MDI	473	9.546512	3.152036	0	17
Gross dependent rate	449	.5155531	.5411124	0	3
Household size	473	3.801268	1.293169	1	8
Head House head sex	473	1.069767	.2550244	1	2
House head age	473	43.72516	12.42522	10	80
Pieces of assets	473	1.541226	1.452238	0	6
Number of migrant job	473	.7885835	.852288	0	3
Medical cost	473	1039.112	3289.586	0	60000
School cost	473	491.7653	1221.275	0	15000
Dry land	473	1.535541	.8177967	0	6
School students	473	.5708245	.767283	0	2
Number of labours	473	2.437632	1.116527	0	6
Head education	473	5.040169	3.388114	0	13
Saving amount	473	350.9725	2618.102	0	53000
Transportation and communication cost	473	219.6702	435.7834	0	5500
Number of sick members	473	.6046512	.8722047	0	5
Number of disabled persons	473	.2219873	.6272271	0	5
House head ethnicity	473	1.579281	.6784781	1	3
Average age of household members	473	35.54056	14.01369	14.375	78
Adult education years	473	15.18182	10.14266	0	52
Education index	473	.434695	.2182877	0	1.083333
Total expenditure	473	5353.216	4286.284	0	63472.6
Net income	473	6357.674	4914.201	-1721	42243

The Monetary Approach shows a strong relationship with medical costs (R=0.8143) and weak relationship with income (R=0.2676) and education (R=0.2094) (Table 2). This implies that households which are poor in food consumption but with high medical and education costs are neglected, yet, this is one of the main causes of poverty in rural China (Gustafsson & Li, 2004; Hu et al., 2008; Tang et al., 2008). PWR shows weak relationships with education (R=0.2779), household size (R=0.2712) and income (R=0.2329). MDI correlates strongly with many socioeconomic characteristics such as education (R=0.6658), household size (R=0.6177), age of household members (R=0.5813), income (R=0.4293), and expenditure (R=0.3163). It has weak relationships with household head, households with migrants, numbers of laborers, students, and sick and disabled members. This implies that households with low education, small size, young members, and low income, low expenditure are poorer. The Official Poor List shows very weak correlations with all the above characteristics (Table 2), which demonstrates the political nature of the Chinese government measure.

Multiple regression models were developed for each of the four approaches using household socioeconomic characteristics as predictor variables (Table 4). The regression model of the monetary approach (F=215.87, df=439, P<0.001, R^2=0.81) and multidimensional approach (F=181.30, df=439, P<0.001, R^2=0.78) provide a good fit to the data. *Ethnicity*, *school students, adult education[2],* household size, average age of members, migrants, education index, head sex are significant predictor variables using the monetary approach. For the multidimensional approach, *expenditure, assets, dry land*, *laborer,*

household size, migrants, average age, trans-communication cost, education index, and head sex are significant predictor variables. Sex, education index, head ethnicity, average age and *medical cost* are predictor variables using the official poverty list, but the overall explanatory power of the model is low (F=6.37, df=444, P<0.001, R^2=0.05). Using the participatory approach, *school cost, sick members*, *head education, expenditure,* household size, average age of members, assets, education index, medical cost, head ethnicity are significant predictor variables with the model having medium to low explanatory power (F=18.68, df=441, P<0.001, R^2=0.23) (Table 4).

Table 4. *Multiple Regressions of Socio-economic Characteristics of households of different approaches*

Source	SS	df	MS	Number of obs= 449	
				F(9, 439) = 215.87	
Model	1.1478e+09	9	127529454	Prob > F= 0.0000	
Residual	259347190	439	590768.087	R-squared= 0.8157	
				Adj R-squared= 0.8119	
Total	1.4071e+09	448	3140875.62	Root MSE= 768.61	

MA	Coef.	Std. Err.	t	P>t	Beta
Transportation and communication cost	.846262	.0850543	9.95	0.000	.2125157
Household size	-200.2592	39.67908	-5.05	0.000	-.1370592
House head sex	459.9582	165.154	2.79	0.006	.0584428
Average age of household members	-7.934975	3.348256	-2.37	0.018	-.0511308
Pieces of assets	135.4814	28.04486	4.83	0.000	.1105941
Number of migrant job	191.3499	47.97477	3.99	0.000	.0922631
Medical cost	.4292088	.0108845	39.43	0.000	.8155335
School cost	.3227172	.0298028	10.83	0.000	.2272732
Number of labors	106.5276	46.54581	2.29	0.023	.0619197
_cons	1537.504	269.3013	5.71	0.000	.

Source	SS	df	MS	Number of obs = 449	
				F(4, 444)= 6.37	
Model	7.22636899	4	1.80659225	Prob > F= 0.0001	
Residual	125.954032	444	.283680252	R-squared= 0.0543	
				Adj R-squared = 0.0457	
Total	133.180401	448	.297277681	Root MSE= .53262	

OPL	Coef.	Std. Err.	t	P>t	Beta
Education index	.4397528	.1426734	3.08	0.002	.1641632
Medical cost	-.0000156	7.51e-06	-2.07	0.039	-.0961269
House head ethnicity	-.0874243	.0383241	-2.28	0.023	-.1085821
Average age of household members	.0076716	.0024963	3.07	0.002	.1606828
_cons	1.353808	.15454	8.76	0.000	.

Source	SS	df	MS	Number of obs= 449
				F(7, 441)= 18.68
Model	55.4451477	7	7.92073539	Prob > F= 0.0000
Residual	187.000287	441	.424036931	R-squared= 0.2287
				Adj R-squared = 0.2164
Total	242.445434	448	.541172844	Root MSE= .65118

PWR	Coef.	Std. Err.	t	P>t	Beta
Education index	1.100759	.2292029	4.80	0.000	.3045598
Household size	.1493081	.0298235	5.01	0.000	.246182
House head education	-.0260235	.0125707	-2.07	0.039	-.1174458
Average age of household members	.0125896	.0032535	3.87	0.000	.1954363
Pieces of assets	.1318313	.0241663	5.46	0.000	.2592558
Number of Number of sick members	-.2002457	.0381056	-5.26	0.000	-.2385382
House head ethnicity	.1401027	.0478345	2.93	0.004	.128969
_cons	.0780338	.2316725	0.34	0.736	.

