Title: Multi-family households in a labour supply model: a calibration method with application to Poland

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Following Grossbard-Shechtman (1984) and Chiappori (1988 and 1992), there has been an increasing interest and a growing body of literature analysing the implications of within-household sharing of resources between individuals who constitute them. Chiappori’s collective model of labour supply allows for identification of individual preferences and a sharing rule which determines the allocation of resources in the household. This is in contrast to the traditional unitary models which treat the couple as a decision-making unit, and ignore the bargaining and allocation processes that go on within it. The relatively straightforward application of the unitary model - especially following the method proposed by van Soest (1995) - make it by far the more often used. However, recent advances in the development of the collective methodology (e.g.: Chiappori 1997, Blundell et al. 2005)) and successful applications of the model which combined estimation and calibration (e.g.: Beninger et al. 2007, Myck et al. 2006, Vermeulen et al. 2006) have demonstrated that ignoring the processes that take place within the household lead to misleading conclusions concerning the behaviour of individuals in couples.

Although the collective model has opened the household “black box” and allowed for individual treatment of partners in couples, the literature has so far ignored a broader issue with special relevance to developing and transition countries, namely the fact that the distinction of single versus multi-person households does not always have to imply single versus couple households. If we define a “family” to be either a single adult or a couple (with or without depending children) then a household can be, and in developing countries very often is, made of more than one such family. There may of course be various combinations of single and couple families as well as families with individuals of working-age and beyond it. Such combinations, with a potential for resource sharing among the families, will have implications for the financial situation of each family, and as a consequence, for the financial incentives to work the family faces.

In developing countries as well as in transition economies multi-family households
(MFHs) are very common and are often the most important source of income insur-
ance. In this respect, multi-family households substitute for the transfer programs of
governments. Therefore it seems that without a way to account for sharing of resources
among families within households, modelling of labour supply responses of such com-
plex households is impossible, and leads either to wrongful conclusions about these
households or to ignoring them entirely.

In our paper we propose an original solution to this problem by borrowing from
recent applications of the collective model and combining estimation and calibration
methods to identify the degree of sharing among families in households. Such com-
bination has been successfully used in the context of the collective model (of single
family households) for example in Beninger et al. (2007), Myck et al. (2006), and
Vermeulen et al. (2006). The method we develop is applied to Polish data. The ap-
plication focuses on single individuals without children but the method can be easily
generalised to couples and to families with children.

The first step of our methodology is estimation of labour market preference pa-
rameters in the standard way for single-family households (SFH). These are then
“imported” to single individuals and couples in MFH. We assume that each house-
hold is characterised by a single between-family sharing parameter, $\alpha$, which can take
values form 0 to 1, where 0 implies no sharing, and 1 implies sharing of all household
resources in accordance to equivalised family size. The value of this parameter is then
calibrated for each MFH using information on the observed labour market status of a
family in the MFH and its other characteristics. The calibration uses a criterion that
minimises the squared “distance” between the expected probability of being observed
in a specific labour market status from a function of expected probabilities among the
same family types living in SFH and with the same observed characteristics except for
income.

Our approach provides only a non-structural solution to the problem of multi-
family households. Yet given the requirements necessary for the identification of the
parameters of the collective model in the case of couples in SFH, it is unlikely that a
structural model can be developed and estimated in the case of multi-family house-
holds. This is especially so if households include families which include no labour
supply flexible individuals (employed or potentially employed). The method provides
a consistent and reliable way to extend the application of labour supply models beyond
societies of the developed world. The most important advantage of our approach is that the method allows to consistently include all families who are considered to be labour supply flexible in the analysis, regardless of whether they live in SFHs or in MFHs. Both other options for labour supply modelling which one could consider, i.e. either ignoring MFHs or focusing on a “main” family in a household (and thus ignoring other families), seem inferior. An appropriate treatment of all households in labour supply models seems essential if they are to be used by governments in developing and transition countries in the analysis of tax and benefit reforms and their effects on poverty and employment.