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Are Traditional Equivalence Scales Still Useful? A Review and A Possible Answer

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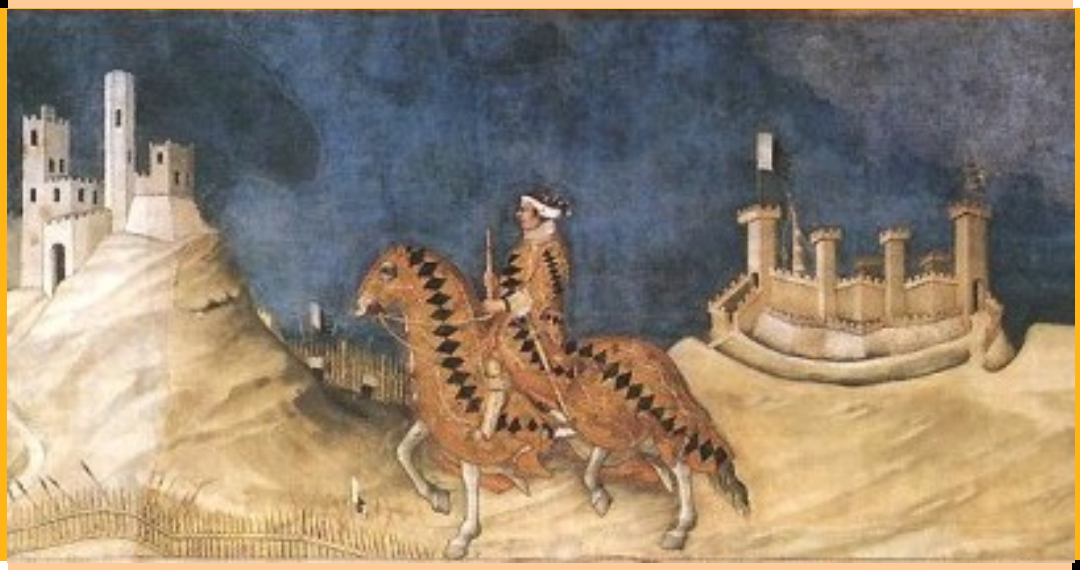

Abstract - This paper presents a critical review of how literature on parametric equivalence scales has evolved. In particular, it focus on the issue of scale identification from consumption data and the underlying theory of household behavior. Indifference scales, defined on a supposedly more reliable approach to family consumption decision (Chiappori's collective model), are replacing traditional equivalence scales in academic research. However, the latter remains the only available tool for tackling non-constant scale patterns with respect to expenditure, a condition empirically detected in several different countries. An implication is that studies based on traditional, but expenditure independent, equivalence scales, may lead to wrong outcomes, such as a substantial understatement of poverty measures. This is a strong reason for a realignment of operationally implemented scales towards the most recent empirical results. Finally, recent findings against the use of traditional equivalence scales are discussed and some reasons to view them as inconclusive are put forward.

JEL codes: D11, D12, D63.
Keywords: equivalence scales, equivalent expenditure, measured inequality.

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1. INTRODUCTION

Interpersonal welfare comparison is a key, tricky and controversial aspect of the whole modern economic thought. Within such a wide context, equivalence scales are tools, derived from demand theory, that give a sound answer to some important questions arising when different household economies are to be compared.

Early definitions of equivalence scales (Engel, 1895; Rothbarth, 1943) are based on the income ratio of two households, differing with respect to some demographic characteristics such as age or family size, when each household purchases the same relative quantity (income share) of a specific good. These definitions rely on the assumption that the involved budget share is a measure of the family's standard of living. The empirical background for scale calculation is the Engel curve analysis.

Even though in some cases the above methodologies are still in use[1], more recent approaches are based on definitions of wellbeing in terms of utility. Equivalence scales are usually specified in terms of cost functions and calculated through the estimation of an empirical cost function. Modeling the dependence of demand functions on demographics, therefore, plays an essential role in this process. Moreover, when a scale has to be empirically estimated and a welfare comparison mechanism has to be specified, some fundamental identification problems arise. These are due both to the ordinal nature of utility defined in the static demand theory and to the fact that family composition may also be considered as a choice variable.

Another relevant issue concerns the distribution of resources among household members. Traditional demand theory, which is the background of traditional equivalence scales, rely on the assumption that they enjoy the same wellbeing. New definitions of scales have been proposed to take into account some features of the intra-household allocation mechanism, in order to allow different utility levels to different household members. A growing strand of literature is exploring these ideas and indifference scales, defined on the basis of Chiappori's (1988, 1992) collective models, are widely replacing traditional scales in the academic research.

While theoretical questions are matter for debate, equivalence scales play an essential role in a widening range of applications, such as poverty and income distribution analysis, and in all fields where welfare comparisons among individuals are to be made. For examples, they are used to build up indexing schemes for social benefits, payments or exemptions and to set alimony and child support allowances.

[1] Lewbel and Pendakur (2008) mention as an example the methodology applied by the Census Bureau to measure poverty in the United States, which is based on food shares (Engel scales) for deriving comparable poverty lines for households of different size and composition.