Source	SS	df	MS	Number of obs= 449
				F(9, 439)= 181.30
Model	2682.28432	9	298.031591	Prob > F= 0.0000
Residual	721.666682	439	1.64388766	R-squared= 0.7880
				Adj R-squared = 0.7836
Total	3403.951	448	7.59810492	Root MSE= 1.2821

MDI	Coef.	Std. Err.	t	P>t	Beta
Number of labours	.3593829	.0774608	4.64	0.000	.1343064
Household size	.3107082	.0667027	4.66	0.000	.1367229
House head sex	-.7288601	.2755915	-2.64	0.008	-.0595428
Transportation and communication cost	.0009368	.0001425	6.57	0.000	.1512536
Pieces of assets	.6398684	.0480021	13.33	0.000	.3358272
Number of migrant job	.8640502	.0813021	10.63	0.000	.2678622
Average age of household members	-.0459897	.0062727	-7.33	0.000	-.1905331
Education index	4.140672	.3532444	11.72	0.000	.3057499
Area of dry land	.2584665	.0790241	3.27	0.001	.0755784
_cons	5.841913	.5194097	11.25	0.000	.

(c) *Overlap*

Only four households of 473 households (1 percent) were identified as poor by all four approaches. As depicted in Figure. 2. ABCD (see also Table 5), there was little overlap[3] between households identified by four, three, two, one, and any one of the approaches. Even with higher monetary poverty lines[4], the maximum overlap of all households among the four approaches was only 8.2 per cent (Table 6). The maximum overlap of poor households using any three approaches was 31 households or 6.55 per cent of the total (Figure. 2. ABC, ABD, ACD, BCD and Table 5). Using any two approaches, maximum overlap of poor households was 19.23 per cent of total households (Table 5, Table 7, Figure. 2. AB, AC, AD, BC, BD, CD). In the number of poor households identified using only one approach, the Official Poor List contains the highest number of poor households (63 households) that were left out by the other three approaches (Figure. 2. A, B, C, D and Table 5). Whatever three approaches are used, still one or more of poor households identified by the other approaches was left out.

Table 5. *Number of households identified as poor by any one, only one, two, three or four approaches (in NPL)*

	NPL	OPL	PWR	MDI	Overlap area
No of Households identified as poor by all four approaches		4			ABCD
No of Households identified as poor in three approaches	-		31		BCD
		-		4	ACD
	1		-		ABD
		0		-	ABC
No of households poor in two approaches	6	-	-		AB
		-	85	-	BC
		-	-	77	CD
		-	91	-	BD
	9	-		-	AC
	6	-	-		AD
No of left out households identified as poor in only one approach	1	-	-	-	A
	-	63	-	-	B
	-	-	34	-	C
	-	-	-	47	D
No of Households identified as poor in any one approach		303			A or B or C or D
Total households			473		

Notes: Household means household; – means the poor households are not poor under this or these approaches. A=NPL; B= OPL; C=PWR and D=MDI

Table 6. *Overlap percentages of four approaches using higher monetary poverty lines*

Different monetary poverty lines	Poverty incidence (%)	Overlap % in poor Households with OPL, PWR and MDI	Overlap % of all Households with OPL, PWR and MDI
National poverty line	3.38	25.00	1.00
National low income line	8.03	15.78	1.20
Local priced-based poverty line	17.97	18.88	3.80
Local priced-based low-income line	42.28	15.50	6.50
Local people's poverty line	59.61	12.05	7.10
Local low income line	86.89	9.48	8.20
World Bank 1.25 USD/day in 2005 PPP	39.11	16.21	6.34
World Bank 2 USD/day in 2005 PPP	78.43	9.97	7.80

Table 7. *Overlap of poor households between two approaches (unit: households (percentage)*

Overlap	Poverty line			OPL	PWR	MDI
	National	Actual price-based	Local			
OPL	6 (3.31%) (37.50%)	37 (20.44%) (43.52%)	118 (65.19%) (41.84%)	-	-	-
PWR	9 (5.80%) (56.25%)	45 (29.03%) (52.94%)	103 (66.45%) (36.52%)	85 (54.83%) (46.96%)	-	-
MDI	6 (3.33%) (37.50%)	40 (44.94%) (47.05%)	205 (71.18% (72.69%)	91 (47.89%) (50.27%)	77 (52.02%) (49.67%)	-

Overlap		NPL			
		Poor	Low income	Non-poor	Total
Official poverty list	Poor	6 (3.31%) (37.50%)	6 (3.31%) (27.27%)	169 (93.37) (38.85%)	181(100%)
	Low income	8 (2.95%) (50.00%)	15 (5.53%) (68.18%)	248 (91.51%) (57.01%)	271(100%)
	Non-poor	2 (9.52%) (12.50%)	1 (4.76%) (4.54%)	18 (85.71%) (4.13%)	21(100%)
	Total	16 (100%)	22 (100%)	435 (100%)	473

Overlap		Actual price-based poverty line			
		Poor	Low income	Non-poor	Total
Official poverty list	Poor	37 (20.44%) (43.52%)	48 (26.51%) (41.71%)	96 (53.03%) (35.16%)	181 (100%)
	Low income	44 (16.23%) (51.76%)	62 (22.87%) (53.91%)	165 (60.88%) (60.43%)	271 (100%)
	Non-poor	4 (19.04%) (4.70%)	5 (23.80%) (4.34%)	12 (57.14%) (4.95%)	21 (100%)

		85 (100%)	115 (100%)	273 (100%)	473
Overlap		Local poverty line			

		Poor	Low income	Non-poor	Total
Official poverty list	Poor	118 (65.19%) (41.84%)	39 (21.54%) (30.23%)	24 (13.25%) (38.70%)	181(100%)
	Low income	151 (55.71%) (53.54%)	84 (30.99%) (65.11%)	36 (13.27%) (58.06%)	271(100%)
	Non-poor	13 (61.90%) (4.60%)	6 (28.57%) (4.65%)	2 (9.52% (3.22%)	21(100%)
	Total	282 (100%)	129 (100%)	62 (100%)	473
Overlap		PWR			

