Multidimensional

Poverty Dynamics in Indonesia

Research in-progress

Paola Ballon and Mauricio Apablaza
OPHI, *University of Oxford*

Tabita, Kenya   Rabiya, India   Stéphanie, Madagascar   Agathe, Madagascar   Dalma, Kenya   Ann-Sophie, Kenya   Valérie, Madagascar

Motivation

Poverty - Multidimensionality and Dynamics

Poverty as capability deprivation is a multidimensional phenomenon (Sen, 85;92)

No indicator alone can capture the multiple living conditions that matter to people, especially if these overlap analysis, hence the analysis shall focus on the joint distribution

Money-metric poverty measures (i.e., 1.25$ a day), based on consumption theory, are multidimensional, but neither understand poverty as capability deprivation, nor give any importance to specific deprivations

An inter-temporal analysis of multidimensional poverty shall be able to:
        a) account for the duration (number of periods) of poverty,
        b) differentiate between chronic and transient poverty.

Motivation

Hence, a dynamic analysis of poverty, conceptualised as capability deprivation, needs multidimensional poverty (MD) measures that:

    a) identify people's deprivations in specific dimensions of wellbeing
    b) allow to understand changes in poverty across time (cross-section)
    c) identify those that are chronically poor (panel-data)
    d) account for the duration of poverty

The Alkire and Foster (AF) methodology in a dynamic context allows analysing poverty under the above four elements
    a) Alkire and Foster, (2011);
    b) Alkire, Apablaza, Chakravarty and Yalonetzky (2012)

UNIVERSITY OF OXFORD

The study

The aim of this study is to:

a)   measure and analyse poverty in Indonesia in a multidimensional and dynamic perspective

b)   compare poverty incidence in MD poverty & "monetary poverty"

We apply the AF methodology to the Indonesian Family Life Survey (IFLS) datasets of 1993, 1997, 2000 and 2007

This rich dataset allows us to:

a)   measure poverty in five domains (12 indicators) comprising education, housing, basic services, health issues, and material resources

b) analyse time changes and chronicity in a 13-year span.

Outline

OPHI Oxford Poverty & Human Development Initiative

UNIVERSITY OF OXFORD

1. The AF methodology

The AF method identifies the poor using two forms of cutoff one within a dimension, and one across dimensions.

To aggregate total poverty, it employs the FGT (1984) measures appropriately adjusted to account for multidimensionality

The dimensional cutoff (denoted by z) is a traditional dimension-specific deprivation cutoff, that identifies a person as **deprived** if she falls below a (dimensional-*indicator*) poverty line.

The cross-dimensional cutoff (denoted by k) states how widely deprived a person must be in order to be **identified** as **multidimensionally** poor, by ***counting*** the dimensions in which she is deprived.

The AF methodology (cont.)

The AF method proposes a family of measures that can reflect the incidence, depth and severity of multidimensional poverty. The analysis here focuses on multidimensional poverty incidence (and intensity).

In this case, the AF measure gives an **adjusted headcount ratio** (M_0) that is the product of two indices:

$$M_0 = H \times A$$

H is the **multidimensional headcount ratio**. This is the percentage of people identified as poor using the dual cutoff approach. It shows the *incidence* of multidimensional poverty.

A is the **average proportion of weighted deprivations** people suffer at the **same time.** It shows the *intensity* of people's poverty – the *joint distribution* of their deprivations.

UNIVERSITY OF OXFORD

The AF method – chronic poverty

In the case of panel data the AF method allows identifying those that are chronically and multidimensionally poor. In this case, the identification uses three cutoffs:

z: dimension-specific cutoffs, to identify who is Deprived
k: cross-dimensional cutoff, to identify who is MD Poor
τ: duration cutoff, to identify who is Chronically poor

This leads to:
$$M0^C = H^C \times A^C \times D^C$$

H^C is the % of people who are **multidimensionally poor in** τ or more periods.

A^C is the **average intensity** among the **chronically multidimensionally** poor

D^C is the **average duration** of chronic pov.% of periods in which people are CP

2. Indonesia & IFLS datasets

Indonesia has experienced strong economic growth over the last forty years. It has made remarkable progress in reducing the proportion of income poor people, and improving social indicators.

The numerous international crisis that has experienced had drastically altered both the economic and political conditions, jeopardising its progress in both income and non-income domains.

An in-depth analysis of joint income/non-income deprivations and its persistence over time remains unsettled.

We use the IFLS a large scale longitudinal survey of individuals, households, families and communities in Indonesia. It collects extensive information on the socioeconomic, demographic and health conditions of Indonesians.

The sample is representative of about 83% of population and contains over 30,000 individuals living in 13 of the 27 provinces in the country.

3. MP - normative considerations

| Dimension (weight)	Indicator	Deprivation Cut-off (z)
Housing (1/5)	Shelter: Walls/ Floor / Roof	At least two deprived indicators: either walls or floor are made of bamboo or the roof made of palm leaves
Education (1/5)	Illiteracy	At least one adult member (15+) is illiterate or has less than 5 years of education
	School attendance	At least one member aged 6 to 15 is not attending school
Health (1/5)	Nutrition	Any adult or child in hh with nutritional information is malnourished
	Acute morbidity	At least one adult (15+) member who experiences at least 3 out of 12 acute diseases
	Mobility	At least one adult (15+) member who is experiences at least 4 out of 7 physical mobility issues

Alkire & Santos, 2010

3. MP – normative considerations

Dimension (weight)	Indicator	Deprivation Cut-off (z)
Basic services	Access to safe drinking water	No access to safe drinking water or access >30min walk
(1/5)	Access to electricity	No electricity
	Access to improved sanitation	The sanitation facilitly is not improved or shared with other households
	Waste disposal	Garbage is not collected or burned & disposed in river
Resources	Assets	HH does not own any big asset & owns < 4 small assets
(1/5)	Income	Monthly per capita consumption is below the *poverty* line