This paper tries to summarize how literature on equivalence scales has evolved, and how some recent empirical evidence impacted on theoretical research. Attention is especially addressed to (i) scale identification from consumption data, (ii) modeling of household behavior as a function of its demographic characteristics, (iii) theories of within-household allocation, (iv) new fields of application, and (v) some recent empirical evidence. Subsequent sections discuss these topics following the order above and section 7 concludes. The implementation and the content of a database specifically built up for demand systems (and equivalence scales) estimation is described in appendix. This database is populated with Italian microdata from the ISTAT annual survey on family consumptions, in the period 1997-2008. Indications from a descriptive analysis of these data are essential for modeling consumption behavior as a function of demographic variables, and give a picture of some relevant socio-demographic trends occurring in Italy.

2. IDENTIFICATION OF EQUIVALENCE SCALES

There are two main identification issues which generally arise when an equivalence scale has to be defined and estimated[2].

A fundamental identification problem depends on the ordinal nature of utility defined in static demand theory. Since utility levels of different households are being compared, an unsolvable and well-recognised indeterminacy is introduced (for example, see Muellbauer, 1974, and Lewbel and Pendakur, 2008) when equivalence scales are to be estimated from behavior. Another identification question about utility-derived scales was raised by Pollak and Wales (1979). They point out that "if a family chooses to have three children and $12,000 when it could have had two children and $12,000, then a revealed preference argument implies that the family prefers the alternative it chose" (p. 219). These authors call a scale which takes full account of the benefits of a particular family compositions as an "unconditional equivalence scale" and show that it cannot be inferred from consumer demand behavior alone. Moreover, they assert that "unconditional equivalence scales are required to make welfare comparison" (p. 220).

Such a pessimistic view has not discouraged further research to find joint restrictions on preferences and on criteria for interpersonal utility comparisons needed to define and estimate equivalence scales. Identification problems may in fact be overcome by imposing specific structures on preferences or their dual representations (cost, indirect utility, ecc.) that, in turn, involve restrictions on scale-defining expressions. Increasingly general scale-defining

[2] Lewbel (1997) lists four distinct equivalence scale identification problems. In addition to these mentioned here, he also consider the ordinary econometric issue of identifying parameters of an empirical demand system from consumption data, and that arising whether a utility derived model were to be estimated using Engel curves from data without price variation.

restrictions have been proposed, keeping up with the fundamental progress in empirical demand systems specification occurred in past decades.

The list of important contributions includes those of Barten (1964), Gorman (1976), Pollack and Wales (1981, 1992), Deaton and Muellbauer (1986), Jorgenson and Slesnick (1987), Lewbel (1989, 1997), Deaton, Ruiz-Castillo and Thomas (1989), Blundell and Lewbel (1991), Pashardes (1991, 1995), Blackorby and Donaldson (1993, 1994), Dickens, Fry and Pashardes (1993), Pendakur (1999), Donaldson and Pendakur (2004, 2006), and Perali (2007). The case in which an equivalence scale is independent of utility, but dependent on the other variables entering a cost function, i.e. prices and demographic characteristics, was analysed by Lewbel (1989) and by Blackorby and Donaldson (1993). They called this condition "independence of base" (IB) and "equivalence scale exactness" (ESE), respectively. An equivalent condition, called "absolute equivalence scale exactness" (AESE), was described by Blackorby and Donaldson (1994).

Both ESE and AESE scales do not depend on the household expenditure capacity. Equivalent expenditure functions obtained from ESE scales are strictly proportional to total expenditure (with fixed expenditure elasticities to the value of 1) and those from AESE scales are constant figures (with fixed expenditure elasticities to the value of 0). The first conversion is typically used for welfare measurements, such as poverty and inequality analyses. The logic of the second conversion is that underlying many social transfer systems, where the cost of a given characteristic (such as a child, or a disabled person, etc.) is seen as fixed. Since equivalence scales measure the extent to which households share goods internally, higher values mean lower economies of scale. However, the ability of household members to share goods may depend on the household expenditure capacity. A condition of necessity may encourage sharing, even if scarcity and sharing may be conflicting circumstances; a condition of abundance of goods may also encourage sharing. The prevailing effect is *a priori* unpredictable and a matter of empirical analysis. In any case, the expenditure-independence restriction seems rather strong, and may be unacceptable when departures are large.

Two cases of expenditure-dependent equivalence scales have been considered by Donaldson and Pendakur (2004, 2006). The condition called *generalized equivalence-scale exactness* (GESE, 2004) is a generalization of IB/ESE where equivalence expenditures are iso-elastic with respect to expenditure. The condition called *generalized absolute equivalence-scale exactness* (GAESE, 2006)[3] is a generalization of both IB/ESE and AESE, and does not imply iso-elasticity.

All above restrictions rely on both testable and untestable hypotheses. As shown by Blundell and Lewbel (1991), and by Lewbel (1997), untestable hypotheses are needed to deal with the identification problems mentioned at the beginning of this section: any criterion for inter-

[3] GAESE restrictions are incorporated into a rank-4 translated quadratic almost ideal (TQAI) demand system proposed by Lewbel (2003a).

household utility comparison involves untestable assumptions. This means that identification problems have not been completely overcome and, therefore, that the methods considered so far are not yet fully satisfactory. Only within the reformulation of family theories in terms of individual preferences, such as Chiappori's (1988, 1992) collective model, it seem possible to define a new class of scales whose identification does not require arbitrary assumptions. This is discussed in section 4. Table 1 contains a list of most important contributions to literature on equivalence scales.

Table 1. Milestones in equivalence scales literature.

