New Poverty Lines in India – the last Hurrah?

Richard Palmer-Jones, School of International Development, University of East Anglia, Norwich, NR4 7TJ (corresponding author: r.palmer-jones@uea.ac.uk);

Amaresh Dubey, Jawaharlal Nehru University, New Delhi (amareshd@yahoo.com)

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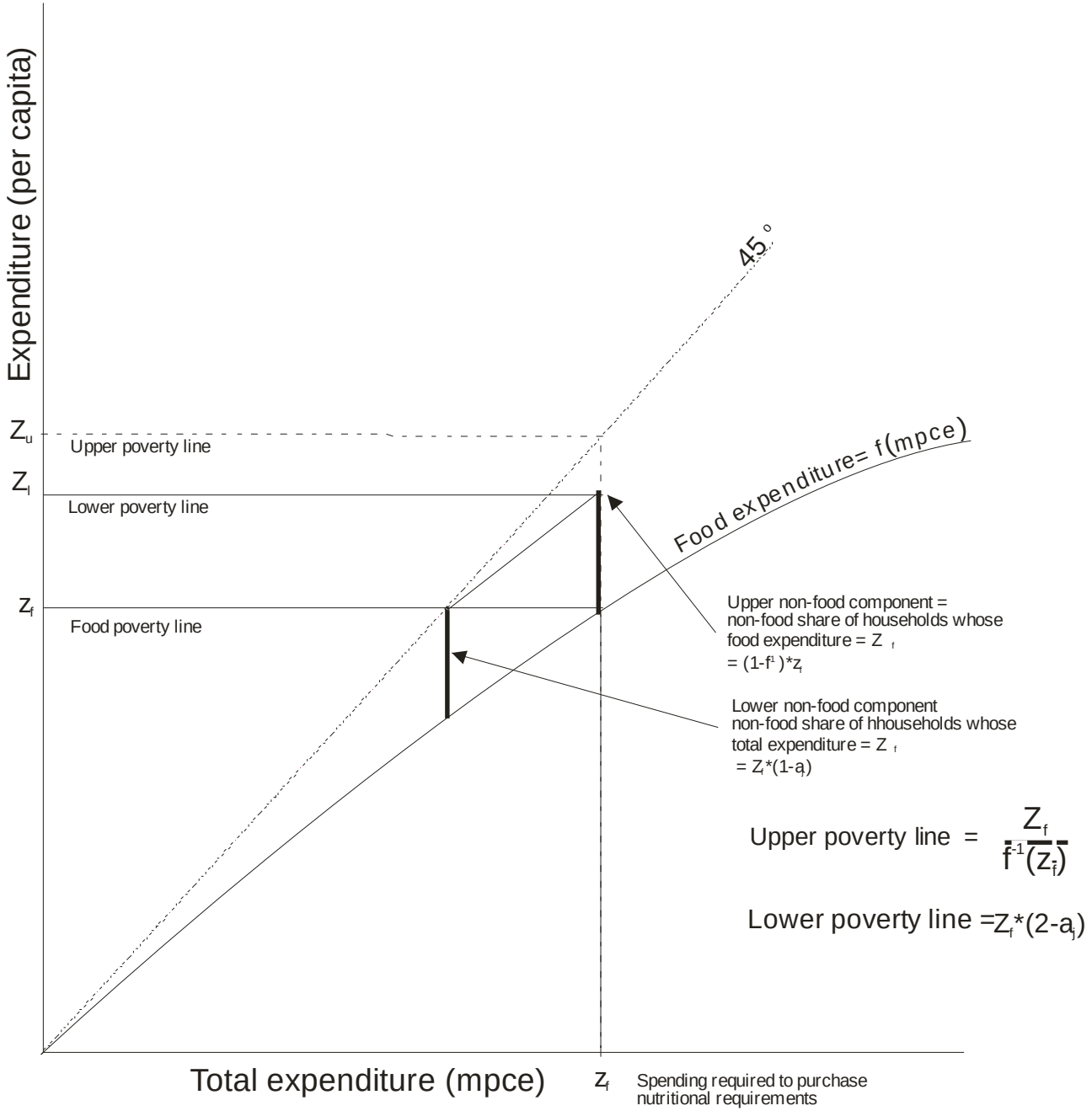
Money-Metric Poverty (MMP)

- Widely used to assess and compare ill-being in different domains
  - Historical, World Development Reports, new world estimates
  - New Indian estimates
    - Exemplary data and methods?
    - High proportion of world poor
      - Also high proportion of undernourished, low education etc.
- Several manuals
  - World Bank, 2002, 2005, UNStats 2005 & Rio group (2006)
  - Basically use similar conceptual framework
    - Calorie based cost of
- Shares essential properties with multi-dimensional poverty (MDP)
  - Definition of a welfare aggregate
  - Identification Index (who is poor), and
  - Aggregation
- Problems of MMP will be/are shared with MDP
  - Poor conceptualisation, ropey estimation, and unconvincing results
  - Just look at Indian poverty estimates!