UNIVERSITY OF OXFORD

4. Results – cross section

Joint distribution matters!
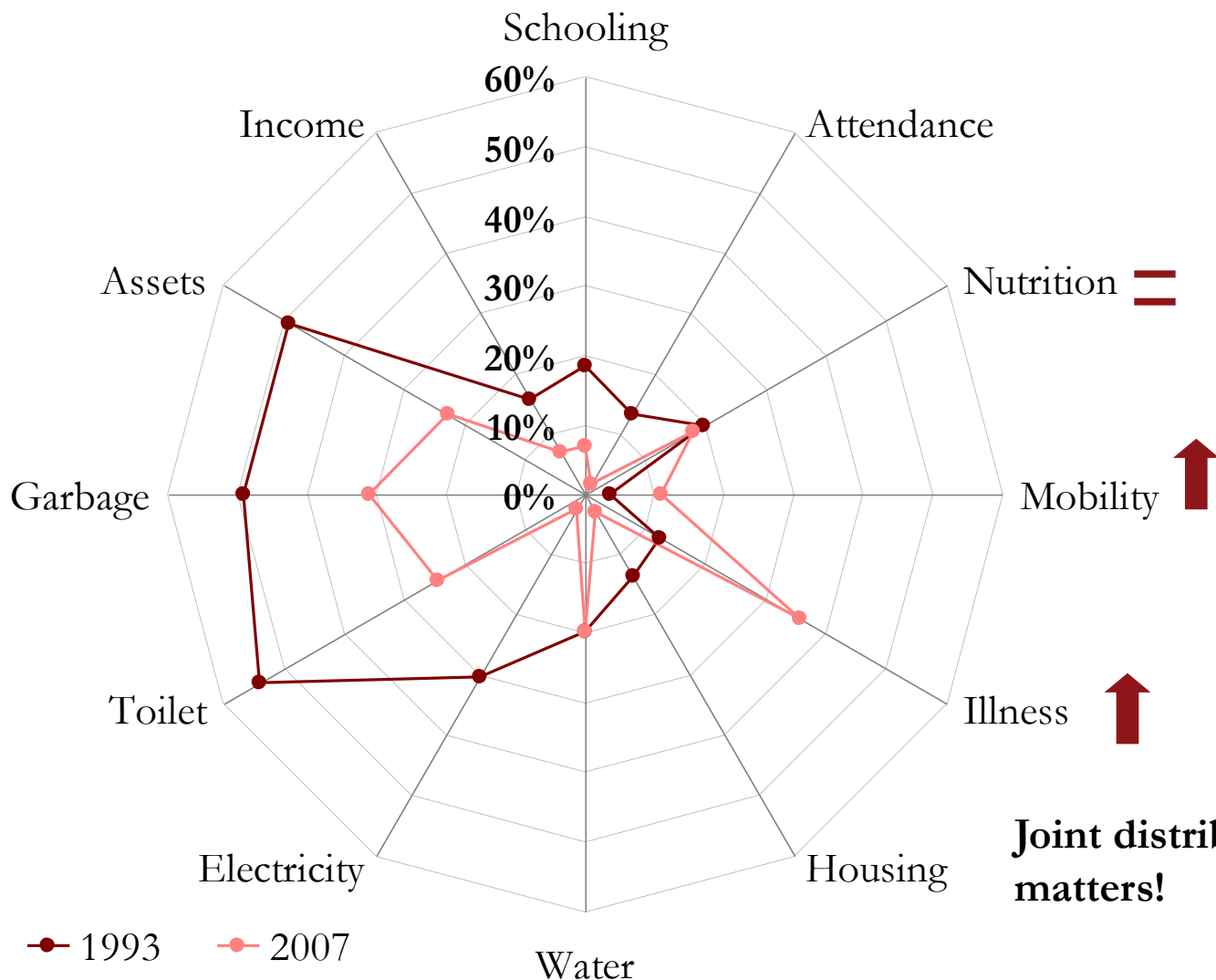
Pair-wise associations – Cramer V
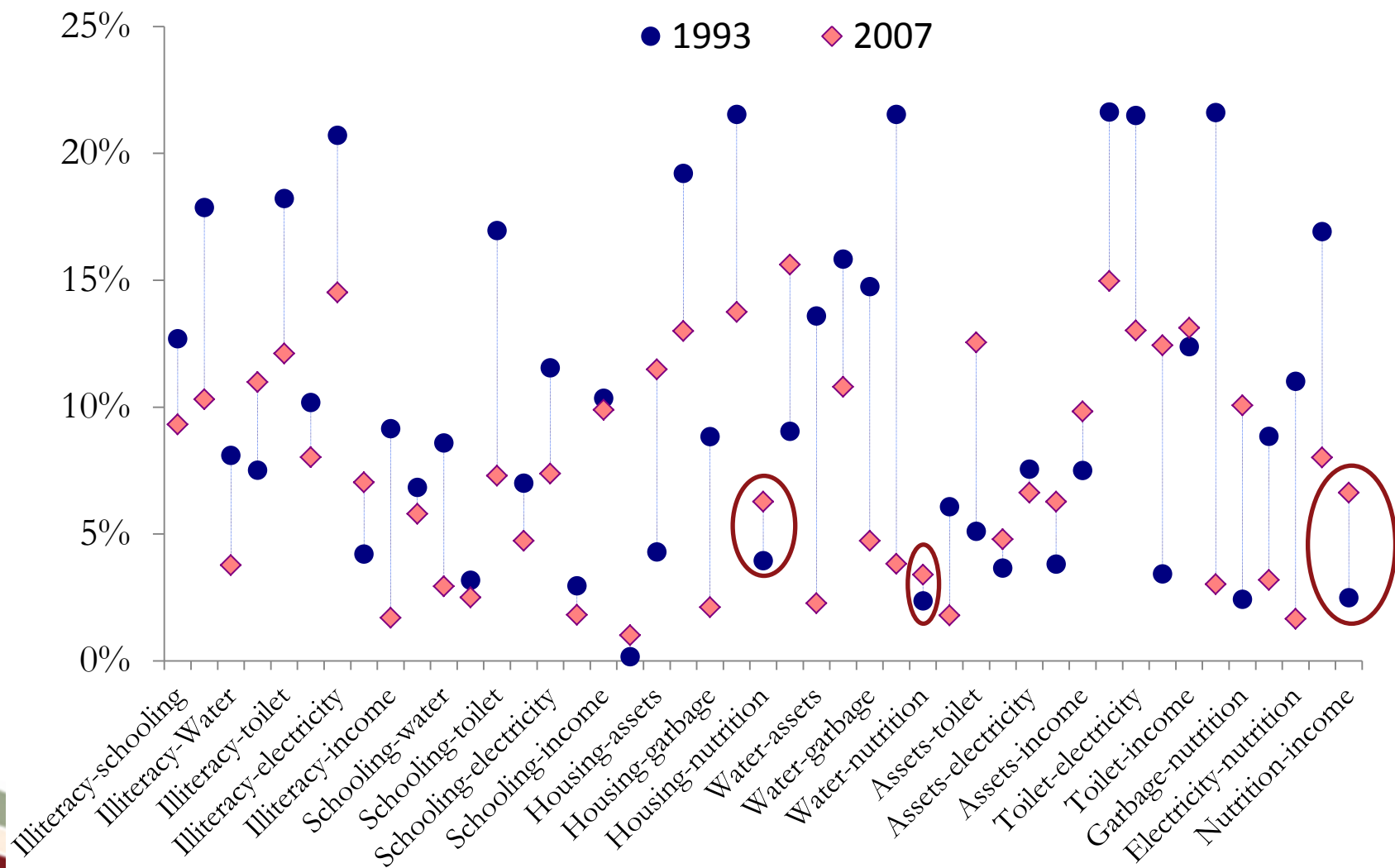
Joint associations – MCA 1993
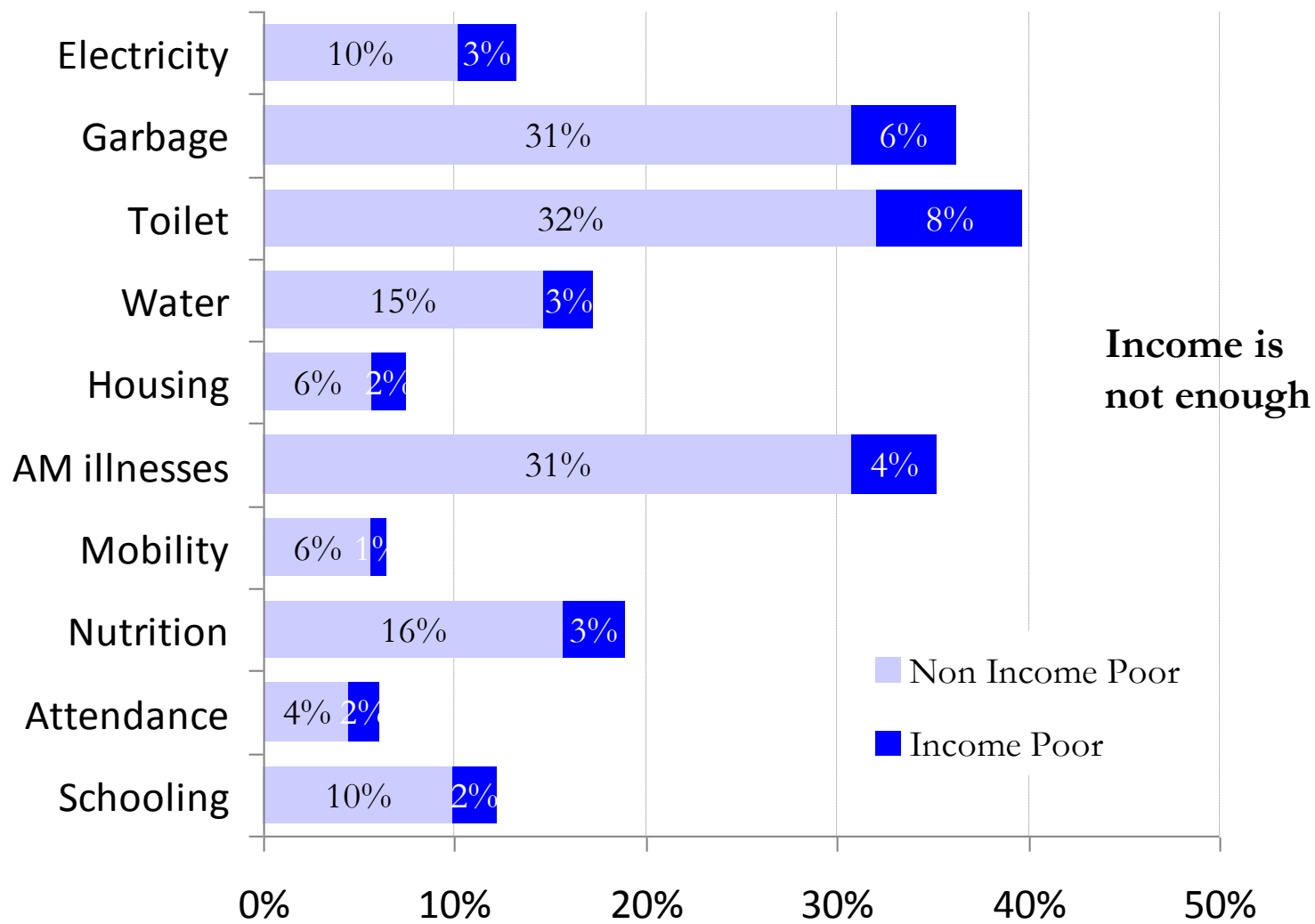

