Monetary poverty indicators at local level: evaluating the impact of different poverty thresholds

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Aims of the presentation

- The importance of estimating poverty indicators at sub-national level is nowadays worldwide recognized
- Poverty is a multidimensional concept: we focus here on relative monetary poverty indicators
- There are relevant issues when computing sub-national poverty indicators that may impact their value, namely:
  1. the choice between the use of income or consumption data;
  2. the use of national or local poverty lines;
  3. taking into account the price levels;
  4. the use of small area estimation techniques.

Aims of the presentation

- In this presentation we focus on two of these issues:
    1. the use of national or local Poverty Lines (PLs);
    2. the use of Small Area Estimation (SAE) techniques.
- The aim is to estimate Italian households' Head Count Ratio (HCR) or at-risk-of-poverty rate
- We use consumption expenditures data from the Italian Household Budget Survey (HBS) 2012 to estimate the HCR for the 20 regions and the 110 provinces in Italy

Aims of the presentation

- We first estimate the regional HCRs using two alternative PLs: the PL defined at national level and the PLs defined at regional level
- Since we observe a high impact of the regional PL definition on the regional HCRs, we then extend the analysis at the provincial level
- When computing the HCR at provincial level, the PL can be defined not only at national or regional level, but also at provincial level
- The 2012 HBS sample is for most of the provinces too small to obtain reliable estimates both of the HCRs and of the provincial PLs
- Therefore, we use SAE to obtain more accurate estimates for the provincial PLs and HCRs

The use of consumption data to estimate the poverty incidence

- In Italy the relative and absolute poverty incidence is computed by Istat by using data from the Household Budget Survey
- To compute the relative poverty incidence, the poverty line is set, for households of two components, equal to the mean per-capita expenditure computed at national level (1015.2 Euros in 2012)
- The poverty line for households with a different number of components is then obtained by multiplying it with a specific coefficient (0.60 for households with one member, 1.33 for households with three members, etc.)

The use of consumption data to estimate the poverty incidence

- The PL used in the computation of the HCR with expenditures data depends on the level of the mean per-capita consumption expenditures that in Italy varies strongly among regions
- The percentage difference reaches the 50% comparing northern with southern Italian regions
- Therefore, it is important to evaluate the impact of the use of sub-national poverty lines in measuring the poverty incidence
- At regional level (NUTS2 level) direct survey estimates are statistically sound

Household poverty incidence at regional level with national and regional PLs

HCR with National PL and with Regional PL Consumption 2012
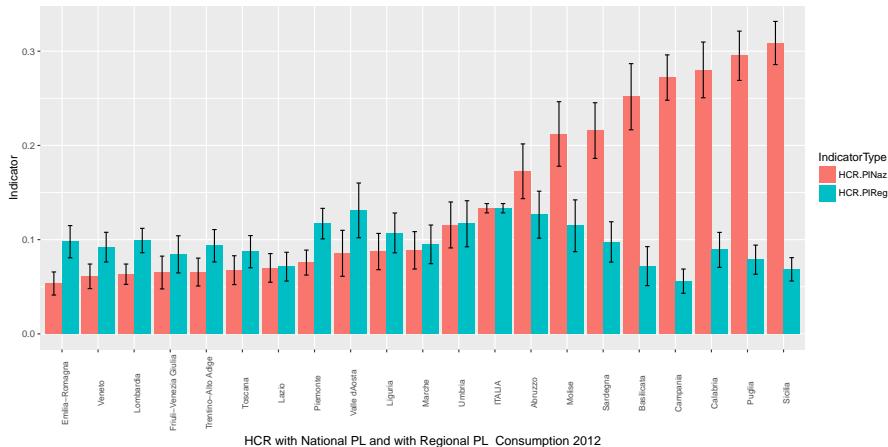
Household poverty incidence at regional level with national and regional PLs
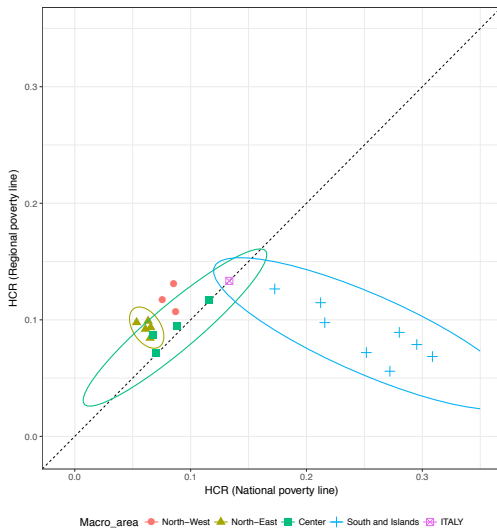
Household poverty incidence at regional level with national and regional PLs