Author:	Theoretical background:	Notes:
Engel (1895)	food budget shares	
Rothbarth (1943)	adult good budget shares	
Barten (1964)	utility, within the unitary approach to family decision	
Lewbel (1989)		IB/ESE
Blackorby and Donaldson (1993, 1994)		IB/ESE, AESE
Donaldson and Pendakur (2004, 2006)		GESE/GAESE
Browning, Chiappori and Lewbel (2006, 2010)	utility, within the collective model of family decision	indifference scales

Empirical estimations obtained by Donaldson and Pendakur (2004, 2006) using Canadian data give the result of equivalence scales significantly declining with expenditure. This implies that the cost of a family characteristic, for example a child, have a fixed component which increases less than proportionally with respect to total expenditure. Similar results have been found by Majumder and Chakrabarty (2008) for India through an Engel curve analysis.

An alternative way to estimate equivalence scales is based on surveys. People are asked about their wellbeing associated with alternative conditions in terms of income, household characteristics, etc. Interpersonal response comparability is still critical for identification and relevant criteria are defined within psychology and experimental economics. Van Praag (1971) and Kapteyn and Van Praag (1976) contributed early on to this literature, surveyed by Van den Bosch (2001), McFadden (2005) and Schröder (2009). Koulovatianos *et al.* (2005a) for Germany and France, and Koulovatianos *et al.* (2005b) for Cyprus, use survey methods to estimate equivalence scales and found a declining with expenditure pattern.

3. MODELING DEMOGRAPHICS AND OTHER ISSUES

Many authors have focused on modeling the dependence of household consumption behavior on demographic characteristics, i.e. the variables that influence such behavior besides prices and income. Early examples are those of Sydenstricker and King (1921), and Prais and Houthakker (1955). In these applications data usually came from a single survey, so that considering price variability was unnecessary.

However, to deal with data from different price regimes, and for consistency with utility maximization, price effects are to be taken into account. Among the first attempts to define equivalence scales in a context of utility maximisation there is the Barten (1964) model, where commodity specific demographic deflators were introduced into the utility function; a generalisation of the Barten model was proposed by Gorman (1976). These specifications involve strong restrictions on cost functions to ensure scale identification from consumption data. Resulting equivalence scales, which in general should depend on all variables entering a cost function (prices, expenditure and demographics), actually only depend on demographics.

The list of further generalisations aimed at incorporating demographic effects into demand systems includes the contributions of Lewbel (1985, 1989), Browning (1992), Blackorby and Donaldson (1993), Blundell, Pashardes and Weber (1995), Pendakur (1999), Donaldson and Pendakur (2004, 2006). The ESE conditions defined by Lewbel (1989) and by Blackorby and Donaldson (1993) allow calculating equivalence scales depending on prices and demographic variables; the GESE/GAESE conditions defined by Donaldson and Pendakur (2004, 2006) allow calculating scales depending on prices, demographics and household expenditure.

In general, demographic effects are incorporated into demand systems by adding a set of functions of demographic variables to the cost function parameters associated to prices and income. These are “typically dummy variables (e.g. Caucasian or not) or low-valued count variables (e.g. number of children under 10 years old).” (Lewbel, 1997, p. 190). A list of other variables mentioned by this author includes: number of household members, race, housing status, geographical location - section of the country or urban versus rural areas - being smokers or non smokers, and a time trend.

The specification of an empirical cost function raises the problem of specification errors. A way to deal with such errors is the use of a non-parametric or a semi-parametric method (Pagan and Ullah, 1999). However, in a demand analysis framework where cross-equation constraints like Slutsky symmetry must hold, such an approach is difficult to implement, apart from the case where only Engel curves are to be estimated. The list of early contributions to Engel curve analyses based on non-parametric or semi-parametric methods includes those of Lewbel (1991), Banks, Blundell and Lewbel (1997), Gozalo (1997) and Pendakur (1999). In

the last two papers attention is concentrated on demand specification as a function of demographic variables and on testing the condition for equivalence scale identification.

Recently, Majumder and Chakrabarty (2008) have estimated equivalence scales in a GESE framework through an Engel curve analysis and using a semi-parametric specification. Haag, Hoderlein and Pendakur (2009), and Pendakur, Scholz and Sperlich (2010) use, respectively, a non-parametric and a semi-parametric method to impose and test Slutsky symmetry in a demand system that depends on prices and expenditure. However, the last two models do not include demographic effects, a point that must be achieved to make them suitable for equivalence scale estimation.

4. FAMILY THEORIES AND INDIFFERENCE SCALES

Traditional equivalence scales rely on the hypothesis that a household is a unique consumption unit, whose behavior can be properly described by a single utility function. According to this so-called unitary approach, all household members enjoy the same level of wellbeing, (ordinally) measured by that function. This view, due to Samuelson (1956) and Baker (1974, 1981), was commonly accepted until the 1980s. Then it has then become less popular since the ascendancy of a set of so called non-unitary models, whose common feature is the recognition of (at least) two decision makers in the family.

First contributions to non-unitary strand of literature are those by Manser and Brown (1980) and McElroy and Horney (1981), whose models consider household decisions as the outcome of a cooperative bargaining. Properties of the Nash bargaining solution depends on the features of family member utilities and on disagreement utilities, i.e. the member payoffs when the outcome is a disagreement (or, in other terms, a divorce). Lundberg and Pollak (1993) also consider the case of a non-cooperative bargaining outcome inside the marriage. Payoffs associated with the default outcomes may be seen as ‘threat points’ to underline the strategic interaction between the players involved; these points are influenced by a set of exogenous factors, for example divorce laws and the social transfer to families with children.