		Poor	Low income	Non-poor	Left out	Total
Official poverty list	Poor	85(46.96%) (54.83%)	84 (46.40%) (35.59%)	11 (6.07%) (16.41%)	1 (0.55%) (6.66%)	181(100%)
	Low income	64(23.61%) (41.29%)	146(53.87%) (62.93%)	54 (19.92%) (80.59%)	7 (2.58%) (36.84%)	271(100%)
	Non-poor	6 (28.57%) (3.87%)	2(9.52%) (0.86%)	2 (9.52%) (2.98%)	11 (52.38%) (57.89%)	21(100%)
	Total	155 (100%)	232 (100%)	67 (100%)	19 (100%)	473
Overlap		MDI			

		Poor	Low income	Non-poor	Total
Official poverty list	Poor	74 (40.88%) (46.25%)	91 (50.27%) (36.40%)	16 (8.83%) (25.39%)	181 (100%)
	Low income	75 (27.67%) (46.87%)	150 (55.35%) (60.00%)	46 (16.97%) (73.01%)	271 (100%)
	Non-poor	11 (52.38%) (6.87%)	9 (42.85%) (3.60%)	1 (4.76%) (1.58%)	21 (100%)
	Total	160 (100%)	250 (100%)	63 (100%)	473
Overlap		Actual price-based poverty line			

		Poor	Low income	Non-poor	Total
National poverty line	Poor	16 (100%) (18.82%)	0	0	16 (100%)
	Low income	22 (100%) (25.88%)	0	0	22 (100%)
	Non-poor	47 (10.80%) (55.29%)	115 (26.43%) (100%)	273 (62.75%) (100%)	435 (100%)
	Total	85	115	273	473
Overlap		Local people's poverty line			

		Poor	Low income	Non-poor	Total
National poverty line	Poor	16 (100%)	0	0	16 (100%)
	Low income	22 (100%) (7.80%)	0	0	22 (100%)
	Non-poor	244 (56.09%) (86.52%)	129 (29.65%) (100%)	62 (14.25%) (100%)	435 (100%)
	Total	282 (100%)	129 (100%)	62 (100%)	473

Overlap			MDI		

		Poor	Low income	Non-poor	Total
National poverty line	Poor	13 (81.25.50%) (8.12%)	3 (18.75%) (1.20%)	0 / 0	16 (100%)
	Low income	14 (63.63%) (8.75%)	8 (36.36%) (3.20%)	0 / 0	22 (100%)
	Non-poor	133 (30.57%) (83.12%)	239 (54.94%) (95.60%)	63 (14.48%) (100%)	435 (100%)
	Total	160 (100%)	250 (100%)	63 (100%)	473

Overlap			PWR		

		Poor	Low income	Non-poor	Left out	Total
National poverty line	Poor	9 (56.25%) (5.80%)	3 (18.75%) (1.27%)	2 (12.50%) (2.98%)	2 (12.50%) (13.33%)	16(100%)
	Low income	14 (63.63%) (9.03%)	5 (22.72%) (2.11%)	1 (4.54%) (1.49%)	2 (9.09%) (13.33%)	22(100%)
	Non-poor	132 (31.42%) (85.16%)	224 (51.49%) (96.55%)	64 (15.23%) (95.52%)	15 (3.48%) (78.94%)	435(100%)
	Total	155 (100%)	232 (100%)	67 (100%)	19 (100%)	473

Overlap			PWR		

		Poor	Low income	Non-poor	Left out	Total
Actual price-based poverty line	Poor	45 (52.94%) (29.03%)	28 (32.94%) (11.86%)	7 (8.23%) (10.44%)	5 (5.88%) (33.33%)	85(100%)
	Low income	41 (35.65%) (26.45%)	55 (47.82%) (23.70%)	14 (12.17%) (20.89%)	5 (4.34%) (26.31%)	115(100%)
	Non-poor	69 (25.27%) (44.51%)	149 (54.57%) (64.22%)	46 (16.84%) (68.65%)	9 (3.29%) (47.37%)	273(100%)
	Total	155 (100%)	232 (100%)	67 (100%)	19 (100%)	473

Overlap			MDI		

		Poor	Low income	Non-poor	Total
Actual price-based poverty line	Poor	53 (63.35%) (33.12%)	29 (34.12%) (11.60%)	3 (3.52%) (4.76%)	85 (100%)
	Low income	42 (36.52%) (26.25%)	62 (53.91%) (24.80%)	11 (9.56%) (17.46%)	115 (100%)

	Non-poor	65 (23.80%) (40.62%)	159 (58.24%) (63.60%)	49 (17.94%) (77.78%)	273 (100%)
	Total	160 (100%)	250 (100%)	63 (100%)	473

Overlap		Local people's poverty line			
		Poor	Low income	Non-poor	Total
Actual price-based poverty line	Poor	85 (100%) (30.14%)	0	0	85 (100%)
	Low income	115 (100%) (40.78%)	0	0	115 (100%)
	Non-poor	82 (30.03%) (29.07%)	129 (47.25%) (100%)	62 (22.71%) (100%)	273 (100%)
	Total	282 (100%)	129 (100%)	62 (100%)	473

Overlap		PWR				
		Poor	Low income	Non-poor	Left out	Total
Local people's poverty line	Poor	103 (36.52%) (66.45%)	135 (47.87%) (58.18%)	32 (11.34%) (47.76%)	12 (4.25%) (63.15%)	282 (100%)
	Low income	39 (30.23%) (25.16%)	64 (49.61%) (27.58%)	20 (15.50%) (29.85%)	6 (4.65%) (31.57%)	129 (100%)
	Non-poor	13 (20.96%) (8.38%)	33 (53.22%) (13.98%)	15 (24.19%) (22.38%)	1 (1.61%) (6.66%)	62 (100%)
	Total	155 (100%)	232 (100%)	67 (100%)	19 (100%)	473

Overlap		MDI			
		Poor	Low income	Non-poor	Total
Local people's poverty line	Poor	121 (42.90%) (75.62%)	140 (49.64%) (56.00%)	21 (7.46%) (33.33%)	282 (100%)
	Low income	31 (24.03%) (19.37%)	77 (59.68%) (30.80%)	21 (16.27%) (33.33%)	129 (100%)
	Non-poor	8 (12.90%) (5.00%)	33 (53.22%) (13.20%)	21 (33.87%) (33.33%)	62 (100%)
	Total	160 (100%)	250 (100%)	63 (100%)	473