Expenditure (per capita)
45°
Z_u
Upper poverty line
Z_l
Lower poverty line
Z_f
Food poverty line
Food expenditure= f(mpce)
Upper non-food component =
non-food share of households whose
food expenditure = Z_f
= $(1-f^{-1})*z_f$
Lower non-food component
non-food share of hhouseholds whose
total expenditure = Z_f
= $Z_f*(1-a_j)$
Upper poverty line = $\frac{Z_f}{f^{-1}(Z_f)}$
Lower poverty line = $Z_f*(2-a_j)$
Total expenditure (mpce)
Z_f
Spending required to purchase
nutritional requirements

- The first virtue of poverty lines for different domains is that they should correspond to a common level of well-being ;
- If this is not the case, then differences in the poverty aggregate (head count ratio, poverty gap and so on) may mean not that there are differences in poverty but that the yardstick used is different
- Hence a poverty line is the expenditure required to achieve a socially defined minimum standard of living

$$z_t^i = \min_q f(p_t^i.q_t^1, e1_t^i, e2_t^i, ...en_t^i, \bar{u})$$

- where z_t^i is the poverty line in domain *i* in period *t*;
- p and q are local prices and quantities of "pure" goods consumed in domain *i* by the poverty group & e_1^i, e_2^i,.. e_n^i are "environmental" or contextual characteristics of area *i* (all in *t)*;
- ū is the socially determined level of welfare below which people are characterised as poor.

Money-Metric Poverty in India

- Naoroji – 1876 cost of prison diets
- 1962 – Planning Commission PL 20 Rps/day/pc based
  - Assumed state provision of basic health and education
  - 20Rps Planning Commission estimate for food and basic needs
    - 100rps / 5 member household
- 1979 – Task Force on estimation of Consumption
  - FEI method of urban and rural PLs based on 1973/4 28th Round
- 1993 – Lakdawala Committee Expert group
  - Applies composite State/sector CPIs to Urban and Rural PLs (56 & 49)
- Debate about Survey Based vs National Accounts measures of consumption and poverty
- Deaton & Tarrozi, 1999
  - New UV CPIs – lowered rural-urban difference * anchored to all-India Rural OPL for 43rd Round (1987-8),
- 55th Round
  - 30 day recall adjustments
- 61st Round (2004-5) results available late 2006
  - Rush to judgement (Dev & Ravi; Himanshu, Jan, 2007)
  - Continuing conflict between calorie and money-metric poverty measures
- New Poverty Lines – 2009/10

Issues – 2000-2010

- Growing gap between calorie and money-metric poverty
- Child anthropometric indicators of ill-being not improving greatly
- D&T and official poverty too low
- Urban vs rural poverty
  - OPLs give too large a difference
- Convincing anchor for poverty lines
- Use of more convincing CPIs that the Official

- Tendulkar Committee PLs
  - New anchor
    - Official Urban poverty line
      - Arbitrary; Raises urban poverty
  - New CPIs
    - Unit Values extended to include footwear and clothing
    - Expenditure ratios for education and health
    - Sub-indexes of CPIAL/CPIIW for miscellaneous goods
    - Inverse budget shares for housing and taxes
  - Robustness checks
    - That sound plausible but do not on balance stand up to scrutiny

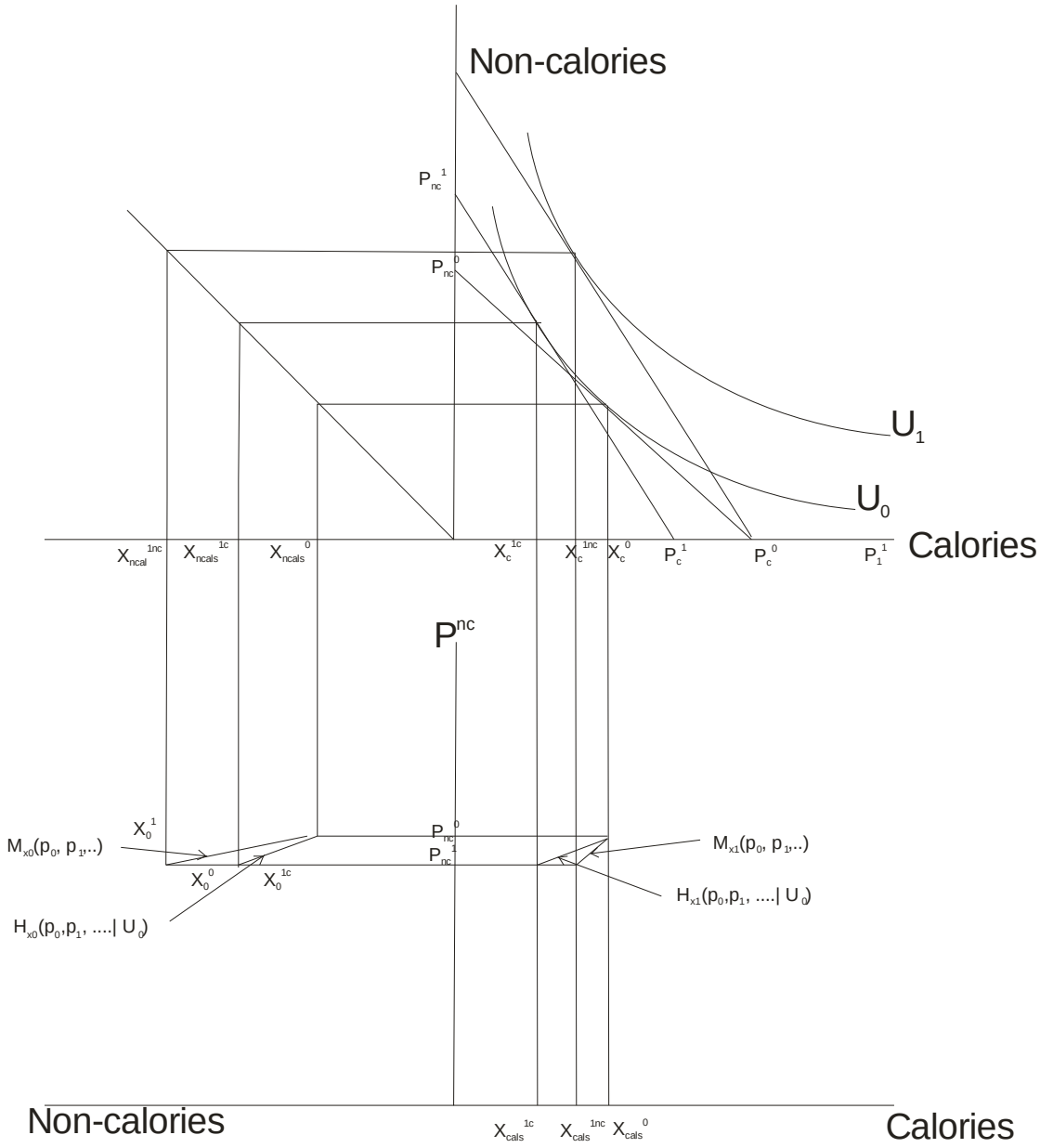
- Calorie anchors
  - A fixed calorie norm or a fixed food bundle only has the same utility in different domains with different relative prices if consumer behaviour is characterised by:

    "***zero utility compensated substitution beween calories and other commodities***"

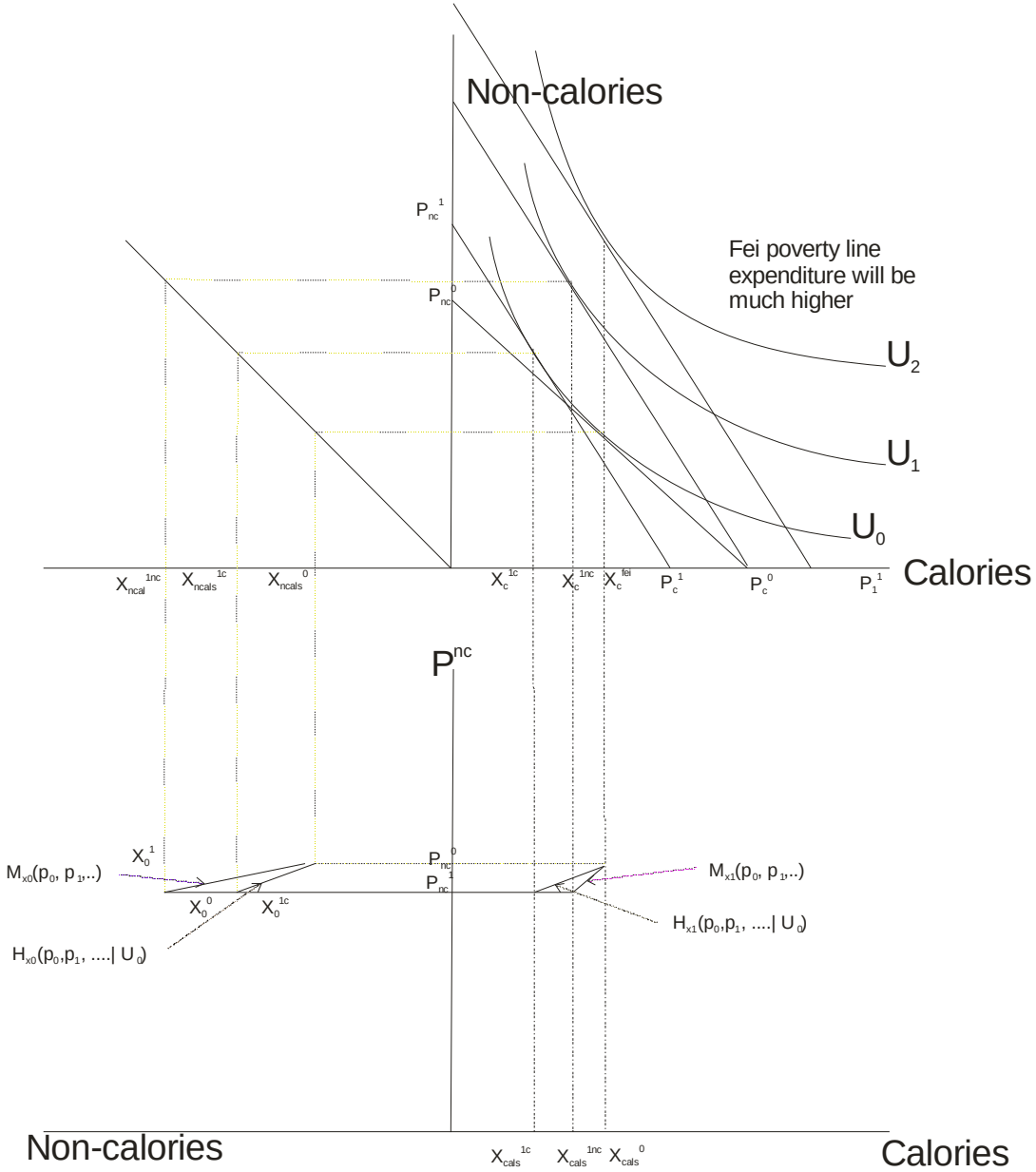
  - This is elementary consumer theory,
  - What this means is demonstrated in the following graphs.