The consideration of intra-household resource allocation mechanisms sets up the theoretical background for modeling a wide range of family behavior, such as marriage and divorce, fertility, investment on children, inter-generational transfers, security in old ages, etc (a review of these topics is in Ermish, 2008). This is a reason that makes non-unitary models (for a review see Lundberg and Pollak, 2008) more appealing. Another reason is a rather strong empirical evidence against the hypothesis, implicit in the unitary approach, of income pooling, i.e. that only the total household income is relevant to economic choices. Lundberg, Pollak and Wales (1997) find a substantial increase of expenditures on women’s and children’s goods after a child’s allowance reassignment from husbands to wives that occurred

in the late 1970s in the UK. Lundberg and Pollak (2008) give a review of empirical works showing similar results, i.e. a rejection of the pooling hypothesis.

A non-unitary alternative to the cooperative bargaining approach is the collective household approach of Chiappori (1988, 1992), where the household has a welfare function that is a weighted sum of individuals' utilities. Research on collective models has led to important results in terms of scale specification. As pointed out by Lewbel, "resolving equivalence scales identification problems will ultimately require greater consideration of the behavior of individual household members, since it is they that actually have preferences" (Lewbel, 1997, p. 195).

Within the collective background, Browning, Chiappori and Lewbel (2006, 2010) calculate the cost for a single person to be on the same indifference curve that he/she would attain as a member of a household, thus calling it indifference scale. "We propose therefore that meaningful comparisons must be undertaken at the individual level, and the appropriate question to ask is, 'how much income would an individual living alone need to attain the same indifference curve over goods that the individual attains as a member of the household?' … . The question only depends on ordinal preferences, and hence is at least in principle answerable from revealed preference data. Consequently, in sharp contrast with the existing equivalence scale literature, our framework does not assume the existence of a unique household utility function, nor does it require comparability of utility between individuals and collectives (such as the household). Instead, following the basic ideas of the collective approach to household behavior, we assume that each individual is characterized by his/her own ordinal utility function, so the only comparisons we make is between the same person's welfare (defined by indifference curves) in different living arrangements." (Browning, Chiappori and Lewbel, 2010, p. 3).

Even though consumption data are usually referred to households rather than individuals, some features of the collective model can be identified and indifference scales have been estimated (Browning, Chiappori and Lewbel, 2010). Available defining conditions and related empirical outcomes only concern adult household members, but these authors are optimistic about extending the model to include children utilities. However, this implies a reformulation of the idea of comparing the utility of an individual living alone with what she or he would attain as a member of a family.

In a recent contribution, Lise and Seitz (2011) show that traditional equivalence scales may produce misleading estimates of consumption inequality and give empirical evidence of this fact using UK data from 1968 to 2001. The usual variance partitioning into the between and the within elements is the crucial point of their analysis. They show that ignoring the within-household component, as involved by the use of traditional equivalence scales, leads to a substantial underestimate of overall inequality between individuals. Their analysis is based on data from the UK Family Expenditure Surveys, and focuses on families formed by single

persons and couples without children. When couples are considered, estimates of the expenditure of each spouse on her/his private goods are generated through a model specified according to Chiappori's collective household approach.

There are two points that, in my opinion, make Lise and Seitz's results inconclusive. First, these authors show how the within-household component had considerably reduced and stabilized itself since the late eighties, representing about 25% of the total inequality. This implies that for short-run comparisons, not involving periods prior the late eighties, traditional scales may still be very informative, accounting for about 3/4 of the overall variability. Second, they use a model to generate the data that are essential to the analysis, that would otherwise be unobservable. Their results crucially rely on the model assumptions and such dependence is even more critical than that occurring in the usual case where a model is used for interpreting data. For example, over the period considered (1968-2001), preferences are held constant so that the decisive factor introducing variability into the outcomes is the difference in potential earnings between spouses. This is a highly dynamic factor in that period and the outputs of the model obviously reflect such dynamics. Therefore, an overstatement of within-households inequality is likely to occur as a result.

5. APPLICATIONS

A review of the literature on applications of equivalence scale lies far beyond the scope of our investigation. Even when well-established applications are considered, such as poverty and income distribution analyses (see Jorgenson, 1997, for a review), researchers try to widen or update available results implementing methodologies based on collective models. Just to mention a recent work, Bütikofer, Lewbel and Seitz (2011) estimated a collective household consumption model using data on older individuals and couples. Their results are useful to determine suitable measures of poverty and welfare inequality, for indexing pension and social security payments and for calculating appropriate levels of social and private insurance.

Another strand of literature on equivalence scale covers legal applications, when comparisons of the wellbeing of households with different compositions are to be made. An example is the assessment of the appropriate compensations for wrongful death, in which a judge or an insurance company have to reimburse for the standard of living loss after a working spouse has died. Lewbel (2003b) points out that using traditional equivalence scales for this calculation may bring misleading results and suggests a method based on the collective approach.