Overlap		MDI			
		Poor	Low income	Non-poor	Total
PWR	Poor	77 (49.67%) (48.12%)	69 (44.51%) (27.60%)	9 (5.80%) (14.28%)	155 (100%)
	Low income	60 (25.86%) (37.50%)	138 (59.48%) (55.20%)	34 (14.65%) (53.96%)	232 (100%)
	Non-poor	11 (16.41%) (6.87%)	36 (53.73%) (14.44%)	20 (29.85%) (31.74%)	67 (100%)
	Left out	12 (63.15%) (7.50%)	7 (36.84%) (2.80%)	0	19
	Total	160 (100%)	250 (100%)	63 (100%)	473

These results show that the chance is low that a household identified as poor in one approach will be identified as poor by another approach. The exclusion error (percentage of people who are not monetary poor but official, participatory or multidimensional poor) is high, whereas the inclusion error (percentage of people who are monetary poor but not official, participatory or multidimensional poor) is also high. This suggests that monetary assessment is a poor proxy for other approaches since it does not capture households poor in other dimensions. It cannot be used as a proxy for other approaches.

Identified by any one approach, about 303 households were poor in at least one dimension (see Figure 1 A or B or C or D and Table 5). This means that whatever approach is used, only 64.05 per cent of total households are identified as poor in at least one dimension. Overlap of results between four, three and two approaches was quite low.

Figure 1. *Overlapped Percentages of Poor Households in Only One (Left Out), Two, Three, Four Approaches*
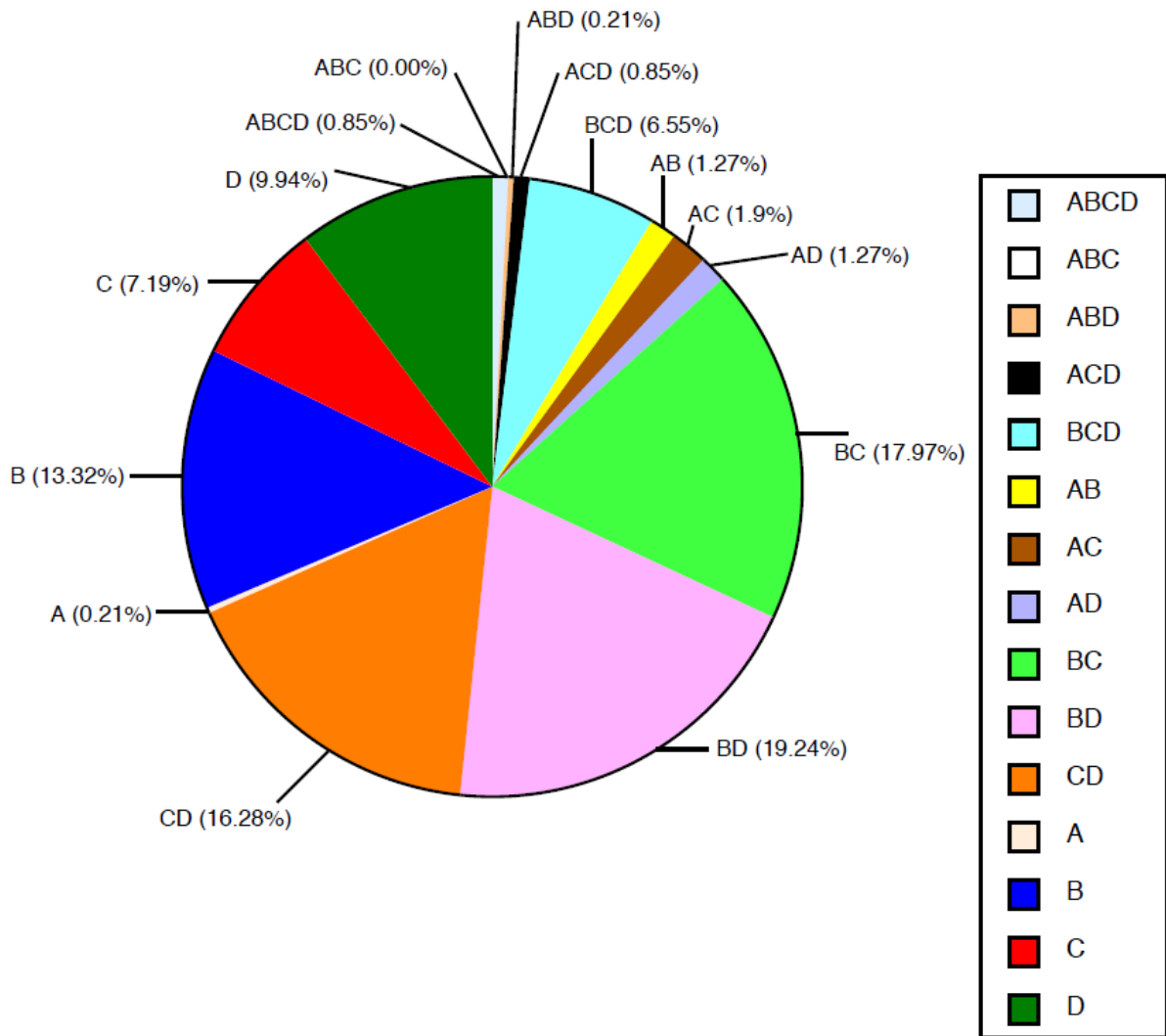
Note: The graph depicts the percentage households classified as Poor by only one approach (left out households by the other three approaches) (A=NPL; B= OPL; C=PWR and D=MDI) or resulting from a combination of the 4 approaches where there is an overlap in the households classified as Poor. The percentage was calculated as the number of households classified as poor out of the total households sampled (n=473). A household may be represented more than once in different combinations of the 4 approaches.

(d) *Correlation coefficients between the four approaches*

Spearman correlations show that the correlation/overlap between the four approaches was low. All the approaches have weak correlations with each other ($0.0670 \leq R \leq 0.4110$) (Table 8). This shows that the monetary approach cannot be used as a proxy to target the poor identified

by other approaches. There is a mismatch between different approaches-either some poor will be ignored or some non-poor will be considered to be in poverty(Notten, 2009).