- The use of different PLs has strong geographical implications in the evaluation of Italian households' poverty
- The choice of the poverty definition and of the PL depends on the level of analysis and the kind of the policy to be implemented (Kangas and Ritakallio, 2007)
- For comparing relative monetary poverty at regional (local) level, it seems justified the use of region-specific PLs (Mogstad et al., 2007)

Household poverty incidence at provincial level with national, regional and provincial PLs

- Having observed a high impact of the regional PL definition on the regional HCRs, we extend the analysis at the provincial level
- When computing the HCR at provincial level, the PL can be defined not only at national or regional level, but also at provincial level
- The 2012 HBS sample size at provincial level, varying from zero to 1037, with a median value of 146, is for most of the provinces too small to obtain reliable estimates both of the HCRs and of the PLs at provincial level
- Therefore, we use a small area model to obtain more accurate estimates

Household poverty incidence at provincial level with national, regional and provincial PLs

- The HCR estimates at the province level are estimated using an area-level Fay-Herriot model (Fay and Herriot, 1979)
- This method uses aggregated auxiliary data to model direct estimates of the HCR to reduce their variability
- As auxiliary variables at the province level we use the per-capita taxable income (information available from the "Agenzia delle entrate" database 2012) and the share of households who own their house (from the Population Census 2011)
- We also estimate the provincial PLs by using a small area model, equal to the one used for provincial HCR estimates

SAE models

Table: HCR SAE model parameters. Model with National PL (NPL), Regional PLs (RPLs) and Provincial PLs (PPLs).

HCR	NPL	RPLs	PPLs
Taxable Income Per Capita $\times 1000$	-0.027***	0.004**	0.003*
Share of house owners	-0.005***	-0.002*	-
Σ_u	0.055	0.031	0.030

Table: Provincial PLs SAE model parameters.

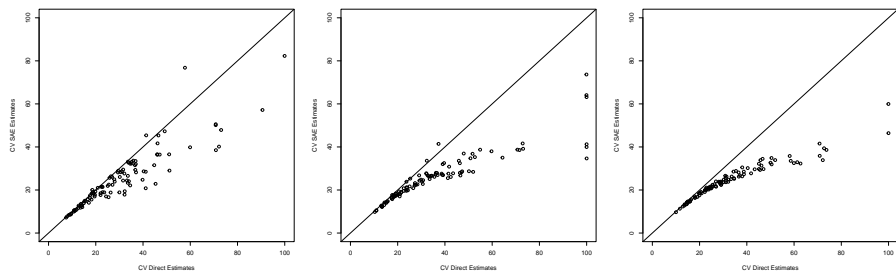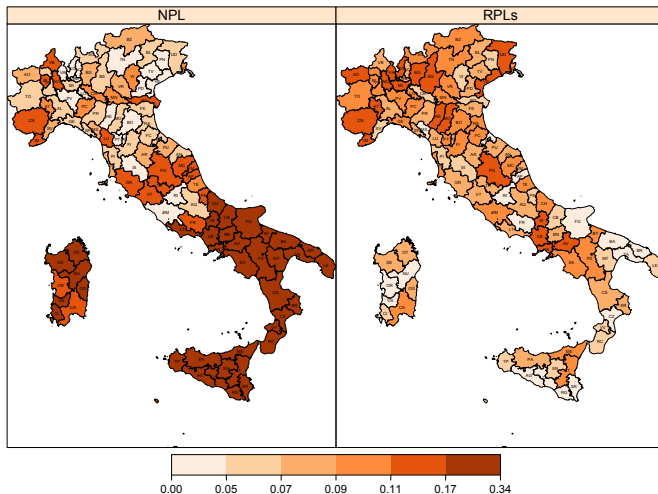| PPLs	Parameter
Taxable Income Per Capita $\times 1000$	72.051***
Share of house owners	8.795***
Σ_u	88.12