- “environmental goods” – factors which affect the translation of (what is recorded as) “consumption”
  - Goods not included or very poorly enumerated- housing
  - Publicly provided goods
    - Health and education
      - Problems of dealing with “Medical Out of Pocket” (MOOP) expenses
  - Environment
    - Various goods (and bads) affecting the transformation of goods in to well-being
    - “free” goods
  - “Culture” – i.e. Culture of poverty, with regard to sanitation (handwashing with soap) ...

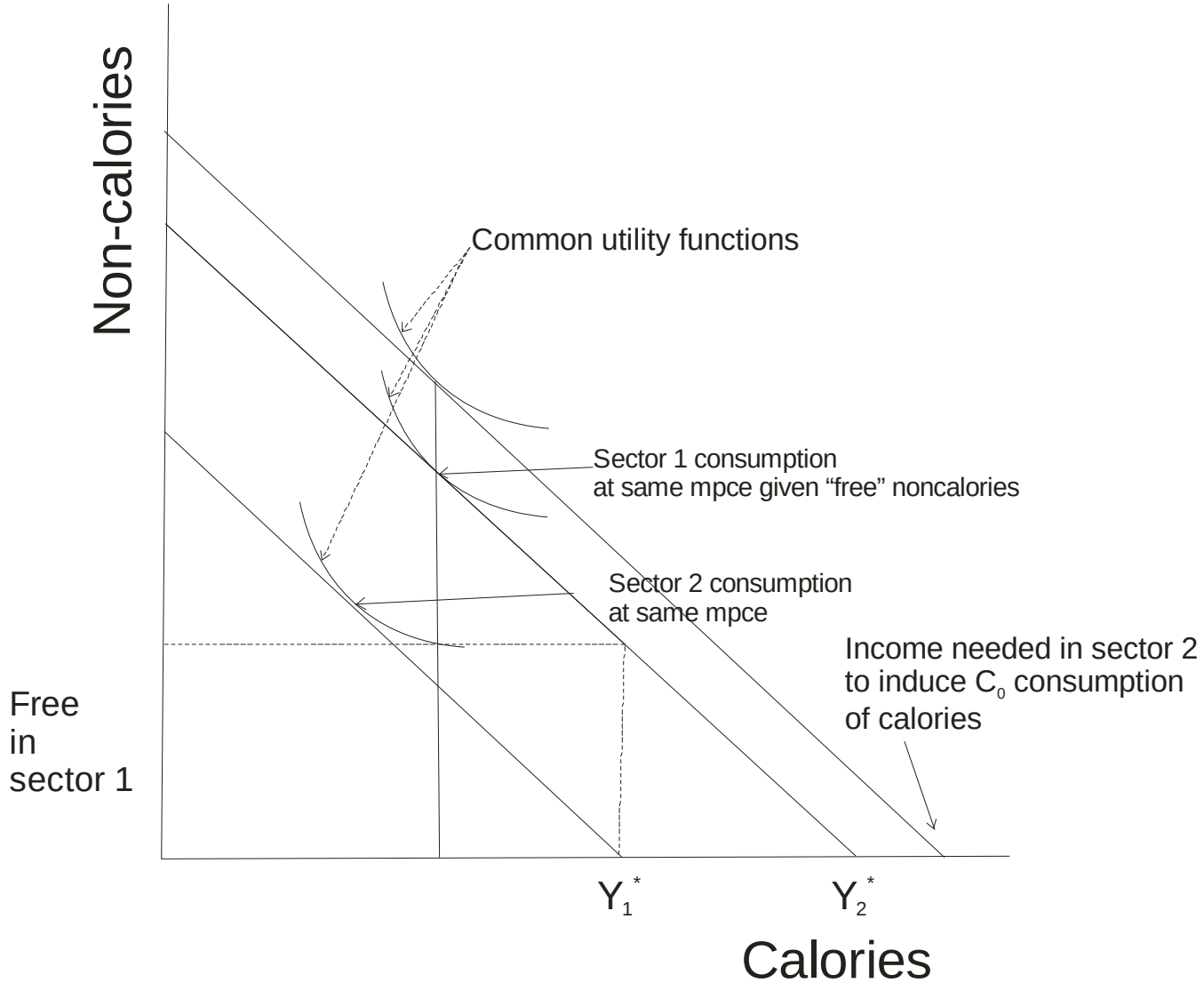
Etc.