MCA coordinate plot
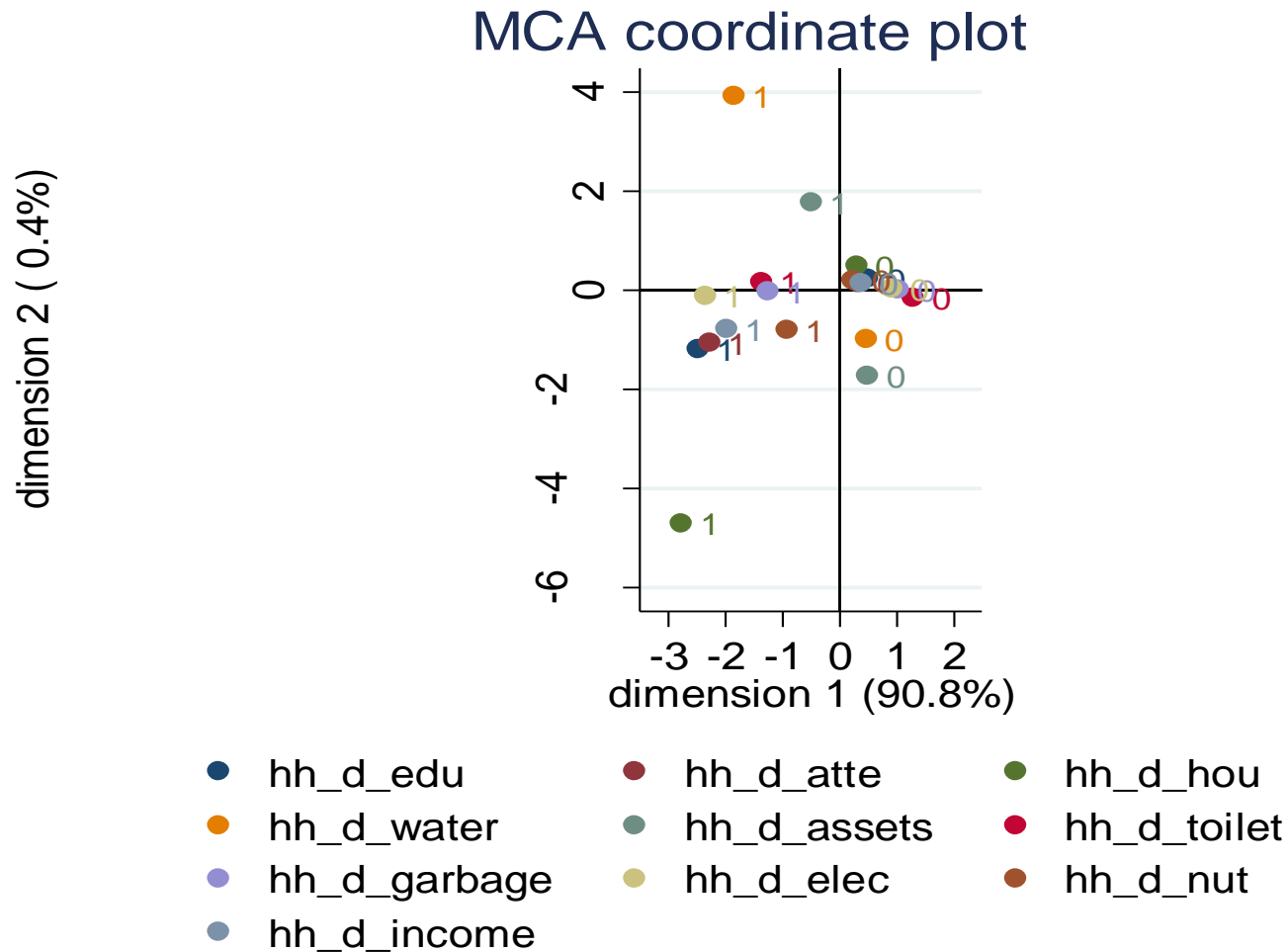
coordinates in standard normalization

Joint associations – MCA 2007

MCA coordinate plot
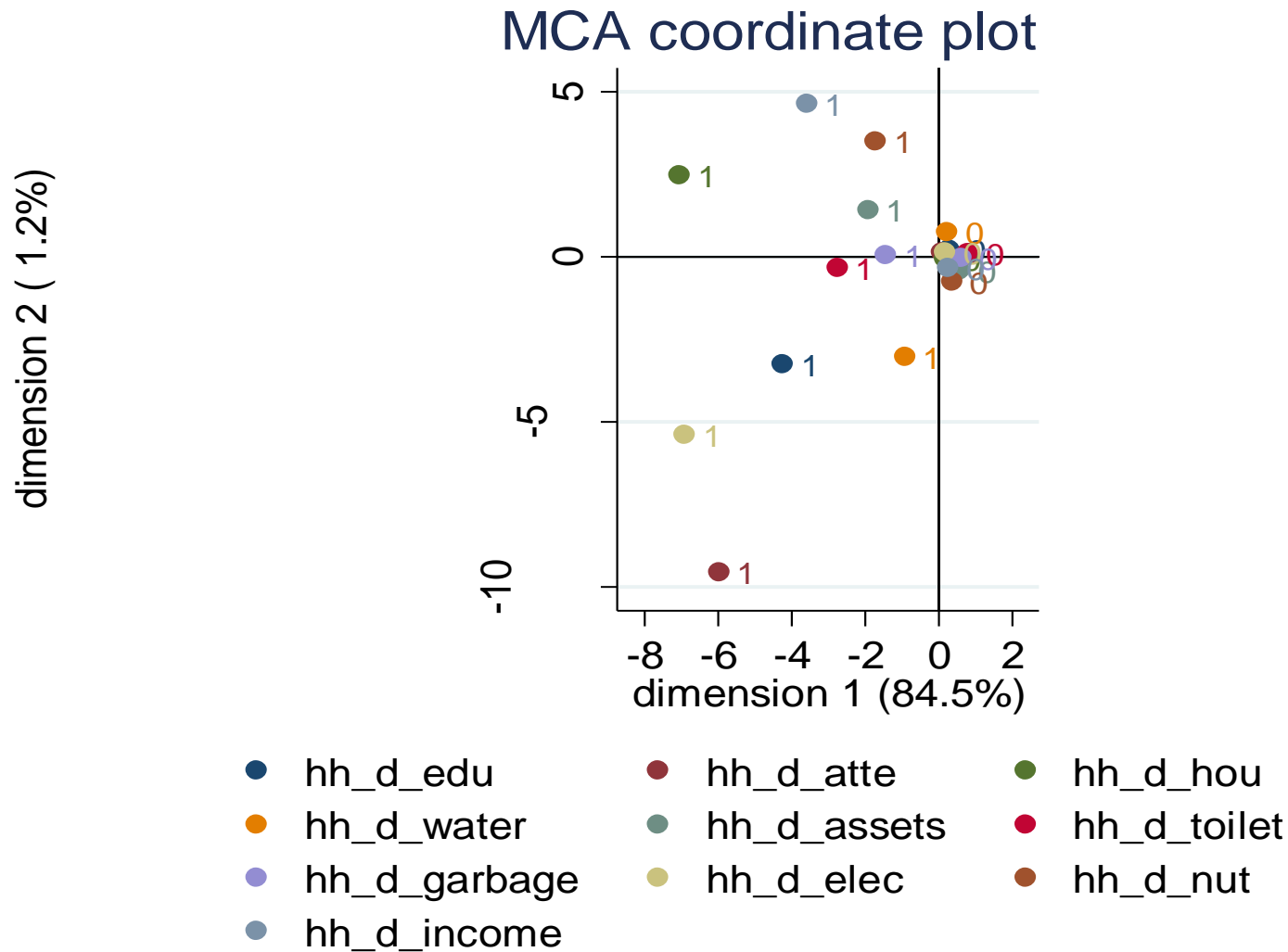
coordinates in standard normalization

Raw head count ratios by income poor condition 1993-2007 (pooled)

The Adjusted Head Count Ratio (M0)
1993-2007
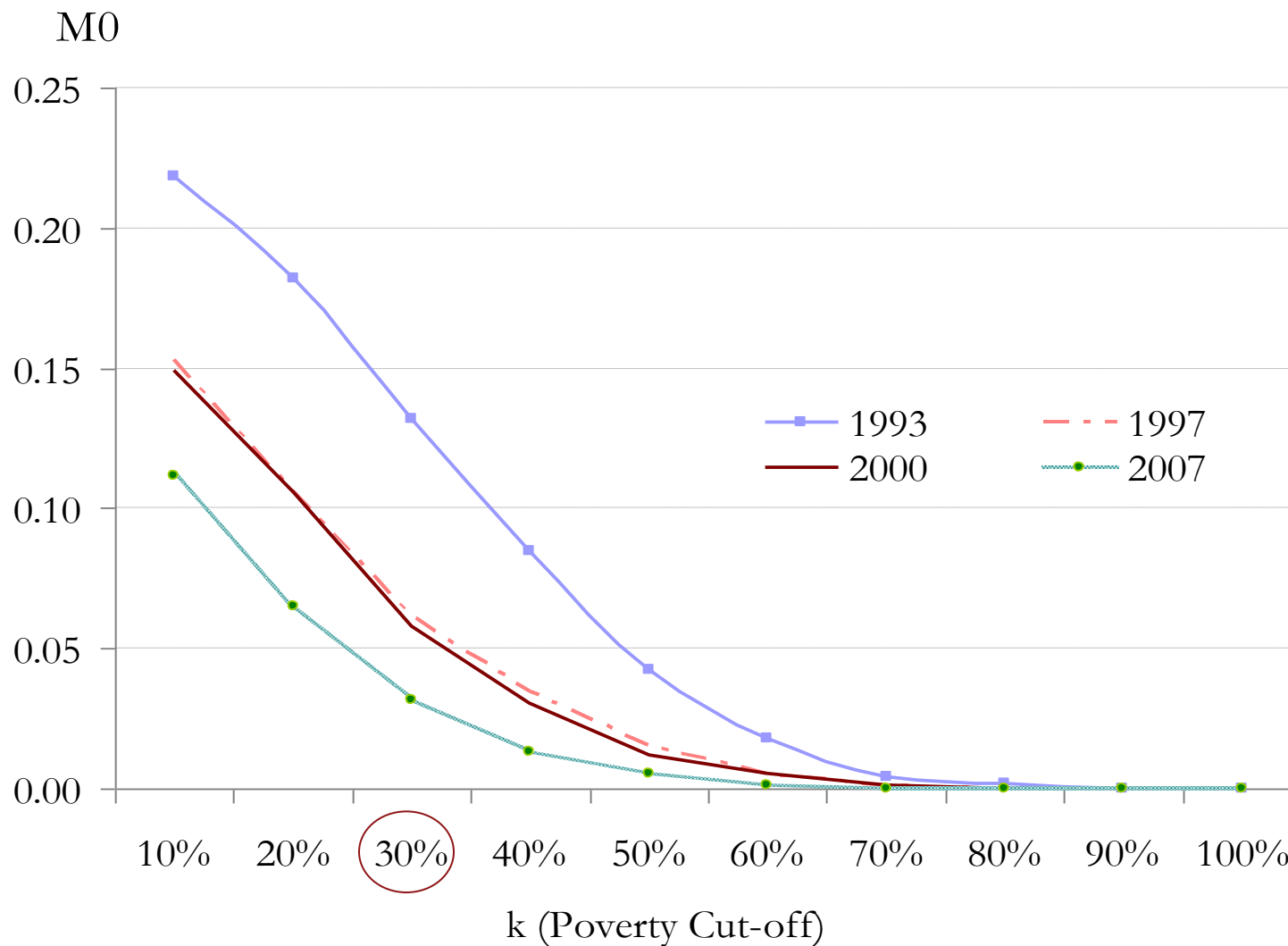
Indonesia
M0: Incidence (H) and Intensity (A)
1993-2007

Poverty cutoff: k= 30%

Year	M0	Incidence H	Intensity A
1993	0.133	32%	42%
1997	0.061	15%	41%
2000	0.053	13%	40%
2007	0.032	8%	38%

≈

Is the spatial distribution (provinces) the same?