Table 8. *Spearman rank correlation coefficients of the results of the four approaches*

	MA	OPL	PWR	MDI
MA	1			
OPL	0.0670	1		
PWR	0.2035	0.2413	1	
MDI	0.4110	0.1103	0.3735	1

(e) *Strengths and Weaknesses*

Different approaches to measuring poverty highlight and hide different facets of being poor. All of the methodologies contribute detailed descriptions of poverty, but no single approach conveys the varied dimensions of poverty.

The Monetary Approach almost invariably includes only private resources such as income and expenditure. MDI measures well the causes of poverty, but has problems with defining how many indicators to use and how much weight to give them, how to scale an indicator, and where to draw poverty lines. Both the Monetary Approach and MDI provide quantitative data which allow for comparisons, aggregation, and generalization at micro and macro levels. PPA provides qualitative data for a rich definition of poverty by involving villagers in defining what poverty is, what its causes are, and which households are poor. However, PPA is relative, not comparable and generalizable, and can only be used at the micro level. PPA and MDI reveal gender dimensions of poverty. The Official Poor List has state-imposed quota limitations on the number of poor households; its results are relative, political and not comparable with other methods.

(f) *Poverty Reduction Strategy*

The policy implications of the monetary approach focus on income generation to help to alleviate poverty in the short term. PPA involves poor people in program design and implementation to reach the goal of empowerment of the poor over the long term. MDI takes into accounts the causes and consequences of poverty and provides information on how to implement a structural policy response. The Official Poverty Identification method emphasizes income generation and improvement of production and living conditions of the poor.

(g) *Epistemological and Normative Theory*

Low overlap/correlation and different highlights and hides to poverty between the four approaches empirically show that poverty definitions result from which discipline is viewing the issue. Different perspectives have much to do with the way in which knowledge of poverty is constructed and reproduced (Tooze & Murphy, 1996, p. 681). In other words, these differences and the low overlap/correlation between approaches to poverty analysis derive from epistemology; our results reflect this fact (Ravi Kanbur & Shaffer, 2007, p. 185; Tooze & Murphy, 1996, p. 681). Epistemology is deeply relevant to poverty analysis because it bears on the types of knowledge which are favoured and validation standards that are used (Ravi Kanbur & Shaffer, 2007, pp. 183-185). Differences in epistemological approach underlie a standard distinction in the philosophy of social science between empiricism/positivism, hermeneutics/interpretive approaches and critical theory/critical hermeneutics (Braybrooke, 1987; Brian Fay, 1975). Alternative approaches convey different types of information on populations, population coverage, methodology and disciplinary framework. There are important links between empiricism and the monetary poverty

approach which is an amalgam of two variants of utility theory, revealed preference theory, money metric utility, and nutrition science. Important linkages are also found between the critical hermeneutic tradition and the participatory approach to poverty assessment, which involves interpreting perceptions of the meaning and causes of poverty as revealed by participants through dialogue. The various approaches to poverty span different 'spheres of concern'. Normative theory provides the underpinnings of different conceptions of poverty and/or the processes of determining their constituent elements; this matters in poverty analysis because different theoretical traditions tend to favour different conceptions or dimensions of poverty. The tensions relating to epistemology and normative theory are at root philosophical and not amenable to any easy theoretical or technical fix (Ravi Kanbur & Shaffer, 2007, p. 192). Few policy makers in China and elsewhere have yet to consider normative theory and the epistemology of poverty.

These disciplinary divides are associated with the low coefficients/overlaps that we found. Results depend first on how poverty is viewed, whether it is viewed in terms of income/expenditure, capability/functioning or multiple dimensions, empowerment, or politics of quota, or social exclusion. If poverty is viewed in a monetary economic sense, then it will be measured as such with income generation as the solution. If poverty is recognized as capability failure, then capability/functioning will be measured and poverty reduction strategies will seek to extend human capability. If poverty is viewed in a broad framework of social sciences and economics, then the multiple dimensions of poverty will be measured and targeted. If poverty is viewed from anthropological and social sciences using a participatory approach, analyses will be based on non-numerical information and contextually generated qualitative categories. Then local people's perspectives and priorities on poverty will be highlighted and empowerment and power issues will be a central feature of the research (B.

Fay, 1987). If poverty is viewed from an official government angle, then politics will play a key role. If poverty assessment focuses on social exclusion, then strategies will attempt to eliminate discrimination (R. Saith, 2001, p. 13).

5. CONCLUSIONS

We empirically compared four approaches to poverty assessment using the same data set from 473 households in rural Yunnan, China. Results show that these approaches generate dissimilar poverty rates. Different approaches identify households with different socioeconomic characteristics as poor. There is little overlap between households identified by any of the approaches. Correlation coefficients between the results of the four approaches are low. Relations between different approaches are positive, but very weak. Different approaches highlight and hide certain aspects and dimensions of poverty. We can conclude that alternative approaches identify different households as poor and measure different dimensions of poverty that lead to different poverty reduction strategies. These findings represent a fundamental methodological division between disciplines and epistemology, i.e. purely economic concepts of poverty ('income' poverty) and various broader concepts.

Our findings clearly demonstrate that the question of who is poor has many different answers. However, there is as yet little communication and much bias between different disciplines. For example, social scientists often consider qualitative evidence as sufficient, while economists require household surveys to produce 'hard data'. In practice and in policymaking, a single approach seldom provides satisfactory data (Lu, 2011). The lack of association between the four approaches to poverty assessment and their lack of overlap means that depending on one approach will involve serious targeting errors and result in not accounting for other kinds or dimensions of poverty. The large discrepancies in those identified as poor according to different approaches means that one poverty assessment

approach cannot be a proxy for other approaches. If only one, two, or three approaches are used to identify the poor, some households will be left out.

Households identified as poor by the different approaches are poor and vulnerable in different dimensions. All households identified as poor by any single approach should be included in targeting for poverty reduction according to the specific dimensions in which these households suffer deficits (area ABCD in Figure 2, see also Table 5). This broadens the targeting for poverty reduction to a large number of households and population, suggesting that poverty reduction should provide different kinds of assistance to the poor in different dimensions of poverty.

6. IMPLICATIONS FOR EPISTEMOLOGY, METHODOLOGY AND POLICY OF POVERTY ASSESSMENT

Our findings have a number of conceptual, methodological and policy implications in China and elsewhere.

