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

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- 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:
 - It 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;
 - the use of small area estimation techniques.

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- In this presentation we focus on two of these issues:
 - 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

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- 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

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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.)

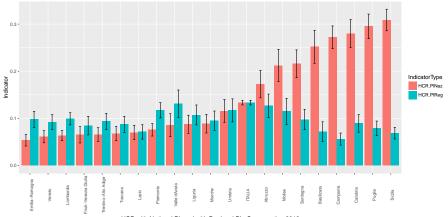
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The use of consumption data to estimate the poverty incidence

- 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

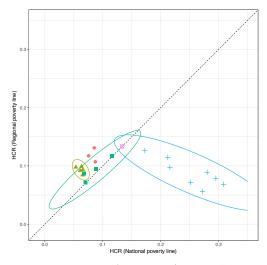
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Household poverty incidence at regional level with national and regional PLs



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Household poverty incidence at regional level with national and regional PLs



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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)

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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

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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

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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 ×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 ×1000	72.051***	
Share of house owners	8.795***	
Σ_u	88.12	

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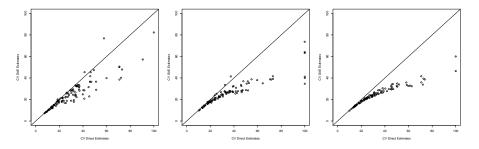
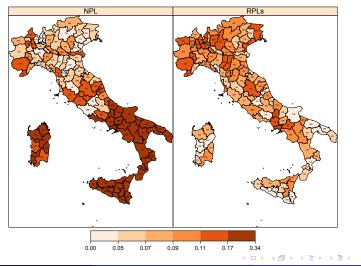


Figure: Plot of the CV of direct estimates versus SAE estimates for the models of the HCR with NPL, RPLSs and PPLs.

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

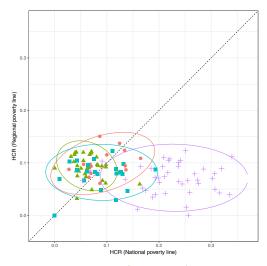


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Household poverty incidence at provincial level with National PL (NPL) and Regional PLs (RPLs)



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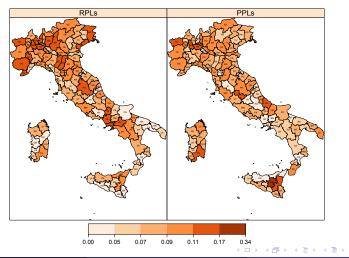
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Household poverty incidence at provincial level with Regional PLs (RPLs) and Provincial PLs (PPLs)

- 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

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

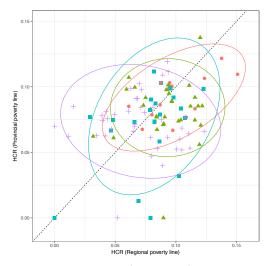


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Household poverty incidence at provincial level with Regional PLs (RPLs) and Provincial PLs (PPLs)





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- 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

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- 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

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