Hicksian demand curves (utility compensated) show fall in demand for calories with fall in relative price of non-calories

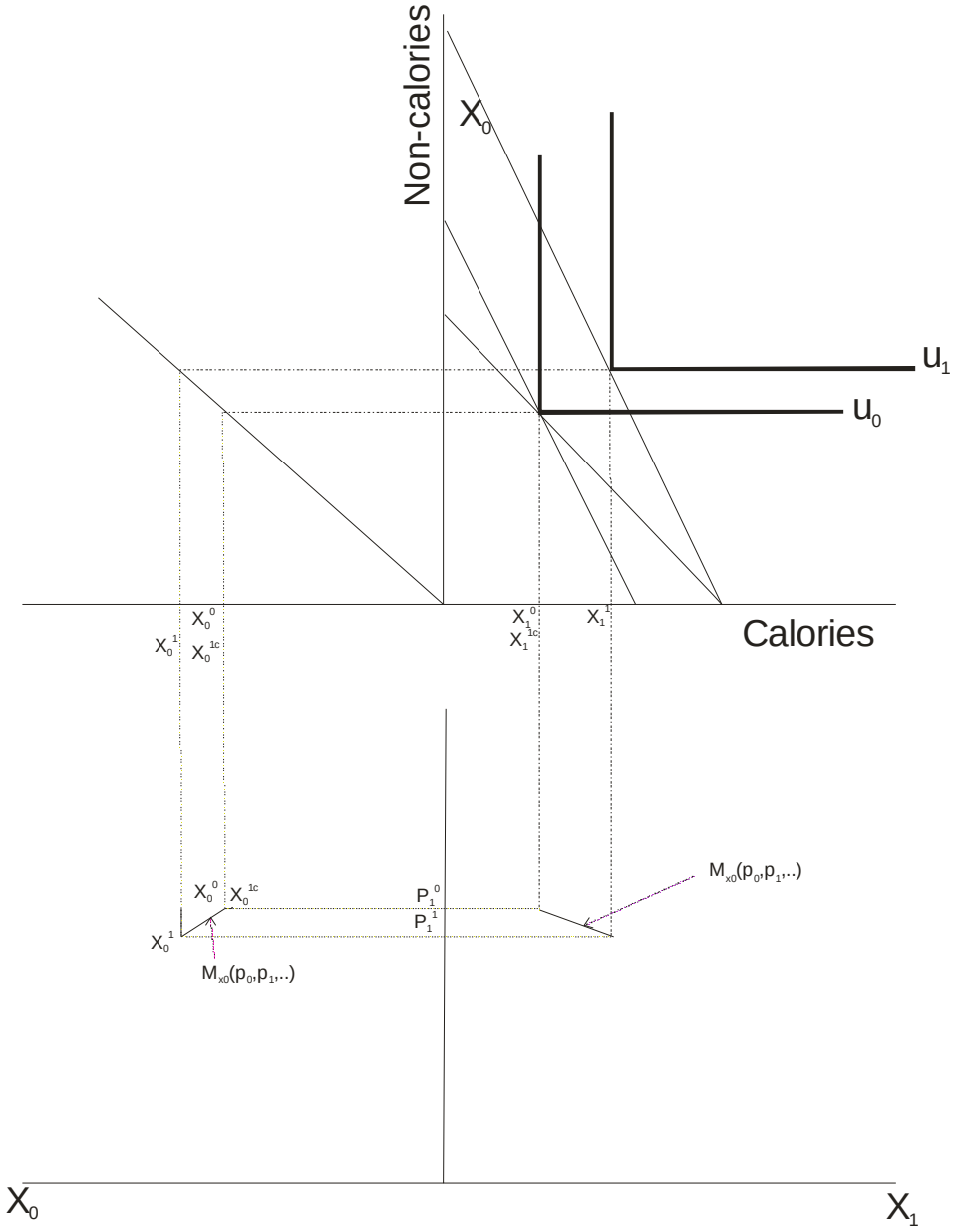


FEI poverty line expenditure is higher than utility compensated expenditure



Y_1^* is the income in sector 1 required to achieve normative calories

Y_2^* is the income in sector 2 required to achieve U_1^* , the poverty line utility level