SAE models

Figure: Plot of the CV of direct estimates versus SAE estimates for the models of the HCR with NPL, RPLSs and PPLs.
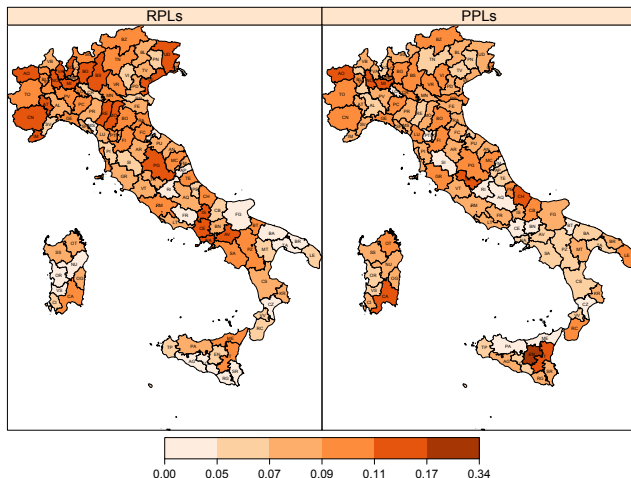
Household poverty incidence at provincial level with National PL (NPL) and Regional PLs (RPLs)

Household poverty incidence at provincial level with National PL (NPL) and Regional PLs (RPLs)
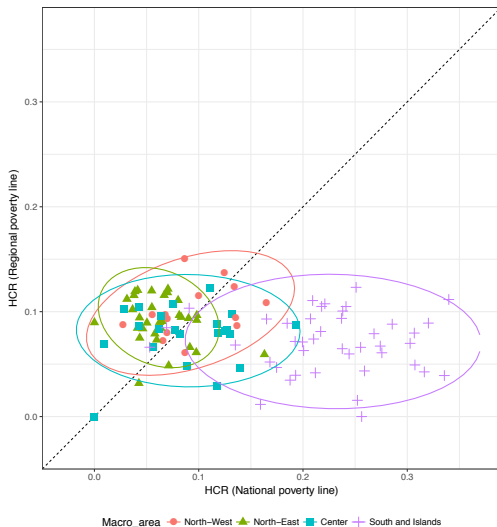
Household poverty incidence at provincial level with Regional PLs (RPLs) and Provincial PLs (PPLs)

- Switching from regional to provincial PLs affect the HCRs in a similar way with respect to the use of the national PL
- The change in the values of the HCRs is very small compared to that observed when comparing results obtained using the national PL
- The results suggest that measuring the monetary poverty incidence at provincial level using national or local (regional or provincial) thresholds strongly change the picture of the phenomena

Household poverty incidence at provincial level with Regional PLs (RPLs) and Provincial PLs (PPLs)

Household poverty incidence at provincial level with Regional PLs (RPLs) and Provincial PLs (PPLs)
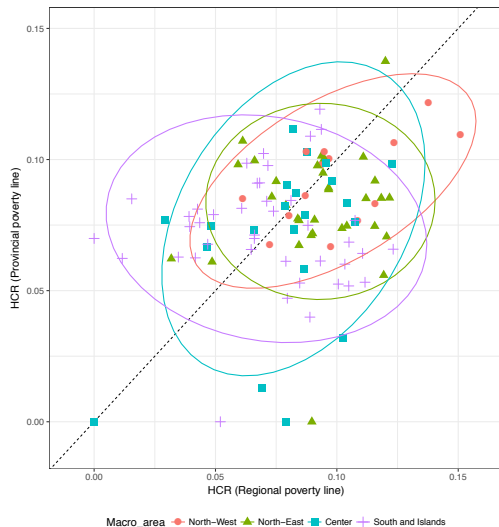
Concluding remarks

- In this work we have presented alternative estimates of the HCR for Italian regions and provinces by using data on households' consumption expenditure
- The aim was to evaluate the impact of subnational PLs on the HCRs and the use of SAE models
- To estimate the HCRs and the PLs at provincial level we suggested the use of a small area model defined at the area level
- Our results show that the choice of the PL is very relevant when the aim is to compare local relative poverty indicators

Concluding remarks

- The results can be extended in several directions, for example by also taking into consideration the different level of the prices in the regions and provinces
- Indeed, also this aspect can highly impact the value of the HCRs
- We have already used Istat regional PPPs available for the capital cities of Italian regions for the year 2009
- We are going to extend the analysis by computing alternative local PPPs