(a) *Conceptual implications*

The differences between the different approaches to poverty assessment have significant implications for the numerical transformation of data, the selection of validity criteria, and the conception/dimension of poverty adopted and interpersonal comparisons of well-being. The conceptual understanding of poverty should be broadened to a broad multidimensional and multidisciplinary socioeconomic understanding to improve our knowledge and analysis of poverty. This calls for a paradigmatic shift in poverty analysis to include its human, economic and sociological dimensions (Ahmed, 2004, p. 15). We concur with several researchers that communication, dialogue, interaction and learning (i.e. mutual learning) between different disciplines provides a better way to understand the different natures of

poverty (Barahona & Levy, 2007, p. 338; Gunewardena, 2004, p. 433; Howe & McKay, 2007).

(b) *Methodological implications*

Using monetary poverty indicators alone will yield rather large errors of exclusion. A monetary approach will thus substantially underestimate the severity of poverty. And income/expenditure does not alleviate poverty in its other dimensions. This means that since the Millennium Development Goals, Human Development Index and the Poverty Reduction Strategy Paper only capture monetary poverty by using monetary approach, people who are poor in other dimensions are left out. It also means that the alleviation of monetary poverty will likely be short term if the interlinked multiple causes of being poor are not tackled (Hayati, Karami, & Slee, 2006). This reaffirms the need for using different approaches to assess poverty to complement monetary poverty measures.

The different approaches should not antagonize but improve, complement and supplement one another. Different approaches tackle different aspects of poverty and answer different questions, thus serving different purposes. It much depends on what kind of poverty one wants to alleviate. Therefore, different approaches should be applied simultaneously or sequentially, purposively, integrated, or combined (Fusco, 2003; S. Kanbur, 2003; Place, Adato, & Hebinck, 2007, p. 324) to avoid leaving out those who are considered poor in other poverty dimensions. A combination of methods for poverty identification can overcome most of the biases in the research process that are encountered when only a single approach is used (Hayati, et al., 2006, p. 338).

Alternative approaches point to different policies and new strategies for poverty alleviation. Income generation from monetary approach can help to alleviate poverty but often only in the short term. There is no guarantee that an economic answer to the economic dimension of poverty will spread to other dimensions and allow poor people to rise out of poverty (Fusco, 2003, p. 12). PPA proposes empowerment of the poor for long term. MDI tackles causes and consequences of poverty in mid-term and long-term. Short-term, temporary or seasonal poverty strategies may call for income generation, safety nets and access to credit. Long-term, chronic poverty strategies require more fundamental changes to policies in education, health and social security. Programs designed to reduce monetary poverty are likely to be ineffective in reaching those households identified as poor under approaches like the participatory or multidimensional approach. Policymakers in China and elsewhere should be aware of these alternatives; there is little reason to give primacy to one strategy over another (White, 2002, p. 519). In China, for example, if multiple approaches are employed, people poor in non-monetary dimensions would be better identified and root causes of rural poverty could be more precisely understood. Poor people could participate in the design and implementation of programs that would assist them to escape poverty. In fact, programs designed more from the bottom-up may relieve the government of some of the burdens of implementation. Government quotas that do not capture the full extent of poverty in China could be replaced (or at least enhanced) by more accurate measures that could lead to more

integrated policy strategies. Poverty reduction would be more effective and sustainable over longer periods of time.

There is a need to shift from poverty reduction strategies focused solely on income generation activities to strategies encompassing a broad combination of short-term, mid-term and long-term strategies covering different aspects of poverty. This calls for a paradigmatic shift in poverty analysis to include its human, economic and sociological dimensions with heightened communication and interaction between different disciplines (Barahona & Levy, 2007, p. 338; Howe & McKay, 2007). Some dimensions of poverty must be tackled together for multifaceted effective change. Only the use of multiple approaches can break the interlinked and intergenerational reproduction mechanisms of poverty over the long term.

REFERENCES

Ahmed, A. I. M. U. (2004). Socio-Demographic Correlates of Rural Poverty in Bangladesh: A Case Study of Gaibandha Sadar and Tanore Upazilas. *Bangladesh e-Journal of Sociology, 1*(2), 17.

Atkinson, A. B. (Ed.). (1998). *Social Exclusion, Poverty and Unemployment* (Vol. CASE Paper 4). London: London School of Economics, Centre for Analysis of Social Exclusion.

Barahona, C., & Levy, S. (2007). The Best of Both Worlds: Producing National Statistics Using Participatory Methods. *World Development, 35*(2), 326-341.

Baulch, B., & Masset, E. (2003). Do Monetary and Nonmonetary Indicators Tell the Same Story About Chronic Poverty? A Study of Vietnam in the 1990s. *World Development, 31*(3), 441-453.

Booth, C. (1887). The Inhabitants of Tower Hamlets (School Board Division), Their Condition and Occupations. *Journal of the Royal Statistical Society*(50), 326-340.

Bradshaw, J., & Finch, N. (2003). Overlaps in Dimensions of Poverty. *Journal of Social Policy, 32*(04), 513-525.

Braybrooke, D. (1987). *Philosophy of Social Science*. New Jersey: Prentice-Hall Inc.

Chambers, R. (1994a). The Origins and Practice of Participatory Rural Appraisal. *World Development, 22*(7), 953-969.

Chambers, R. (1994b). Participatory Rural Appraisal (PRA): Analysis of Experience. *World Development, 22*(9), 1253-1268.

Chambers, R. (1995). *Poverty and Livelihoods: Whose Reality Counts?* (IDS Discussion Paper 347). Brighton: Institute of Development Studies.

Chambers, R. (2002). Relaxed and Participatory Appraisals: Notes on Practical Approaches and Methods for Participants in PRA?PLA-related Familiarisation Workshops.   Retrieved 8 November, 2004, from http://www.ids.ac.uk/ids/particip/research/pra/pranotes02.pdf

Chen, S., & Ravallion, M. (2007). Absolute Poverty Measures for the Developing World, 1981–2004. *Proceedings of the National Academy of Sciences, 104*(43), 16757.