Provinces - 1993-2007
M0: Incidence (H) and Intensity (A)
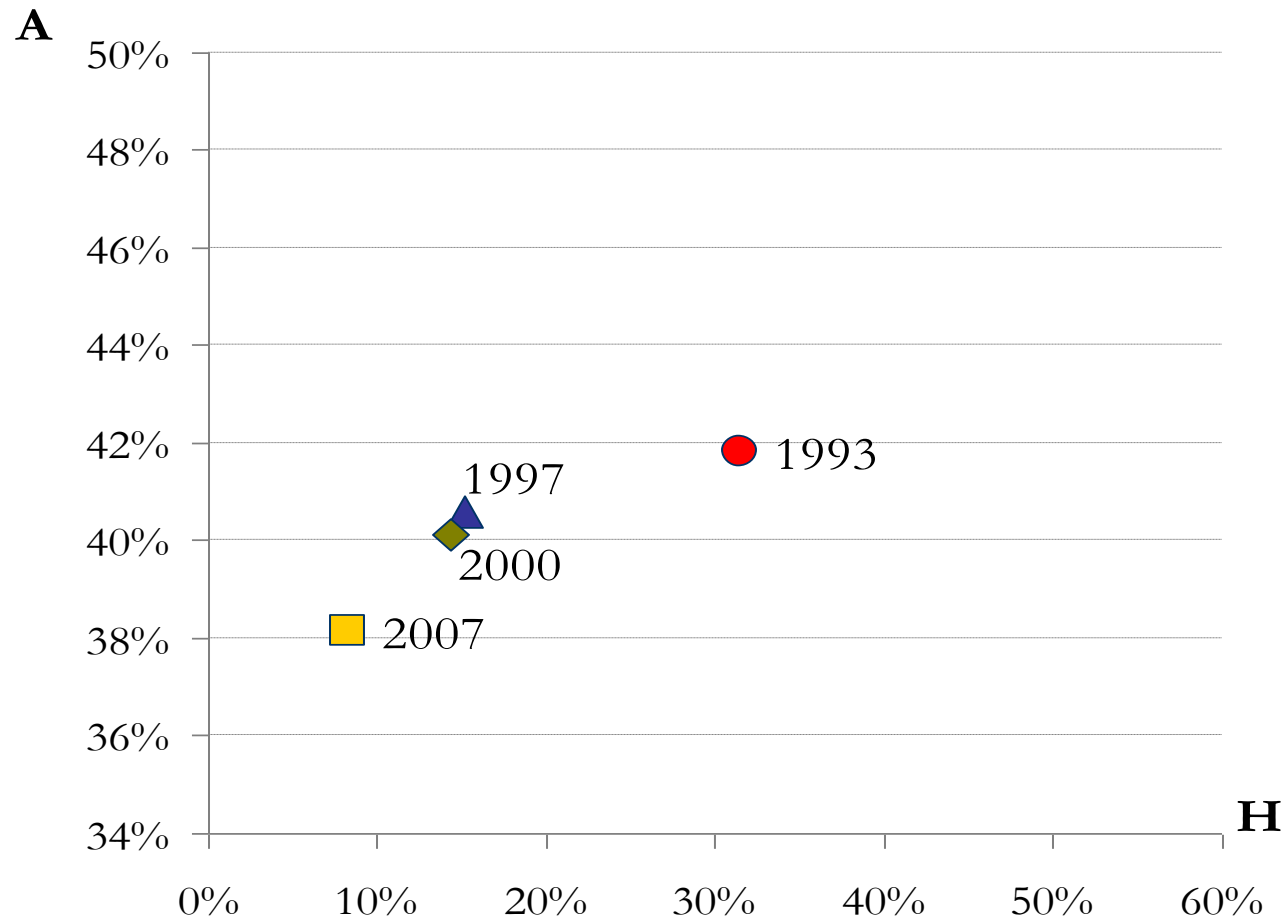
Provinces - 1993-2007
M0: Incidence (H) and Intensity (A)

Provinces - 1993-2007
M0: Incidence (H) and Intensity (A)

Provinces - 1993-2007
M0: Incidence (H) and Intensity (A)

