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Children capabilities and family characteristics in Italy

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This paper explores the possibilities of using structural equation modelling to measure capabilities both at a theoretical and empirical level. We focus on two capabilities relevant for evaluating children's well being in Italy:

1. *Senses Imagination and Thought*. Nussbaum (1999) has defined this capability as follow: "Being able to use the senses, to imagine, think, and reason and do these things in a "truly human" way informed and cultivated by an adequate education, including by no means limited to, literacy and basic material skills."

2. *Leisure activities, play*. Leisure activities and Play: The role of this capability in children's well being is essential but its functionings are not easily observable. Psychologists stress that it is not only important to assess how much the child plays but what types of plays and activities the child does and with whom does he/she play.

Di Tommaso (2007) has applied a Structural Equation Model (in particular a MIMIC) to estimate well being for children in India. In this paper we utilise the same broad class of models (Joreskog and Goldeberger 1975, Zellner 1970)[1]. The existence of multiple, inter-related indicators to measure these dimensions of children's well being raises the question

[1] An excellent review of the literature is to be found in Bentler and Weeks (1980) and Aigner, Hsiao, Kapteyn, and Wansbeek (1984), and Wansbeek and Meijer (2000).

of how to combine them in empirical research. The Structural Equation Model (SEM) is one approach to this problem. Confronted with the problem of determining the impact of *causes* of child well being, the most basic strategy is to choose a single indicator we believe is the closest (drop off rates for example) to the unobserved construct (Senses, Imagination and Thought), and ignore both measurement error and information on the remaining indicators. In this paper we assume that each functionings of the above capabilities is an indicator of the unobserved respective capability that is linked to the observable indicators. This modelling approach allows us to consider a capability as a latent construct of which we observe only few dimensions. The principal advantage of this approach is that it does not rely on exact measurement of the capability. Each indicator represents a noisy signal of it. This modelling strategy has been extensively used in psychometrics and more recently in econometrics (see for example Di Tommaso et al. 2007), and is founded upon the specification of a system of equations which establishes the relationship between an unobservable latent variable, a set of observable endogenous indicators and a set of observable exogenous variables (which are believed to be the causes of a specific capability).

To measure the above mentioned capabilities not only we need data on the personal characteristics of children and their families, but also data on the availability, prices and quality of schools, nursery schools, sport classes, artistic activities.

The empirical part of the paper utilises two Italian data sets. The first is 1998 ISTAT (Italian National Statistical Office) multipurpose survey on family and on children condition (FSS98). This data set contains information on children's education, the socio-demographic structure of their families, child care, attended classes but it lacks information on family income. Because income is an important variable affecting child well being, we have matched this data set with the 2000 Bank of Italy survey on household income and

wealth data by using propensity score matching techniques (for a detailed description see Addabbo et al 2007).

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