Chen, S., & Ravallion, M. (2010). The Developing World Is Poorer Than We Thought, But No Less Successful in the Fight Against Poverty. *Quarterly Journal of Economics, 125*(4), 1577-1625.

Cornwall, A. (2003). Whose Voices? Whose Choices? Reflections on Gender and Participatory Development. *World Development, 31*(8), 1325-1342.

CPRC. (2004). *The Chronic Poverty Report 2004-05*. Manchester: The Chronic Poverty Research Centre, Institute for Development Policy & Management, University of Manchester.

D'Ambrosioa, C., Deutschb, J., & Silberb, J. (2009). Multidimensional Approaches to Poverty Measurement: an Empirical Analysis of Poverty in Belgium, France, Germany, Italy and Spain, Based on the European Panel. *Applied Economics, 42*(1), 1-34.

Deneulin, S., & Stewart, F. (2002). Amartya Sen's Contribution to Development Thinking. *Studies in Comparative International Development, 37*(2), 61-70.

Deutsch, J., & Silber, J. (2005). Measuring Multidimensional Poverty: An Empirical Comparison of Various Approaches. *Review of Income and Wealth, 51*(1), 145-174.

Farrington, F. (2004). Towards a Useful Definition: Advantages and Criticisms of 'Social Exclusion'. Retrieved 28 July, 2004, from http://www.ssn.flinders.edu.au/geog/geos/farrington.html

Fay, B. (1975). *Social Theory and Political Practice*. London: George Allen and Unwin Ltd.

Fay, B. (1987). *Critical Social Science: Liberation and Its Limits*. Cambridge Polity Press.

Foster, J., Greer, J., & Thorbecke, E. (1984). A Class of Decomposable Poverty Measures. *Econometrica, 52*, 761-765.

Fusco, A. (2003). *On the Definition and Measurement of Poverty: The Contribution of Multidimensional Analysis*. Paper presented at the The 3rd Conference On The Capability Approach: From Sustainable Development To Sustainable Freedom. Retrieved from http://cfs.unipv.it/sen/papers/Fusco.pdf

Greeley, M. (1994). Measurement of Poverty and Poverty of Measurement. *IDS Bulletin, 25*(2).

Gunewardena, D. (2004). Quantitative and Qualitative Approaches to Measuring Poverty: Issues and Challenges in the Context of Sri Lanka. In H. Gsanger & M. Fernando (Eds.), *Poverty Monitoring in Asia* (pp. 487). Colombo, Sri Lanka: Centre for Poverty Analysis.

Gustafsson, B., & Li, S. (2004). Expenditures on Education and Health Care and Poverty in Rural China. *China Economic Review, 15*(3), 292-301.

Haan, A. d. (2001). Social Exclusion: Enriching the Understanding of Deprivation. Retrieved 2 November 2004, from http://www.sussex.ac.uk/Units/SPT/journal/archive/pdf/issue2-2.pdf

Hayati, D., Karami, E., & Slee, B. (2006). Combining Qualitative and Quantitative Methods in the Measurement of Rural Poverty: the Case of Iran. *Social Indicators Research, 75*(3), 361-394.

Howe, G., & McKay, A. (2007). Combining Quantitative and Qualitative Methods in Assessing Chronic Poverty: The Case of Rwanda. *World Development, 35*(2), 197-211.

Hu, S., Tang, S., Liu, Y., Zhao, Y., Escobar, M. L., & de Ferranti, D. (2008). Reform of How Health Care is Paid for in China: Challenges and Opportunities. *The Lancet, 372*(9652), 1846-1853.

Hulme, D., & Shepherd, A. (2003). Conceptualizing Chronic Poverty. *World Development, 31*(3), 403-423.

Kanbur, R., & Shaffer, P. (2007). Epistemology, Normative Theory and Poverty Analysis: Implications for Q-Squared in Practice. *World Development, 35*(2), 183-196.

Kanbur, R., & Squire, L. (Eds.). (2001). *The Evolution of Thinking About Poverty: Exploring the Contradictions*. Oxford: Oxford University Press.

Kanbur, S. (2003). *Q-squared, Combining Qualitative and Quantitative Methods in Poverty Appraisal*. Delhi: Permanent Black.

Kuklys, W., & Robeyns, I. (2004). Sen's Capability Approach to Welfare Economic. Retrieved 1 August 2004, from http://www.ingridrobeyns.nl/Downloads/cwpe0415.pdf

Laderchi, C. R., Saith, R., & Stewart, F. (2003). Does It Matter That We Do Not Agree on The Definition of Poverty? A Comparison of Four Approaches. *Oxford Development Studies, 31*(3), 243-274.

Laderchi, C. R., Saith, R., & Stewart, F. (2003). Does it Matter That we Don't Agree on the Definition of Poverty? A Comparison of Four Approaches. from Queen Elizabeth House, the University of Oxford: http://www2.qeh.ox.ac.uk/RePEc/qeh/qehwps/qehwps107.pdf

Laderchi, R. (1997). Poverty and its Many Dimensions: the Role of Income as an Indicator. *Oxford Development Studies, 25*(3), 345-360.

Lenoir, R. (1974). *Les Exclus: un Fran ais sur dix*. Paris: Seuil.

Li, B., & Pinel, J. G. (2004). *nengli, pinkun, shehui paichi ji fuli* (Capability, Poverty, Social exclusion and Welfare). Retrieved 29 July, 2004, from http://www.sociology.cass.net.cn/shxw/shzc/t20040610_2178.htm

Lok-Dessallien, R. (2004). Review of Poverty Concepts and Indicators. Retrieved 12 August, 2004, from
http://www.undp.org/poverty/publications/pov_red/Review_of_Poverty_Concepts.pdf

Lu, C. (2010). Who is poor in China?—A Comparison of Alternative Approaches to Poverty Assessment in Rural Yunnan. *Journal of Peasant Studies, 37*(2), 407-428.

Lu, C. (2011). *Poverty and Development in China: Alternative Approches to Poverty Assessment.* Oxford: Routledge.

Maltzahn, R. v., & Durrheim, K. (2008). Is Poverty Multidimensional? A Comparison of Income and Asset Based Measures in Five Southern African Countries. *Social Indicators Research, 86*, 149-162.

McKay, A., & Lawson, D. (2003). Assessing the Extent and Nature of Chronic Poverty in Low Income Countries: iIssues and Evidence. *World Development, 31*(3), 425-439.