Which dimensions ?
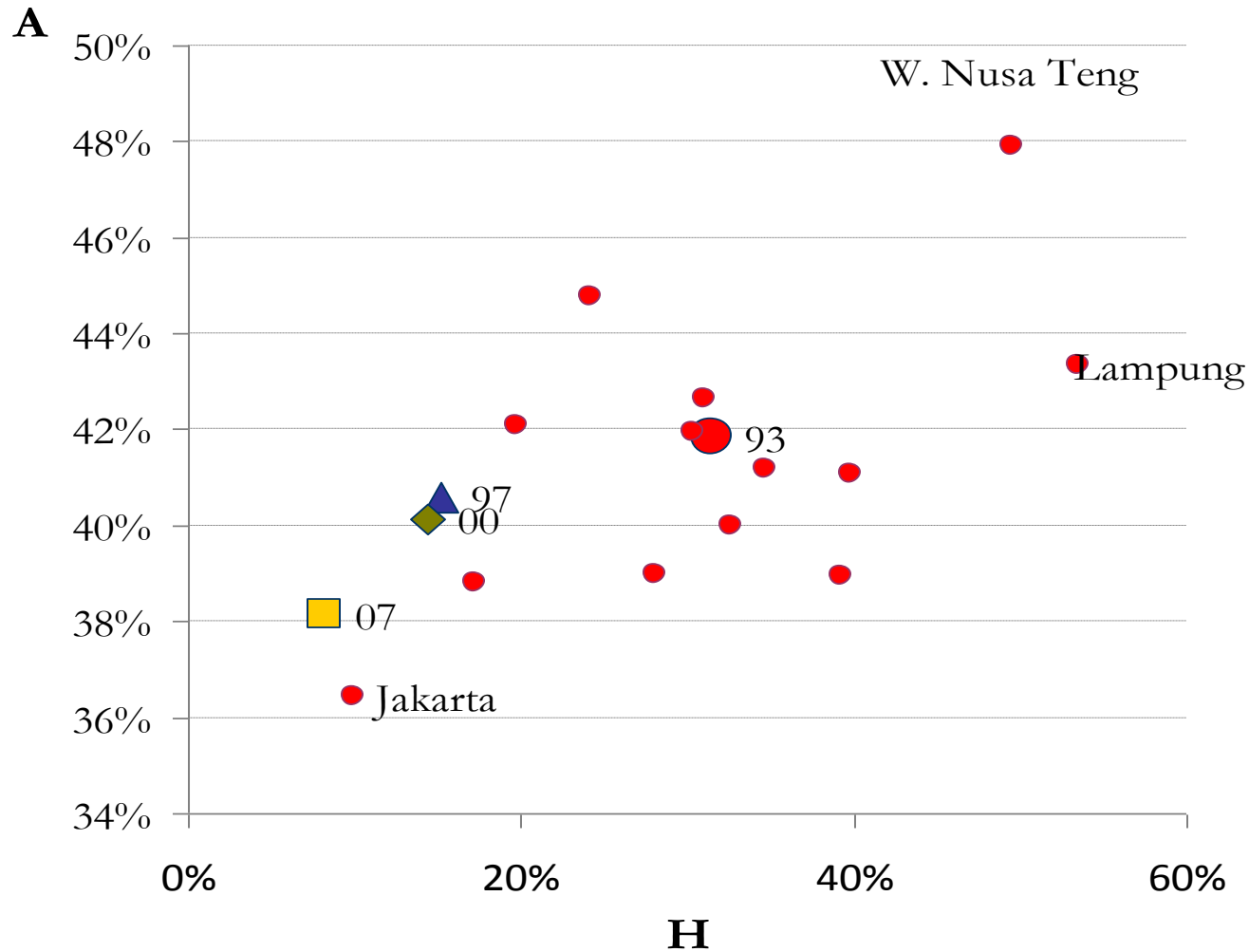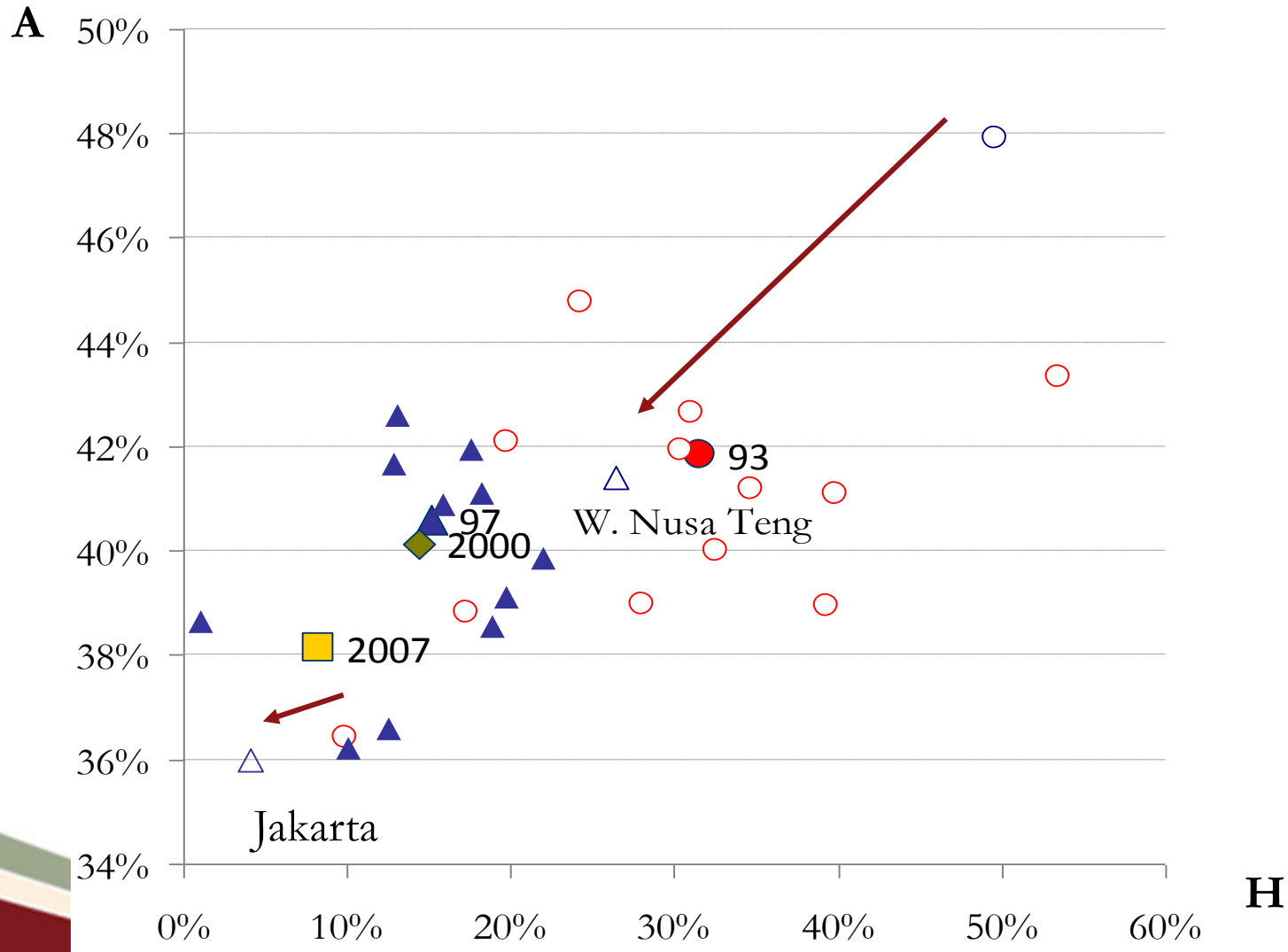
1993: Incidence (H) and Intensity (A) Area, Religion
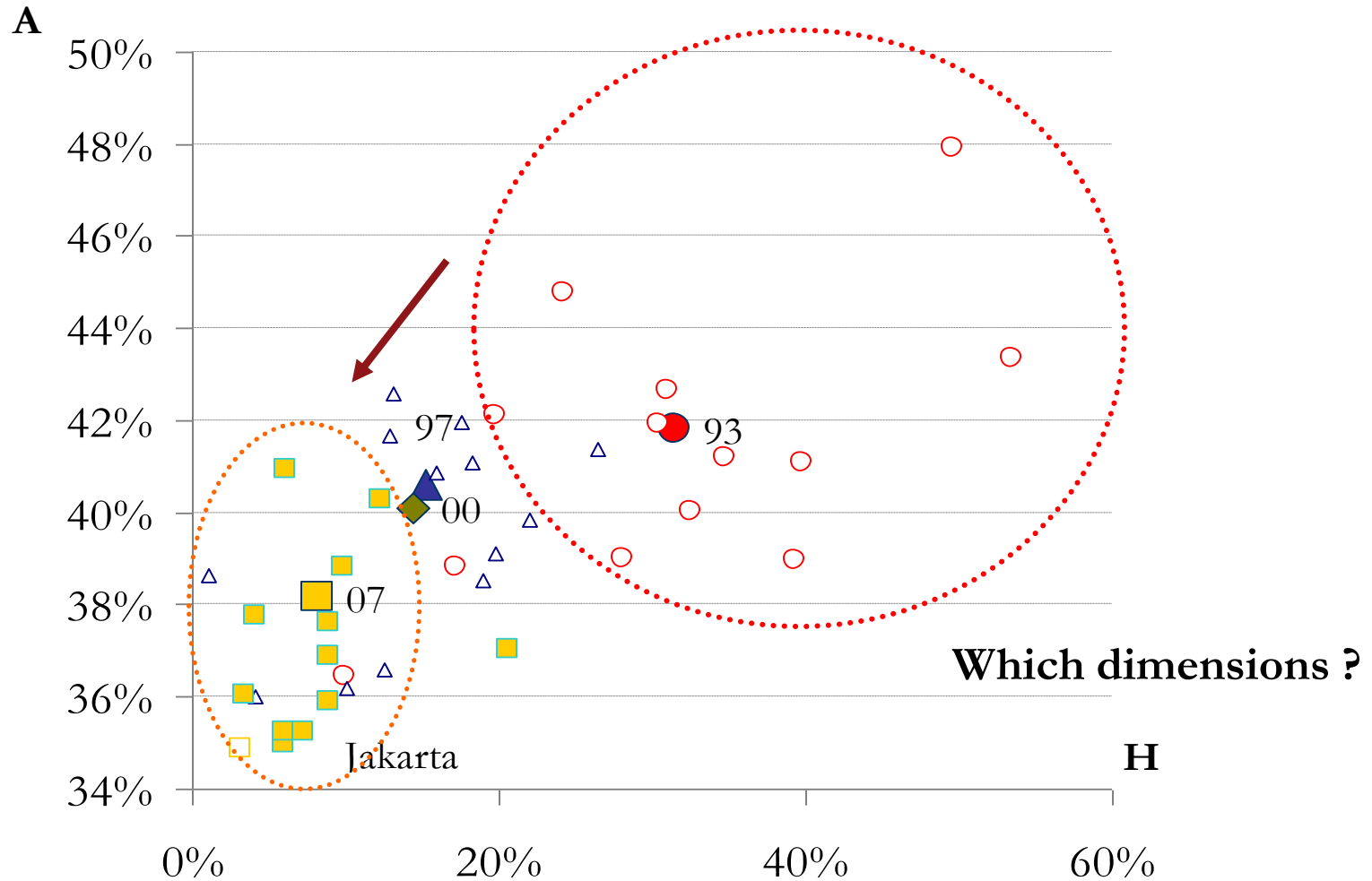
Legend: Islam, Prot., Cath., Hindu, Other, Rural, Urban
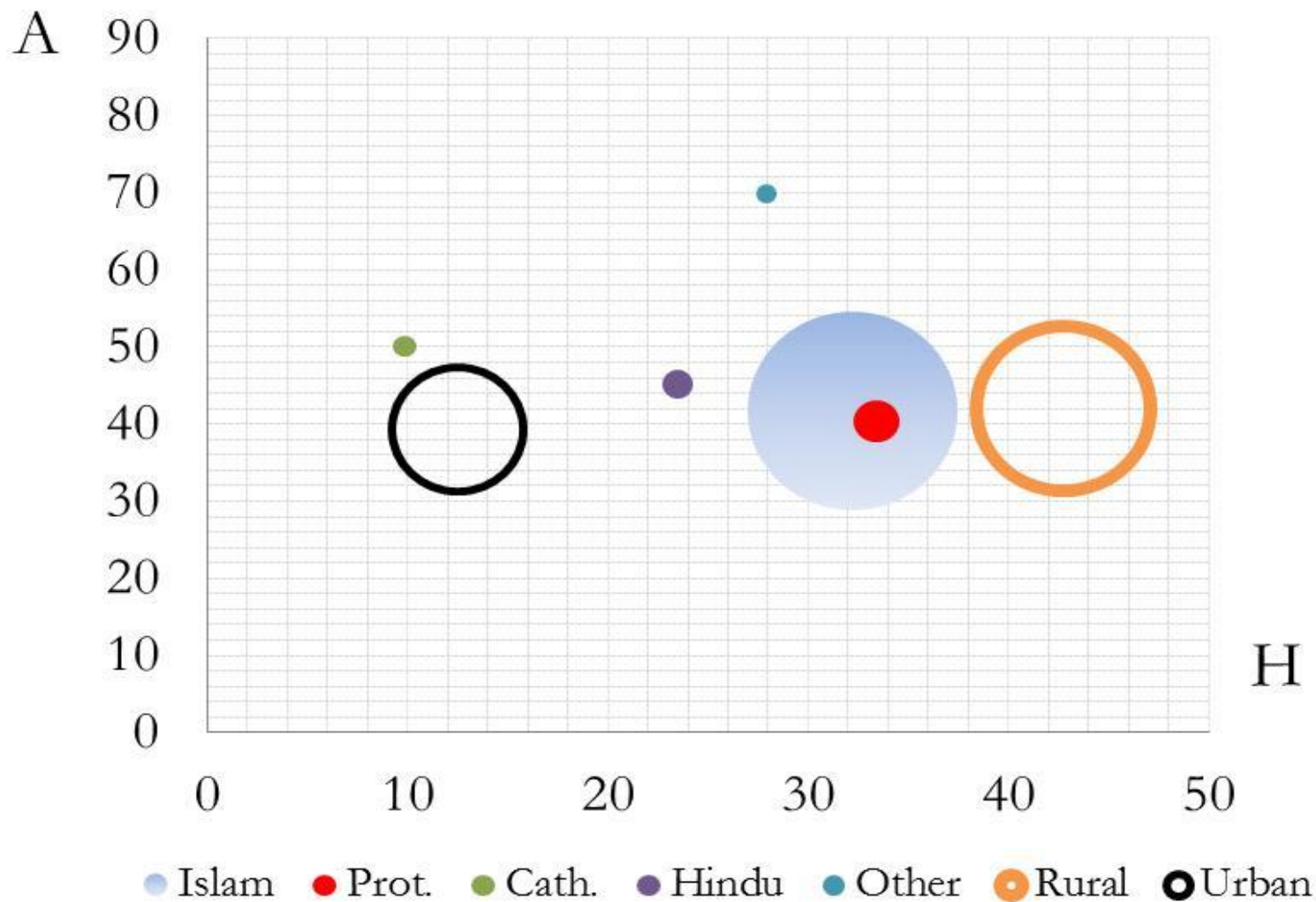
2007: Incidence (H) and Intensity (A) Area, Religion
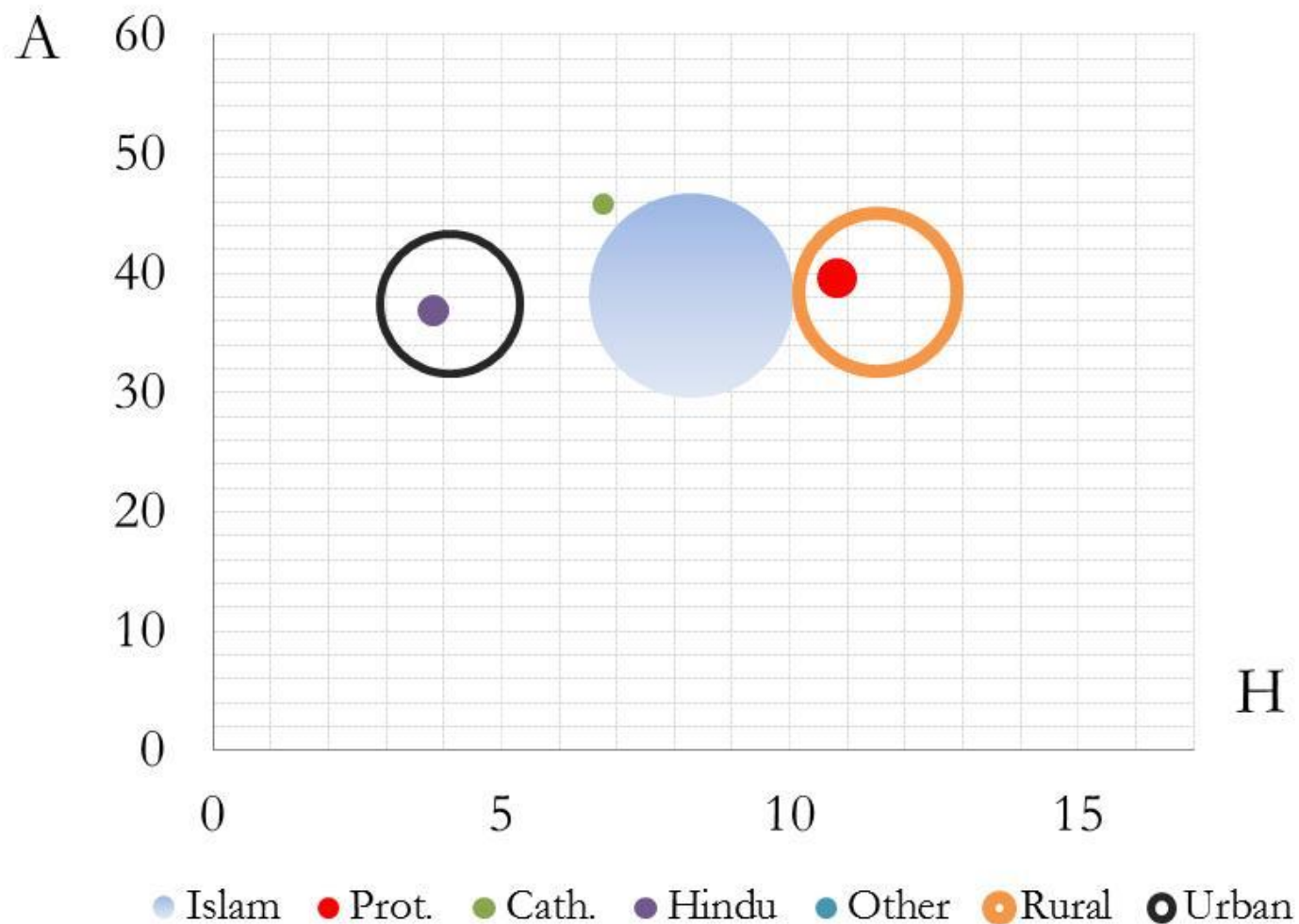
Relative contributions - indicators