Equivalence scales are also used for alimony and child support calculations. For example, the *Guidelines* implemented in Canada since 1997 establish a rule based on the application of a traditional and expenditure independent equivalence scale (Canada, 1995, 1997). Allen (2007)

shows how such an innovation set off a significant increase in the propensity to divorce for wealthy couples and suggests it was caused by the net welfare transfer involved by the use of that scale. Welfare transfers corresponding to the higher divorce propensities are consistent with the differences between the equivalent incomes generated from the scale given in the *Guidelines* and the corresponding values generated using Donaldson and Pendakur (2004) scale[4]. Indirectly, it seems to be a further evidence of the declining with expenditure pattern. Moreover, "This study shows that an improperly designed set of child support guidelines that create an opportunity to transfer wealth through divorce actually increased some divorce rate substantially. Other laws which mitigate wealth transfers can lower divorce rates, and thus, reduction in divorce rates over time may simply be the result of well-designed net-wealth transferring laws which occurred over time." (Allen, 2007, p. 596).

6. SOME RECENT EVIDENCE

A full application of Donaldson and Pendakur (2006) model has been recently proposed by Balli and Tiezzi (2011) for Italy. They find that the declining with expenditure pattern is the prevailing one. It disappears when there are no children and strengthens when the number of children increases. This result confirms that of Donaldson and Pendakur, while simultaneously being more varied. It implies that scale economies in current consumption are lower for families with children and poor expenditure capacities.

As already shown, a number of other empirical results confirm those obtained in the pioneering contribution of Donaldson and Pendakur (2004, 2006). Declining with expenditure scales are estimated by Majumder and Chakrabarty (2008) for India through an Engel curve analysis, by Koulovatianos *et al.* (2005a) for Germany and France, and by Koulovatianos *et al.* (2005b) for Cyprus, using survey methods. Moreover, Allen (2007) findings on divorce rate might also be a hint of the declining pattern.

In Table 2 there is an example of equivalent expenditure calculation using the Balli and Tiezzi scale (reference family: 2 adults). Expenditure levels shown in the central column are chosen to give the same equivalent expenditure, in a way that the three families share exactly the same wellbeing. For these expenditure levels, results coincide with those obtained by the OCSE scale in use until 2008. This scale is not expenditure dependent and, as any other scale with the same characteristic, would generate an equal equivalent expenditure within the poorer families group (i.e. 7.500€) and within the richer one (i.e. 22.500€). This means that inside these two groups no difference in wellbeing would be detected using expenditure independent scales.

[4] Differences between the two model proposed by Donaldson and Pendakur in 2004 and 2006 are relevant from a theoretical point of view, but without any practical importance from an empirical perspective.

However, using expenditure dependent scale this situation would change substantially. Within poorer families, the most numerous ones (i.e. the couple with two children) suffer a further disadvantage. The opposite occurs to richer families, where the lower wellbeing is enjoyed by the couple without children.

Table 2. Example of equivalent expenditures computed through the scale estimated by Balli and Tiezzi (2011) and corrected as indicated in note ([1]), per three family types.

Family type	Y = 1/2 Y*				Y = 3/2 Y*	
	Y (€)	YE (€)	Y* (€)	YE (€)	Y (€)	YE (€)
2 adults (ref. family)	7,500	7,500	15,000	**15,000**	22,500	**22,500**
2 adults + 1 child	9,000	6,767	18,000	**15,000**	27,000	23,077
2 adults + 2 children	10,500	**6,442**	21,000	**15,000**	31,500	23,684

[1] The scale for 2-children families is modified to coincide with the OCSE scale (in use until 2008) for the middle expenditure values (21.000€), maintaining the original declining with expenditure pattern.

This example shows as declining with expenditure scales allow detecting a fact otherwise neglected. A reliable difference in equivalent expenditure between unhealthy households (considering the two extreme cases) is about 15%, but a traditional scale would have shown a case of perfect homogeneity. Ignoring that gap might involve serious misconducts, such as awarding a social benefit to the wrong applicant.

7. CONCLUDING REMARKS

It seems that we are on the edge of a paradigmatic change in modeling consumption behavior and, therefore, in estimating equivalence scales. Possibly, the same occurs in other related fields such as econometrics, with the spreading of nonparametric and semiparametric techniques. Indifference scales defined on the basis of a more comprehensive household decision theory may quickly replace traditional ones, and this process seems to be taking place at least in the fields of theoretical and empirical research. However, when operational applications are considered, this process seems to be at a very early stage. Actual schemes for social payments (as the ISEE used in Italy[5]), guidelines for child support in divorced couples[6], poverty lines officially produced by statistical institutes[7], etc., are still based on traditional and expenditure independent scales.

[5] Governo Italiano, Ministero del Lavoro e delle Politiche Sociali (2011).
[6] Cf. Canada: Department of Justice (1995, 1997).
[7] As an example, cf. the last annual report on poverty in Italy produced by ISTAT (2011).

That depicted above seems to be a tricky situation. The use of traditional, expenditure independent scales may bring misleading results in many cases, even when most standard applications are considered. However, taking action is not easy given the still unclear aspects of possible steps. The present stalemate means that, under the appearance of a sound economic foundation, many unfair decisions may occur when public bodies are implementing social policies. Whenever reliable and converging evidence is obtained, it should be incorporated within applications, particularly those influencing important aspects of everyday life. In fact, a realignment of implemented equivalence scales to the most recent and significant empirical results seems to be a real need.