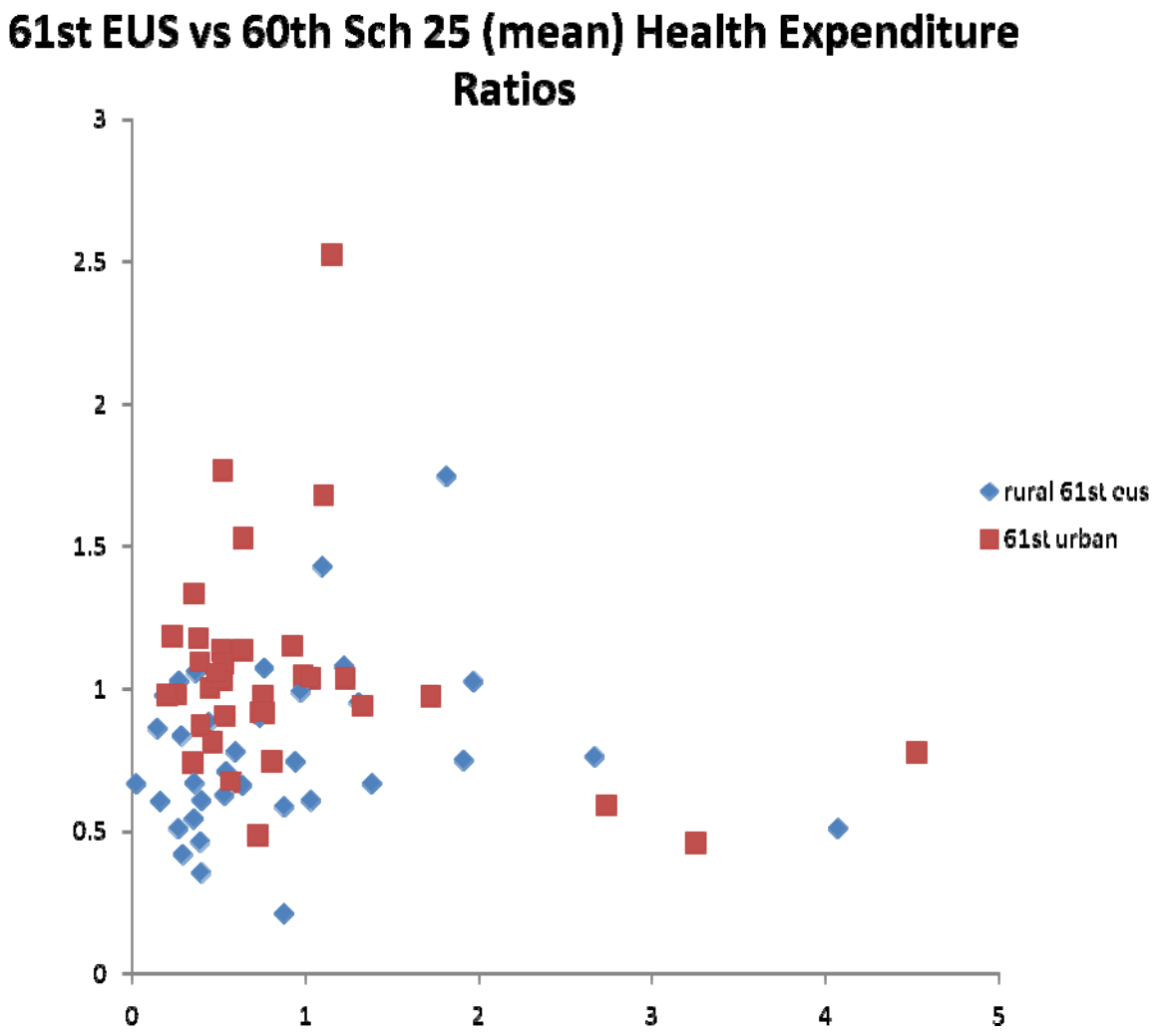


Hicksian demand curves disappear with zero utility compensated substitution.

- Unit values
  - Strongly present - +ive coefficient of total per capita expenditures indicates quality effects
- Expenditure ratios = price ratios

$$I_2^1 = \frac{p^1 q^1}{p^2 q^2} = \frac{p^1}{p^2} \quad if \ and \ only \ if \ q^1 = q^2$$

  - ie if quantities are equal in each domain
  - Empirical realisation – data source
    - 61st round (thick) EUS education
    - 60th round (thin) health expenditures
      - Why not use 61st round health expenditures?
      - Wat happens if we do?



Ratio of health expenditure in state/sector to all-India expenditure in EUS to ratio for same state in 60th sch 25.

- Compare expenditure in 61st round (thik) EUS education with 64th round (thin) education