Contribution of each domain to MP
M0: Break down by dimension/indicator 1993-2007
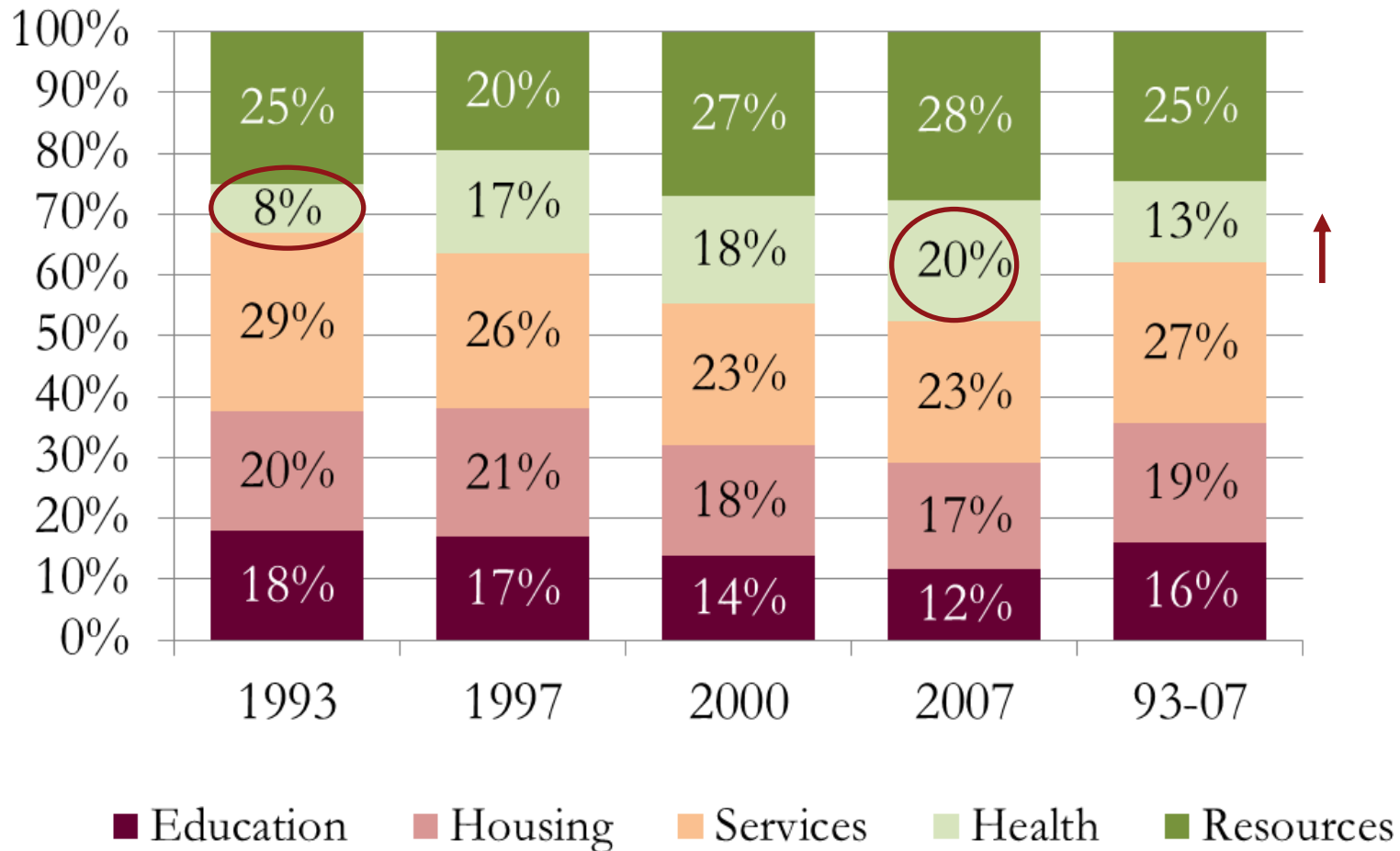
Raw-Censored headcount ratios
Gap trends

Indicator	1993	1997	2000	2007
Housing	1%	1%	1%	0%
Attendance	3%	2%	2%	1%
Mobility	2%	5%	4%	9%
Schooling	5%	6%	5%	4%
Income	5%	4%	8%	5%
Electricity	12%	7%	4%	1%
Water	9%	11%	10%	16%
Nutrition	11%	13%	14%	15%
Assets	27%	14%	19%	17%
Garbage	27%	27%	24%	26%
Toilet	29%	31%	26%	19%
Illnesses	7%	37%	39%	32%

Incidence rates - MD poverty & Income poverty 1993

Unit of analysis	MD poor	Income poor	Both	MD poor & Income non poor	MD non poor & Income poor	Pop share
Indonesia	32	16	11	21	5	100
Area						
Rural	43	16	14	29	3	64
Urban	12	16	6	6	10	36
Monthly per capita consumption - Quintiles						
First (lowest)	65.2	70.0	50.8	14.5	19.2	20.0
Second	41.4	11.2	4.4	37.0	6.8	20.0
Third	27.3	0.0	0.0	27.3	0.0	20.0
Fourth	19.3	0.0	0.0	19.3	0.0	20.0
Fifth (highest)	5.9	0.0	0.0	5.9	0.0	20.0