Narayan, D., Chambers, R., Shah, M. K., & Petesch, P. (Eds.). (2000). *Crying out for Change*. Washington, D.C.: World Bank.

Narayan, D., Patel, R., Schafft, K., Rademacher, A., & Koch-Schulte, S. (Eds.). (1999). *Can Anyone Hear Us ? Voices From 47 Countries* (Vol. I). Washington, D.C.: World Bank.

Narayan, D., & Petesch, P. (Eds.). (2002). *From Many Lands* (Vol. 3). Washington, D.C.: World Bank.

Norton, A., Bird, B., Brock, K., Kakande, M., & Turk, C. (2001). *A Rough Guide to PPAs, Participatory Poverty Assessment-An Introduction to Theory and Practice*: Center for AID and Public Expenditure, ODI.

Notten, G. (2009). Is Monetary Poverty a Suitable Proxy for Deprivation in the Physical Environment? *Children, Youth and Environments 19*(2), 21-35.

Nussbaum, M. (2000). Women and Human Development *The Capabilities Approach*. Cambridge: Cambridge University Press.

Philipp, B. (1999). Poverty- World Bank and UNDP concepts. Retrieved 4 August, 2004, from http://www.gtz.de/forum_armut/download/bibliothek/arm_mess_e.pdf

Place, F., Adato, M., & Hebinck, P. (2007). Understanding Rural Poverty and Investment in Agriculture: An Assessment of Integrated Quantitative and Qualitative Research in Western Kenya. *World Development, 35*(2), 312-325.

Qizilbash, M. (2003). *On the Arbitrariness and Robustness of Multi-Dimensional Poverty Rankings*. Paper presented at the WIDER Conference on Well-being and Inequality in Developing Countries. Retrieved from http://www.wider.unu.edu/conference/conference-2003-2/conference%202003-2-papers/papers-pdf/Qizilbash%20240403.pdf

Qizilbash, M. (2004). On the Arbitrariness and Robustness of Multi-Dimensional Poverty Rankings. *Journal of Human Development and Capabilities, 5*(3), 355-375.

Ravallion, M. (1992). *Poverty Comparisons: a Guide to Concepts and Methods* (No. LSMS Working Paper 88). Washington, D.C.: World Bank.

Robeyns, I. (2005). The Capability Approach: a Theoretical Survey. *Journal of Human Development and Capabilities, 6*(1), 93-117.

Roemer, J. (1996). *Theories of Distributive Justice*. Cambridge: Harvard University Press.

Rowntree, B. S. (1902). *Poverty. A Study of Town Life*. London: MacMillan and Co.

Saith, A. (2004). Social protection, Decent Work and Development. Retrieved 2 August, 2004, from http://www.ilo.org/public/english/bureau/inst/download/dp15204.pdf

Saith, A. (2005). Poverty Lines Versus the Poor: Method Versus Meaning. *Economic and Political Weekly*(Issues in Measurement of Poverty), 4601-4610.

Saith, R. (2001). *Social Exclusion: the Concept and Application to Developing Countries* (Working Paper Number 72 No. QEH Working Paper Series - QEHWPS72). Oxford: Queen Elizabeth House, University of Oxford.

Sen, A. (1992). *Inequality Reexamined*. Oxford: Oxford University Press.

Sen, A. (1993). Capability and Well-being. In M. Nussbaum & A. Sen (Eds.), *The Quality of Life*. Oxford: Clarendon Press.

Sen, A. (2000). *Social Exclusion: Concept, Application, and Acrutiny* (Social Development Paper No. Social Development Papers No. 1). Manila: Office of Environment and Social Development, Asian Development Bank.

Srinivasan, T. N. (1993). *Human Development: A New Paradigm or Reinvention of the Wheel?* Nashville: American Economic Association.

Stewart, F., Saith, R., & Harriss-White, B. (2007). *Defining Poverty in the Developing World*. London, New York: Palgrave Macmillan.

Sugden, R. (1993). Welfare, Resources, and Capabilities: A Review of Inequality Reexamined by Amartya Sen. *Journal of Economic Literature, XXXI*(1947-1962).

Sumner, A. (2007). Meaning Versus Measurement: Why do 'Economic' Indicators of Poverty Still Predominate? *Development in Practice, 17*(1), 4-13.

Sundaram, K. (2003). On Identification of Households Below Poverty Line in BPL Census 2002: Some Comments on the Proposed Methodology. *Economic and Political Weekly (EPW), 2005*(21 January).

Tang, S., Meng, Q., Chen, L., Bekedam, H., Evans, T., & Whitehead, M. (2008). Tackling the Challenges to Health Equity in China. *The Lancet, 372*(9648), 1493-1501.

Tooze, R., & Murphy, C. N. (1996). The Epistemology of Poverty and the Poverty of Epistemology in IPE: Mystery, Blindness, and Invisibility. *Millennium-Journal of International Studies, 25*(3), 681.

UN. (2006). *The Millennium Development Goals Report*. New York: United Nations.

WB. (2000). *World Development Report 2000/2001: Attacking Poverty*. New York: Oxford University Press.

Whelan, C., Layte, R., & Maitre, B. (2004). Understanding the Mismatch Between Income Poverty and Deprivation: A Dynamic Comparative Analysis. *European Sociological Review, 20*(4), 287.

White, H. (2002). Combining Quantitative and Qualitative Approaches in Poverty Analysis. *World Development 30*(3), 511-522.

Ysander, B. (1993). Descriptions of Inequality. In M. Nussbaum & A. K. Sen (Eds.), *The Quality of Life*. Oxford: Clarendon Press.

Notes

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[1] The dependency ratio is defined as the ratio of the number of dependants (people aged less than 15 or older than 60) and the number of people of working age (between 15 and 60).

[2] Italics in this paragraph mean the characteristics only display in this approach.

[3] Overlap here means the overlapped households identified by four, three, two, one, and any one of the approaches.

[4] Lines such as the national low income line of 924 Yuan, local price-based poverty line of 1,296 Yuan, local priced-based low income line of 1945 Yuan, local people's poverty line of 2315 Yuan, local income line of 3475 Yuan, or World Bank 1.25 USD/day or 2 USD/day.