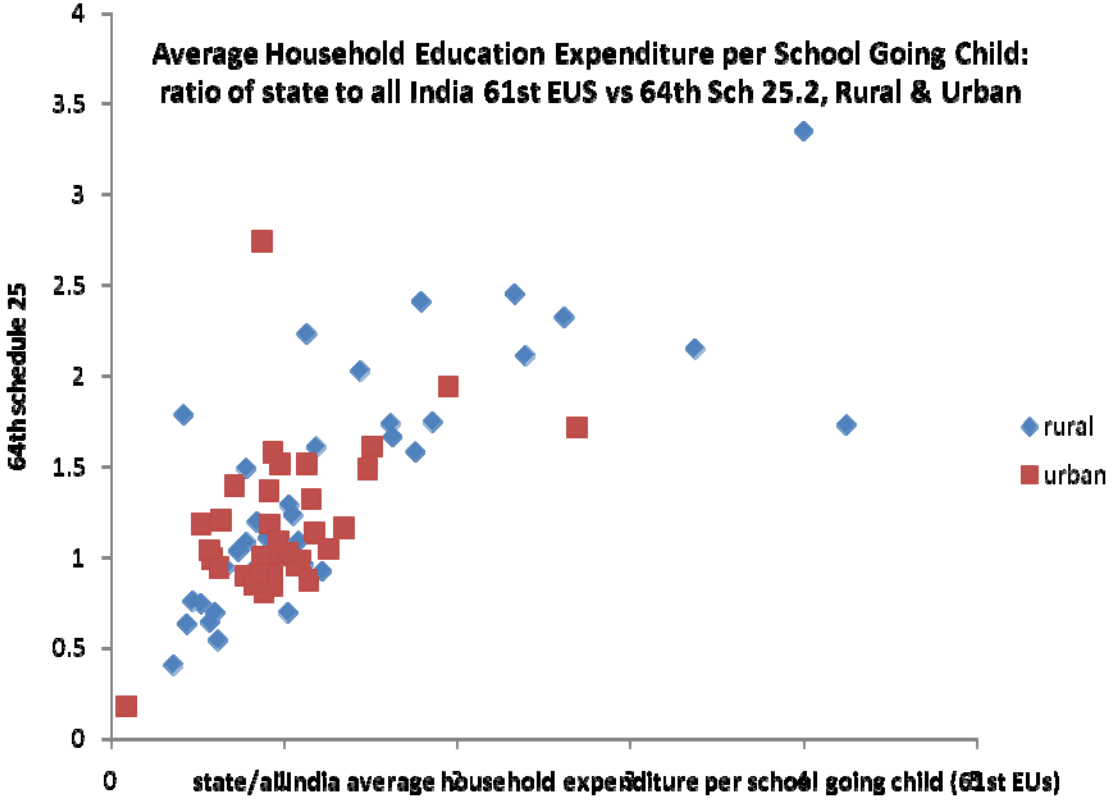
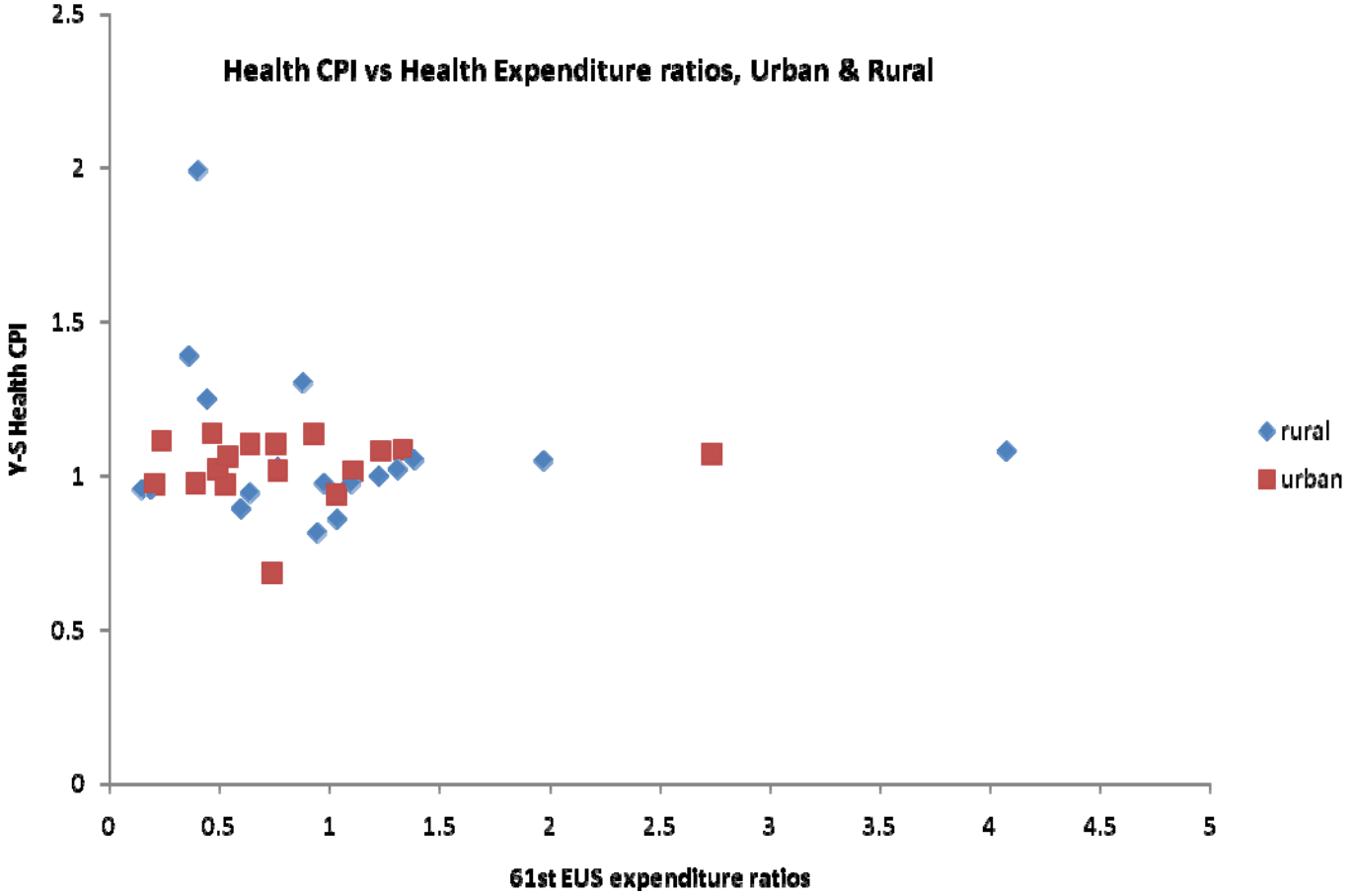


Figure 1: Ratio of state average education expenditure per school-going-child to all India, 61st EUS vs. 64thj Schedule 25.2

note: for 61st EUS the average is (total education expenditure) / (number of school going children)

  - Why use average expenditure per school-going-child?
    - Why not use expenditure to reach a certain minimum standard? (confounded by age distribution of children)

- Saluja-Yadav indexes
  - Computed from prices used in CPI calculations



  - Show no correlation with "expenditure ratio" indexes – which is correct? Or neither!

- Robustness tests
  - Calorie norms! And nutritional indexes (somewhat convincing)
  - What is the logic of comparing cumulative expenditure distributions in urban and rural areas?
  - Why should expenditure distributions of casual labourers or illiterates be the same in urban and rural areas?
  - Reclassifications from poor to non-poor and vice versa
    - Those classified from non-poor to poor should be more like the poor than those reclassified from poor to non-poor.
    - How much of the shift is due to the change in the urban-rural poverty lines?, and how much to rebasing, or to new CPIs? Likely due to rebasing, so not at all surprising.
  - Comparison to normative expenditures for the poor
    - Some significant deviations from a ratio of 1, and some low correlations. i.e misreporting results.