Incidence rates - MD poverty & Income poverty

Legend: MD poor · Income poor · Both · MD poor & Income non poor · MD non poor & Income poor
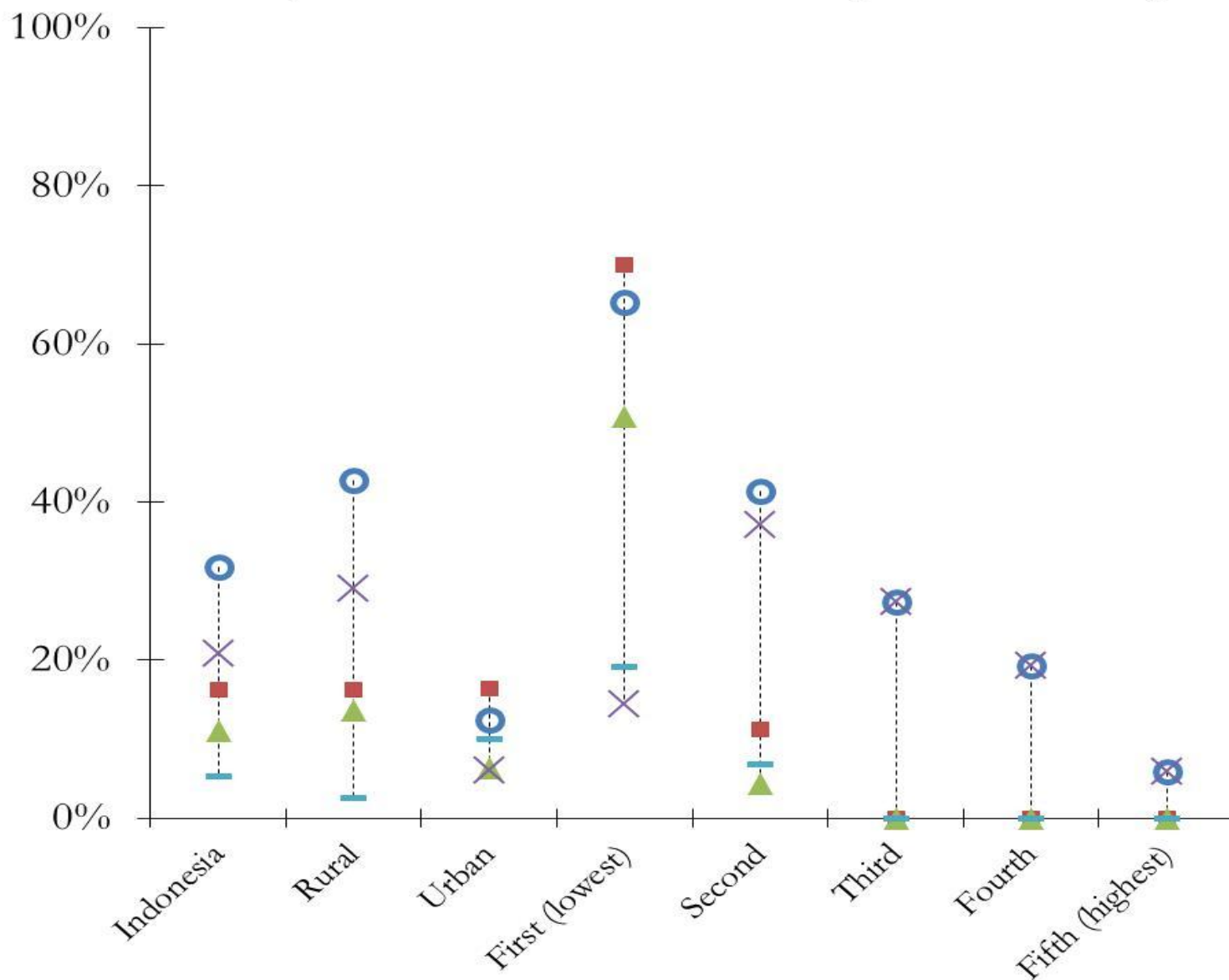
1993

Who are the MD poor?
1993

Characteristics of the household head

Monthly per capita consumption (Quintile)	Average			Proportion		
	Years education	Age	ousehold size	Male headed	Muslim	Protestant
First (lowest)	1.8	23.7	6.3	82%	92%	7%
Second	1.9	23.6	5.6	78%	94%	4%
Third	2.1	25.5	5.1	80%	91%	2%
Fourth	2.1	23.9	4.9	83%	94%	3%
Fifth (highest)	2.1	30.2	4.1	79%	94%	2%

UNIVERSITY OF OXFORD

Who are the MD poor? - 1993

Relative Contribution (%)

Monthly per capita consumption (Quintile)	Schooling	Attendance	Housing	Water	Toilet	Electricity
First (lowest)	9.3	6.9	15.4	3.7	8.6	7.5
Second	11.3	7.2	21.7	4.4	10.1	7.0
Third	11.6	8.0	23.9	4.4	11.1	6.0
Fourth	11.1	9.2	25.6	4.1	10.1	7.4
Fifth (highest)	11.0	6.6	21.7	5.5	12.1	4.4

	Mobility	Illness	Nutrition	Income	Assets	Garbage
First (lowest)	1.0	2.1	4.2	17.4	15.8	8.0
Second	1.0	3.4	5.0	2.6	17.4	8.9
Third	1.2	2.5	5.0	0.0	17.6	8.9
Fourth	0.4	3.5	3.7	0.0	16.8	8.2
Fifth (highest)	1.4	3.3	4.3	0.0	19.7	9.9

Incidence rates - MD poverty & Income poverty 2007

Unit of analysis	MD poor	Income poor	Both	MD poor & Income non poor	MD non poor & Income poor	Pop share
Indonesia	8	8	3	5	5	100
Area						
Rural	12	7	4	8	4	56
Urban	4	9	2	2	6	44
Monthly per capita consumption - Quintiles						
First (lowest)	22.9	39.6	15.6	7.3	24.0	20.0
Second	9.2	0.0	0.0	9.2	0.0	20.0
Third	5.3	0.0	0.0	5.3	0.0	20.0
Fourth	2.8	0.0	0.0	2.8	0.0	20.0
Fifth (highest)	1.2	0.0	0.0	1.2	0.0	20.0

Incidence rates - MD poverty & Income poverty

Legend: ○ MD poor   ■ Income poor   ▲ Both   × MD poor & Income non poor   — MD non poor & Income poor

Categories: Indonesia, Rural, Urban, First (lowest), Second, Third, Fourth, Fifth (highest)
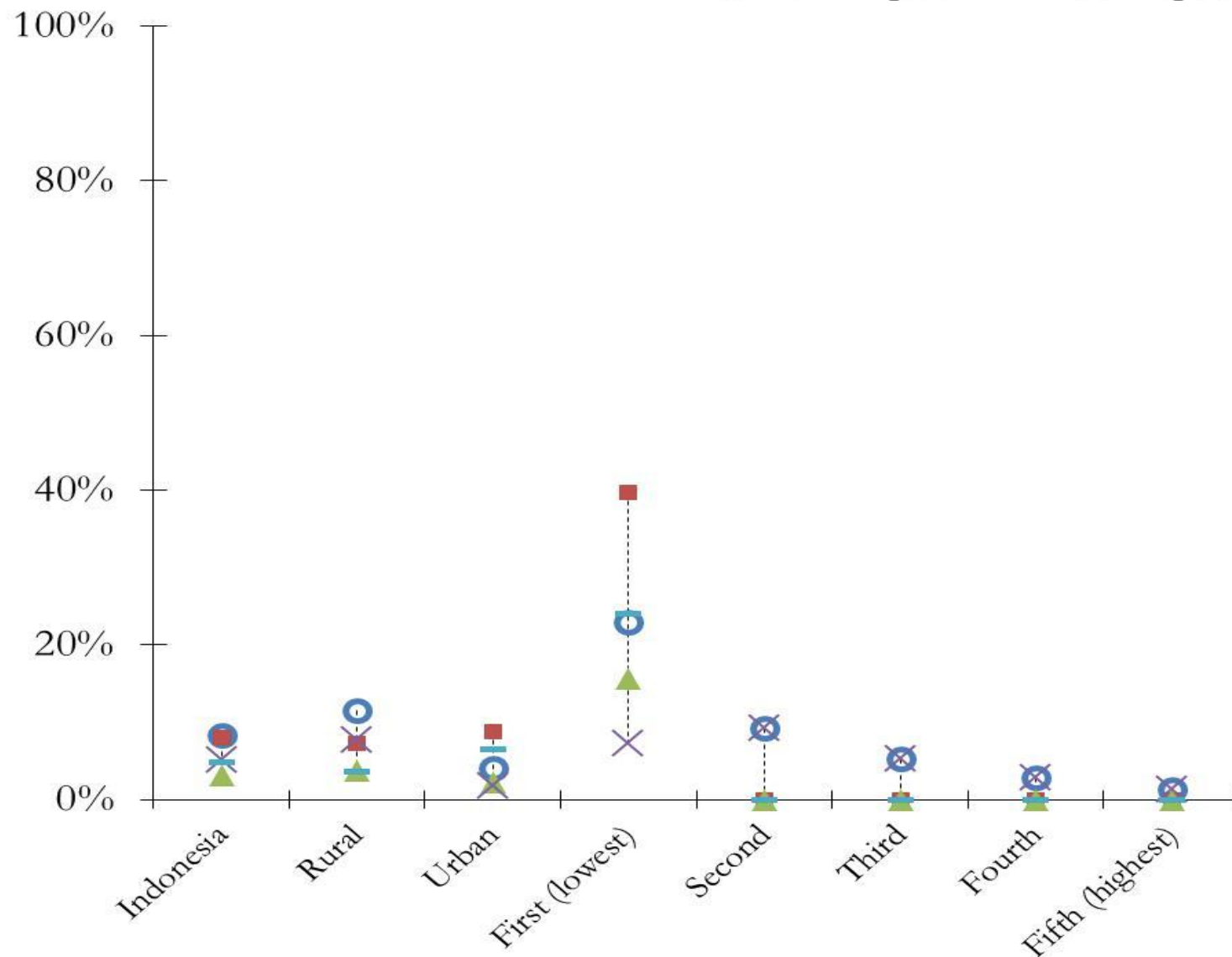
2007

