The analysis of the material deprivation of foreigners in Italy

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Abstract
We examine the material deprivation of foreigners on a sub-sample of the 2009 Italian Survey on Income and Living Conditions. We employ two indices of material deprivation that take into account the regional level of our analysis, and rely on the assignment of weights to items. The determinants of material deprivation are investigated through a zero-inflated beta model.

1 Introduction

Studies on material deprivation in Italy suggest that material hardship is higher among foreigners both in terms of diffusion and intensity [3].

Material deprivation is defined as the "*...inability for individuals or households to afford those consumption goods and activities that are typical in a society at a given point in time, irrespective of people's preferences with respect to these items*" [4]. It has often been considered as a valid indicator of multidimensional poverty [2]. In this perspective the analysis of the material deprivation provide information also on social inclusion and living standards [6].

We employ two weighted indices of deprivation that take into account the importance assigned to each item at the regional level. The first index allows to compare regions in terms of diffusion and intensity of material deprivation, whereas the second index permits to compare individuals. The latter index is used as a response

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variable to estimate the impact of some key explanatory variables on material deprivation. Data are drawn from a sub-sample of the 2009 Survey on Income and Living Conditions for Italy[2] (henceforth IT-Silc).

2 The measurement of material deprivation in Italy

We measure material deprivation as "*the number of individual's* (enforced) *lack of access to essentials of life*" [2] following a well-established literature. Relying on data available from the IT-Silc survey, the nine "essential" Eurostat items [2] were considered.

According to the last fiscal federal reform, Italian municipalities and regions are charged with the implementation of the most part of social policies. Moreover, there is great evidence that income and standards of life inequalities exist among Italian regions. These are the reasons why scholars have recently adopted the regional level to analyze material deprivation in Italy [1]. If Southern regions appear in general to be poorer and more deprived than the Northern ones, it can be expected that this applies also for foreigners within regions.

The issue of item weighting has been considered in the literature and many solutions suggested [1, 2]. The Material Deprivation Index (*MD*) we calculate can be described as follows:

$$MD_i = \sum_{j=1}^{9} w_{jk} X_{ij} \qquad \text{with} \qquad w_{jk} = \frac{h_{jk}}{\sum_{j=1}^{9} h_{jk}} \quad (1)$$

where $i=1, 2, ..., N$ indicate the sample units, $j=1, 2, ..., 9$ the deprivation items, $k=1, 2, ..., 21$ are the 19 Italian regions and 2 autonomous provinces (henceforth all simply named "regions"), X_j represent indicator deprivation variables (1 = not owning, 0 = owning the item) and the w_{jk} terms represent normalized weights; $\forall js$, $\sum_{j=1}^{9} w_{jk} = 1$. Due to the regional nature of deprivation in Italy it seems reasonable that such weights may vary across regions.

In equation (1), h_{jk} represent weights calculated for the *j-th* item and the *k-th* region on the whole It-Silc sample and they can be calculated in different ways. We use two alternative formulations where h_{jk} is the percentage of sample units *not having* the item or *having* it. In the first case higher weights are attributed to less possessed items so as to indicate higher deprivation in the region. These weights are used when comparisons are made among regions (*Regional Material Deprivation Index - RMD*). In the second case higher weights are given to more possessed items in the region; that means, individuals result more deprived if they *do not have* an item possessed by most of the people living in the same region. These last weights are used in case of comparisons among individuals (*Individual Material Deprivation Index - IMD*). Both indices measure the intensity of deprivation through the weighted mean of items not owned by the individuals in our sample. They are continuous variables in the [0,1] interval; the lower bound (zero) is achieved from the individual when he/she does not suffer any deprivation, whereas the upper bound (one) corresponds to the lack of all considered items.

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[2] In year 2009 a special research on foreigners was run by ISTAT, but data have not still been released, so for this application we use data from the 2009 general IT-SILC research, from which the subsample of 1,636 foreigners was drawn.

3 Model and discussion

The percentage of foreigners experiencing at least one deprivation varies from 0% of Molise and Sardinia to around 60% for the autonomous province of Trento. In the trimmed distribution the mean intensity of the index varies from 0.51 of Aosta Valley, to 0.80 of Sicily.

Under strong inequalities in material deprivation, a major aim of this paper was to investigate the determinants of deprivation among foreigners in Italy. This was done by interpreting *IMD* as a response variable and some socio-demographic characteristics of foreigners and of their households as explanatory variables[3].