Our results not as good as PC's – but still look good. However, what is due rebasing? Further, the nutrition index is arbitrary, and one does not know whether the association is due to new rural/urban PLs or to new CPIs

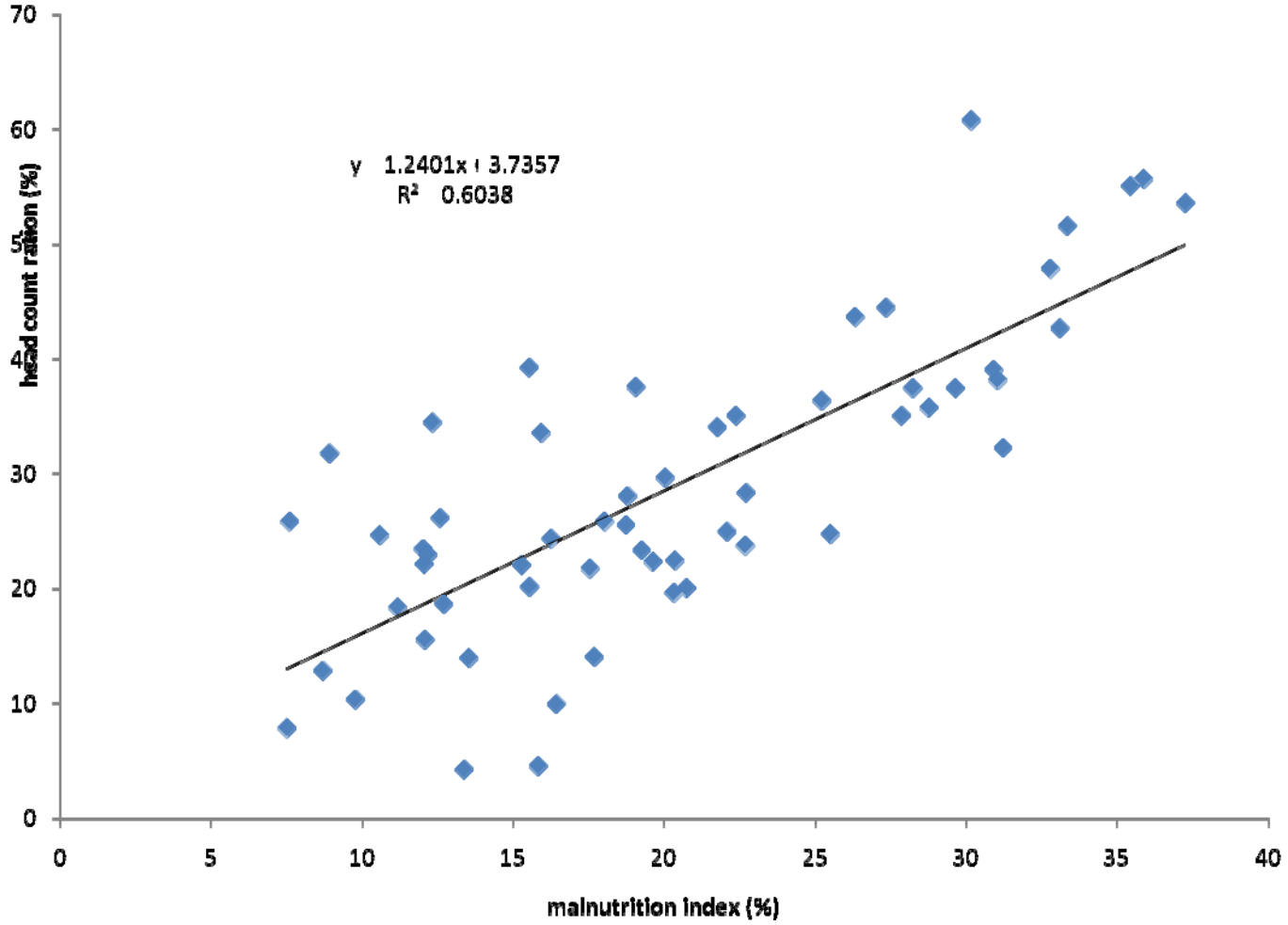


Figure 4 Scatter graph of HCR of New Poverty Lines with Composite Malnutrition Index, 2004-5

Conclusions

- The devil is in the detail
  - MMP calculations are not convincing
    - Theoretical and empirical problems
    - Inconsistent results - with different (but equivalent) data
  - One gets the impression that the exercise is accepted because it satisfies both sets of adepts
    - The technicians
      - Used more “modern” methods
      - Broke the link with calories (but still used for validation)
    - The radicals
      - Gave suitably higher es poverty
      - But kept the right happy too, because the higher poverty could be attributed to the re-basing of the poverty lin

- Implications for multi-dimensional poverty?
  - MMP is used in MDP (one element)
  - Other dimensions also need their welfare aggregate (health, education, and so on)
  - They also need their cut-offs and methods of aggregation
  - How convincing are they?
    - Does one get reproducible results
      - With same data, other analysts, and other analytical techniques
      - With different data
    - Is there any theory to justify them