Who are the MD poor?
2007

Characteristics of the household head

Monthly per capita consumption (Quintile)	Average			Proportion		
	Years education	Age	household size	Male headed	Muslim	Protestant
First (lowest)	2.1	42.5	5.2	91%	96%	2%
Second	2.1	47.6	4.3	94%	94%	4%
Third	1.9	48.2	4.5	85%	83%	15%
Fourth	2.4	54.8	2.7	94%	90%	7%
Fifth (highest)	1.8	52.8	2.4	98%	74%	7%

OPHI Oxford Poverty & Human Development Initiative

UNIVERSITY OF OXFORD

Who are the MD poor? - 2007

Relative Contribution (%)

Monthly per capita consumption (Quintile)	Schooling	Attendance	Housing	Water	Toilet	Electricity
First (lowest)	6.5	2.0	16.7	4.1	8.2	1.9
Second	9.5	2.9	21.9	6.7	9.5	2.2
Third	16.1	4.0	13.8	5.2	9.8	2.5
Fourth	15.3	0.0	15.4	5.4	9.4	1.0
Fifth (highest)	23.3	4.4	11.1	9.2	9.5	1.5

	Mobility	Illness	Nutrition	Income	Assets	Garbage
First (lowest)	4.5	8.0	6.5	17.4	17.8	6.4
Second	2.9	9.0	7.6	0.0	18.3	9.4
Third	5.9	10.7	6.3	0.0	16.1	9.7
Fourth	9.1	10.5	6.9	0.0	19.9	7.1
Fifth (highest)	6.2	5.8	6.8	0.0	16.8	5.5

OPHI Oxford Poverty & Human Development Initiative

UNIVERSITY OF OXFORD

Incidence rates - MD poverty & Income poverty Matched MD threshold "deflated"

Unit of analysis	MD poor	Income poor	Both	MD poor & Income non poor	MD non poor & Income poor
Indonesia	16.8	16.2	7.1	9.8	9.2

% changes: k 40 (deflated) - k 33					
Area					
Rural	-19.5	no change	-4.3	-15.2	4.3
Urban	-7.0		-3.4	-3.7	3.4
Monthly per capita consumption - quintiles					
First (lowest)	-23.5		-17.2	-6.3	17.2
Second	-21.3		-2.7	-18.6	2.7
Third	-15.9	no change	0.0	-15.9	0.0
Fourth	-10.4		0.0	-10.4	0.0
Fifth (highest)	-4.0		0.0	-4.0	0.0

Incidence rates - MD poverty & Income poverty Matched Income threshold "inflated"

Unit of analysis	MD poor	Income poor	Both	MD poor & Income non poor	MD non poor & Income poor
Indonesia	31.8	31.8	18.4	13.4	13.3

% changes: Income P1 (inflated in 26%) - Income P1

Area					
Rural	no change	23.4	11.2	-11.2	12.2
Urban	no change	1.6	0.6	-0.6	1.0
Monthly per capita consumption - quintiles					
First (lowest)		30.0	14.5	-14.5	15.6
Second		47.7	22.5	-22.5	25.1
Third	no change	0.0	0.0	0.0	0.0
Fourth		0.0	0.0	0.0	0.0
Fifth (highest)		0.0	0.0	0.0	0.0
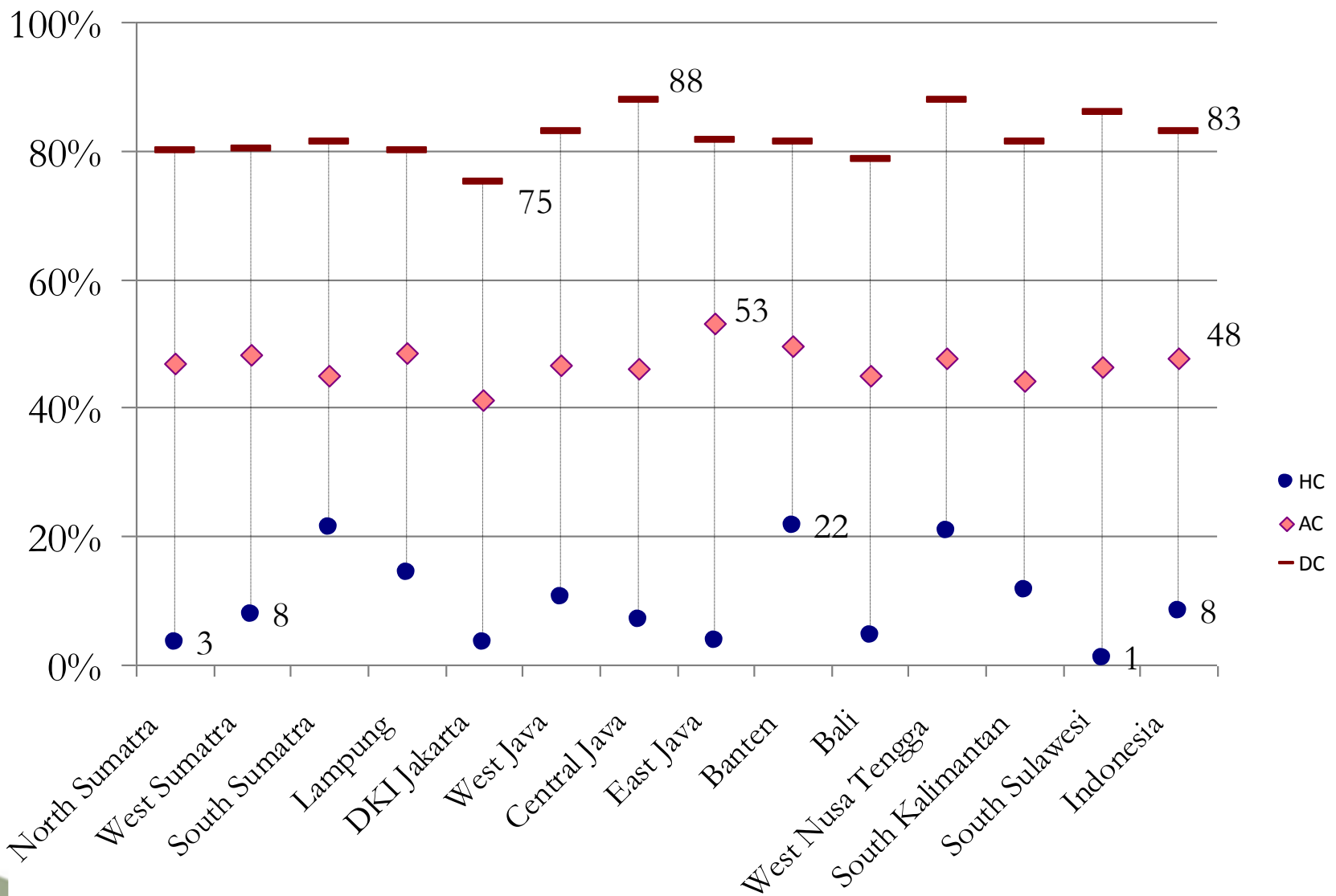
H: 8% are CP; A: 48% of dim = 6; D: 83% of periods

OPHI Oxford Poverty & Human Development Initiative

Contribution of each indicator to Multidimensional and Chronic poverty

Indicator	Contribution
Schooling	11%
Attendance	5%
Housing	20%
Water	5%
Toilet	10%
Electricity	5%
Garbage	7%
Nutrition	7%
Mobility	2%
Illnesses	7%
Assets	13%
Income	8%

Concluding remarks

In this paper we apply the AF methodology to measure and analyse poverty in Indonesia in a multidimensional and dynamic context using the Indonesian Family Life Survey (IFLS).

Our study considers five domains (12 indicators) of intrinsic importance, comprising education, housing, basic services, health issues, and material resources

Our analysis indicates that although Indonesia has made great progress towards the reduction of income poverty and the improvement of social indicators, challenges remain when the joint distribution of deprivations is considered.

A comparison of the percentage of deprived households between 1993 and 2007 indicates that the patterns of deprivation had not remained the same, with health been the dimension requiring the most attention.

Concluding remarks

Over the 1993-2007 period multidimensional poverty measured by the adjusted head count ratio has decreased. However, when disentangled by incidence and intensity, the conclusion is less strong. Over this period of time the number of multidimensionally poor people has fallen (from 32 to 8%), but their average intensity has remained more or less equal (around 40%).

The spatial distribution of poverty, at the provincial level, also evidences an unbalanced progress of provinces in reducing multidimensional poverty with Jakarta been the province the lowest level of MP.

Our panel results indicate that i) around 8% of Indonesians are chronically and multidimensionality poor, with an average duration of 80% of periods; ii) housing and assets are the indicators contributing most to the chronic and multidimensional status of the population.

Thank you