The *IMD* index can assume a non-negligible number of zeros. In this situation a model referring to mixed continuous-discrete distributions should be preferred. This family of distributions, introduced by Ospina and Ferrari [5] and usually referred to as zero-or/and-one inflated beta distributions, allows to model data that assume values in [0, 1), (0, 1] or [0, 1].

In our sample, the distribution of the *IMD* is asymmetric, right-skewed with an inverted "J" shape. No one experimented the maximum intensity of deprivation, whereas 26.8% of foreigners resulted not deprived in any of the 9 dimensions. All these elements suggested to model the index through a zero-inflated beta model.

This model consists of a beta and a logit component simultaneously estimated. Through the logit component the effect of covariates on the no deprived condition can be estimated, whereas the beta component predicts the effects on the deprivation values [5]. Both models estimate the impact of socio-economic and demographic characteristics[4] of foreigners and their households, controlling for the regions where they live.

The model fits data well and estimates (Table 1) show that: having a tertiary education is associated with a higher probability of being no deprived and a lower intensity of deprivation; being unemployed is related with a low chance of being not deprived and with high intensity of deprivation; the higher the work intensity status of the household, the lower the probability to experience more severe forms of deprivation; having a native partner permits both to protect foreigners from falling into deprivation and to reduce the intensity of deprivation; couples without children and large households with dependent children are less deprived than single households; individuals who self assess a bad or very bad health are more likely to experience deprivation; home-owners are less likely to fall into material deprivation than tenants and if these fall in deprivation it is a less severe experience.

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[3] The choice of variables was driven through the combination of the stepwise method and suggestions from the literature on living conditions of immigrants in Italy and on material deprivation.

[4] The variables selected in the zero-inflated beta model are: sex, age of foreigners, household composition, labour market position, working intensity status, have a native partner, tenure status, being UE or Extra UE citizen, bad or very bad self assessed health and region. Note that the same covariates show opposite signs in the two parts of the zero-inflated beta model. In the beta model positive estimates indicate the amount of increase in the *IMD* index that would be due to an increase (or to a change in state) in the explanatory variables, whereas in the logit model positive estimates indicate the amount of increase in the predicted probability of being not deprived. All the estimates are on the logit scale.

Table 1: Zero-inflated beta model*. Parameter estimates (coeff.) and standard errors (std.err.)

	Beta component		Logit component	
	Coeff.	Std. Err.	Coeff.	Std. Err.
Personal characteristics				
Woman (ref. man)	-0.041	0.043	0.057	0.138
Age	0.027	0.009	-0.061	0.026
Squared age	0.000	0.000	0.001	0.000
Socio-economic characteristics (ref. Up to Upper Secondary School)				
Higher Secondary School	-0.163	0.043	0.226	0.141
Tertiary School	-0.171	0.082	0.917	0.206
Labour market position (ref. employee)				
Self-employed	-0.082	0.086	0.591	0.226
Unemployed	0.274	0.063	-0.928	0.262
Inactive	0.021	0.057	-0.078	0.182
Household composition (ref. one person household)				
2 adults without children	0.009	0.076	0.657	0.231
single parent household with children,	-0.057	0.076	0.123	0.239
2 adults with children	0.105	0.124	-0.056	0.422
other household with dependent children	-0.163	0.086	0.532	0.265
Working intensity status (WI) (ref. WI= 0)				
$0 < WI < 0.5$	-0.221	0.109	-0.591	0.354
$0.5 \leq W < 1$	-0.319	0.106	-0.306	0.343
$W = 1$	-0.421	0.110	-0.051	0.357
Other characteristics				
Having an Italian partner (ref. a foreign partner)	-0.152	0.067	0.728	0.173
Tenants (ref. owners)	0.203	0.046	-0.553	0.132
EU citizen (ref. extra-EU citizen)	-0.087	0.048	0.386	0.138
Bad or very bad self assessed health (ref. not bad/very bad)	0.070	0.094	-1.157	0.403

* controlled for regions

4 Conclusions

This paper shed light on the new field of material deprivation of foreigners in Italy, taking into account the regional nature of deprivation and explicitly including item weighting. Nevertheless, the results of the model suffer from weakness of external validity because data on foreigners are drawn from the standard IT-Silc survey whose frame population is not that of foreigners but that of all Italian households. The years since migration and the age of arrival are not available in the IT-Silc survey and they were consequently omitted in our model. All these limitation will be overcome as soon as the IT-Silc special survey on foreigners is available.

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