The literature on indifference scales is growing rapidly, yet relevant aspects of a family economy are still to be embodied in it, such as expenditure dependence. Moreover, empirical evidence against the use of equivalence scales based on the unitary approach is little and, as shown above, controversial. Any model based on the unitary approach may be considered as a particular specification of a more general one, such as a collective model. From this point of view, a traditional scale is not in contrast with the literature on indifference scales and may be fully accepted if there is enough empirical evidence to support its use. This seems to be the case of decreasing with expenditure scales, whose relevance has emerged from many researches, based on alternative methods and realized in several different countries. Then, a possible conclusion is that there are still very good reasons to estimate equivalence scales based on the unitary approach, if they are specified to allow for expenditure dependence.

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APPENDIX. THE HOUSEHOLD CONSUMPTION DATABASE

A.1 - Introduction

The household consumption database (HCDB) has been created as a support to the estimation of a demand system. Two kinds of information, both from the Italian Institute of Statistics (ISTAT), are used to populate the HCDB:

1. microdata collected through the annual Italian household consumption survey[8], consisting in household demographic characteristics, expenditures and other economic information;
2. monthly price indexes for 12 aggregate goods consumed by households whose reference person is either a blue or a white-collar worker.

Data are made uniform to deal with some minor adjustments to the variable list, which includes about 280 expenditure items (nearly 190 regarding current expenses), introduced during the period considered (1997-2008). Expenditures are available as monthly figures, and in some cases are a result of a processing made by ISTAT, since the original information is not requested on a monthly basis; for example, expenditures on durables are retrospectively asked for the three month period before the interview.

Imported data are elaborated to generate, for each observation (i.e. for each household), an additional set of aggregate variables, such as the total expenditure for specific groups of items, for example 'clothing' or 'housing'. An export procedure generates the files to be used for subsequent analyses. All data concerning a single household from January 1997 to December 2008, including price indexes, are aligned in a row. Any selection is possible to generate the most suitable file for the analysis to be done.

A.2 - The Household Sample

In this section, the content of the HCDB is summarised. In table 1, the number of observations (households) per year and geographic area is given.

Until 2001, geographic references were removed from some specific observations to preserve their privacy. After that, such information was fully released, but the age of each family member has only been made available in categories. In some cases, however, the classification in 15 classes[9] still fails to ensure privacy and only a 4-class age classification is available. In general, while expenditure data are always given without restrictions, demographic data may be in some cases unavailable. The lack of information about the age

[8] Cf. ISTAT, Indagine sui Consumi delle Famiglie, Manuale d'uso – all years since 1997 to 2008.
[9] Ranges are: 0-5, 6-14, 15-17, 18-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75 or more. Until 2001 full age figures were given.

of one family member makes the evaluation of variables defined impossible for the whole household, such as the number of children, the number of employed adults, etc.

Table 1. Number of observations (households) per year and geographic area.

Year	Number of households	Households with valid geographic reference (region)				
		Total	North-West	North-East	Center	South and Islands
1997	22,362	20,784	4,999	4,247	3,961	7,577
1998	21,586	20,042	4,826	4,188	3,747	7,281
1999	20,930	19,394	4,588	4,049	3,707	7,050
2000	23,728	22,054	5,237	4,425	4,139	8,253
2001	23,918	22,368	5,346	4,499	4,314	8,209
2002	27,499	27,499	6,396	5,855	5,253	9,995
2003	28,006	28,006	6,820	5,739	5,285	10,162
2004	24,853	24,853	5,908	4,923	4,583	9,439
2005	24,107	24,107	5,930	5,065	4,548	8,564
2006	23,639	23,639	5,188	5,065	4,619	8,767
2007	24,400	24,400	5,753	5,143	4,509	8,995
2008	23,423	23,423	5,565	5,051	4,314	8,493
	288,451	280,569	66,556	58,249	52,979	102,785

In table 2 the full ISTAT 1997-2008 sample is analyzed with respect to the number of components in each household by computing the corresponding number of households with full demographic information and, within this subset, the distribution of the family type.

Table 2. Number of households and percent distribution of the household type, per number of household components.

Number of household components	Total number of households	Households with valid demographic references[a]				
		Total number	%	% distribution per household typology[b]		
				Single or sing. parent	Couples (with / without ch.)	Other
1	63,033	62,504	99.2	100.0	0.0	0.0
2	75,554	73,112	96.8	17.9	76.7	5.4
3	65,057	62,566	96.2	8.3	86.2	5.5
4	62,431	60,182	96.4	0.9	93.2	5.9
5	17,660	15,217	86.2	0.1	78.6	21.2
6	3,645	1,615	44.3	0.1	55.6	44.3
7	773	92	11.9	0.0	42.9	57.1
8	203	8	3.9	0.0	75.0	25.0
9	55	1	1.8	0.0	0.0	100.0
> 9	40					
	288,451	275,297	95.4	31.0	63.6	5.4

[a] More specifically, with a valid geographic reference and with age information for all the members.
[b] Information only available from 2002 onwards; percentages are referred to such a period.

The removal of the demographic data is particularly problematic when the family size is more than 5. Less than one half of 6-member families, and only a small fraction of more-than-6-member families, are actually provided with such information. In the 12-year period between 1997 and 2008 only 101 families with 7 or more have complete demographic information, a number that seems useless for most analyses involving such variables.

Another sample feature which seems strictly related to the family size is the family typology. Since 2002, a new variable describing the family type has been released (TIPFAM – family type). In particular, it concerns being i) a single, ii) a single parent, iii) a couple with children, iv) a couple without children, or v) in an other family situation. Starting from the trivial case of 1-member families, the number of families of the 'other' type raises with the family size and is almost one half of those with 6 members, and more than one half of those with more than 6 members.

Until 2001 the family type could be derived by analyzing other demographic variables, a procedure with some unclear aspects given the available data. In particular, information was given about each family member and his/her relationship with the 'reference person', i.e. the first member in the ISTAT data file, that is the holder of the file recorded in the household register handled by each municipality[10].

In table 3 the number of households with full demographic information and the corresponding number of different types of family members is listed per year.

Table 3. Number of households with valid demographic references and distribution of the number of household component types, per year.

Year	N.of households with valid demographic references	Number of household members per age classes				
		Total	Elderly (over 64)	Adults (between 25 and 64)	Youth (between 15 and 24)	Children (under15)
1997	20,624	57,149	8,060	32,445	7,718	8,926
1998	19,896	54,857	7,991	31,472	7,219	8,175
1999	19,232	52,239	8,172	29,785	6,642	7,640
2000	21,876	58,734	9,267	33,671	7,287	8,509
2001	22,193	58,688	9,601	33,662	7,046	8,379
2002	26,800	71,317	12,536	40,654	8,162	9,965
2003	27,335	71,900	13,163	40,938	7,934	9,865
2004	24,252	62,958	12,973	35,631	6,782	7,572
2005	23,515	59,837	11,775	33,616	6,362	8,084
2006	23,005	58,431	11,645	32,756	6,036	7,994
2007	23,758	60,478	12,154	33,867	6,432	8,025
2008	22,811	56,947	11,492	32,089	5,917	7,449
	275,297	723,535	128,829	410,586	83,537	100,583

[10] The reference person is an irrelevant role that may be taken on by any member of the family at the age of 18 or older. Before the reform of the family law approved in 1975, the analogous role was much stronger (the "head of the family", centred on the husband figure and entitled to considerable power).

Over the 12-year period 1997-2008 the information was collected from 723,535 people. In each annual sample, more than one half were adults (between 25 and 64). The number of elderly (more than 64) was, in the first years, less than the number of children (less than 15); in the more recent years the elderly-children ratio was more than 1.5.

Table 4. Number of household components, percent distribution per 2-year periods between 1997-1998 and 2007-2008.

Number of household components	% distribution per 2-year periods					
	1997-1998	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008
			Italy			
1	19.0	20.6	22.5	23.2	24.8	25.5
2	24.6	25.7	25.8	27.0	28.0	27.9
3	24.6	23.6	22.8	22.4	21.6	21.7
4	24.9	23.9	22.5	21.1	20.0	19.4
5	6.4	5.7	5.7	5.5	4.9	5.0
> 5	0.4	0.5	0.7	0.8	0.6	0.5
			North-West			
1	22.6	25.0	26.5	26.4	27.7	28.9
2	28.6	29.5	29.1	30.2	31.0	30.4
3	26.3	24.8	23.9	23.7	21.9	21.8
4	19.2	18.1	17.4	16.4	16.3	15.9
5	3.1	2.5	3.0	3.0	2.8	2.9
> 5	0.2	0.1	0.2	0.3	0.3	0.3
			North-East			
1	20.8	21.8	22.6	23.9	24.9	25.8
2	26.6	28.3	28.9	30.0	30.9	30.3
3	26.7	25.7	24.1	22.9	22.3	22.5
4	21.1	20.3	20.1	18.5	17.7	17.0
5	4.6	3.7	4.0	4.0	3.7	4.0
> 5	0.2	0.2	0.4	0.6	0.5	0.5
			Centre			
1	19.8	21.4	24.6	24.6	25.4	25.9
2	26.9	27.3	26.3	27.2	28.3	29.6
3	26.0	24.8	23.6	23.1	23.1	22.1
4	22.8	22.8	20.4	19.7	18.3	17.8
5	4.3	3.5	4.4	4.3	4.3	4.2
> 5	0.1	0.2	0.7	1.1	0.7	0.5
			South and Islands			
1	15.3	16.6	18.6	19.8	22.6	22.8
2	19.5	21.0	21.7	23.1	24.1	24.1
3	21.6	21.1	20.8	20.9	20.3	20.9
4	31.9	30.2	28.4	26.3	24.7	24.1
5	10.7	10.0	9.3	8.7	7.3	7.3
> 5	1.0	1.0	1.2	1.2	1.0	0.8

In terms of components, the percentage of families with 1 or 2 members increased about 10 points during the period (table 4). In 2007-2008 these families together made up more than

one half of the total (53.4%), whereas in 1997-1998 they were definitely less (43.6%). The families from the South and the Islands maintain, over the whole period, quite a sharp profile: the above percentages are 46.9% and 34.8% respectively. In 1997-1998, 4-member families were by far the dominant typology there (nearly 1/3 of the total), whereas, in the rest of Italy, both 3 and 2-member families prevailed. Even if downsized, in 2007-2008 this role continued: 4-member families still were the most typical situation (24.1%, the same percentage as 2-member), while in the rest of Italy their incidence is far more limited (with percentages between 15.9% and 17.8%, always the smallest with respect to 1, 2 and 3-member families).

Table 5. Household composition, percent distribution per 2-year periods between 1997-1998 and 2007-2008.

Household composition[a]	% distribution per 2-year periods					
	1997-1998	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008
	Italy					
E	18.0	19.6	20.8	22.4	23.0	23.1
AE	34.2	35.9	37.7	39.4	39.2	40.0
YAE	19.0	17.5	15.9	15.0	14.2	14.2
CYAE	28.8	27.0	25.5	23.2	23.5	22.7
	North-West					
E	19.2	20.9	22.0	23.1	24.1	23.9
AE	39.6	42.2	42.6	43.3	42.6	42.5
YAE	18.1	15.8	14.0	13.4	12.5	12.6
CYAE	23.1	21.1	21.4	20.2	20.8	20.9
	North-East					
E	18.4	19.6	20.5	22.4	21.8	22.7
AE	38.2	39.4	41.7	42.1	42.2	41.9
YAE	17.8	15.8	14.2	13.2	12.8	12.6
CYAE	25.6	25.3	23.7	22.3	23.1	22.7
	Centre					
E	20.3	21.2	22.3	23.8	24.1	24.4
AE	36.2	38.9	39.3	41.1	40.4	41.7
YAE	18.7	16.7	15.3	14.1	13.9	13.7
CYAE	24.8	23.2	23.0	21.0	21.7	20.2
	South and Islands					
E	15.9	17.9	19.4	21.1	22.4	22.0
AE	27.2	28.5	31.4	34.4	34.6	36.3
YAE	20.4	20.0	18.6	17.6	16.4	16.5
CYAE	36.5	33.6	30.6	26.8	26.6	25.2

[a] E: families with only elderly (over 64); AE: families with only adults (between 25 and 64), or adults and elderly; YAE: families with no children and with young members (between 15 and 24); CYAE: families with children (less than 15).

In terms of household composition (table 5), the overall percentage of families with only elderly people (E; defining criteria of the family categories mentioned in this paragraph are

indicated in note A of table 5) and adult/elderly (AE) members increased from 52.2% in 1997-1998 to 63% in 2007-2008. In the South and the Islands this increment was even sharper, from 43.1% to 58.3%: still, these regions maintain a strong characterization with respect to the other areas of the country, even though they share the same trend with the rest of Italy.

Table 6 shows the education level of the reference person. Despite its present irrelevance, there's a tendency for some senior members of the family to take it on.

Table 6. Education level of the survey reference person, percent distribution per 2-year periods between 1997-1998 and 2007-2008.

Education[a] of the survey reference person	% distribution per 2-year periods					
	1997-1998	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008
			Italy			
University	8.0	8.8	8.0	8.0	9.0	9.8
Secondary 2	26.4	26.8	27.4	28.0	29.3	30.0
Secondary 1	29.1	28.8	29.1	29.1	29.3	29.9
Primary	36.4	35.6	35.6	34.9	32.4	30.2
			North-West			
University	7.9	8.9	8.5	8.2	9.7	10.1
Secondary 2	27.7	27.6	28.6	30.2	30.6	32.5
Secondary 1	29.6	29.7	30.2	29.8	30.6	30.9
Primary	34.8	33.8	32.7	31.8	29.1	26.5
			North-East			
University	7.9	8.3	7.7	8.0	8.8	9.8
Secondary 2	27.9	29.5	29.5	30.4	33.5	34.0
Secondary 1	28.0	28.4	28.1	28.5	27.9	28.4
Primary	36.2	33.8	34.7	33.1	29.7	27.8
			Centre			
University	8.3	10.4	8.6	9.0	9.8	10.7
Secondary 2	27.1	27.7	27.8	28.8	30.5	29.8
Secondary 1	27.4	26.2	27.5	26.8	26.9	27.8
Primary	37.1	35.7	36.1	35.5	32.8	31.7
			South and Islands			
University	7.9	7.8	7.1	7.2	7.9	8.9
Secondary 2	24.0	23.8	24.6	24.2	24.5	25.6
Secondary 1	30.9	30.4	30.2	30.6	31.2	31.7
Primary	37.2	38.0	38.1	38.0	36.4	33.7

[a] Each level includes all qualifications available from the corresponding institutions (i.e. "University" comprises everything from three year degrees (or shorter courses) to PhD. "Secondary 2" and "Secondary 1" correspond to the upper and lower secondary schools in the Italian system. "Primary" also includes the lack of any qualification or education.

The overall percentage of reference persons with university or upper secondary qualifications rose from 34.4% in 1997-1998 to nearly 40% in 2007-2008. In the South and Islands this

trend emerged with lower intensity: the corresponding figures are, respectively, 31,9% and 34,5%. In the Centre and in the South and Islands reference persons with a primary education (which also includes the lack of any qualifications or education) were still the modal category in 2007-2008, whereas at the beginning of the period such category prevailed in all the areas.

Other relevant information about household members is their occupational status. Tables 7 and 8 show the percent distribution of the occupation rate of household members per age classes and the distribution of the number of working adults for the families with 2 adult members (the most common family type in terms of number of adults[11]).

About 3% of the elderly have a working activity. It seems a rather stable figure over the years and over geographic areas. A relatively smooth tendency to an increase of the adult occupation rate emerges, from 59% in 1997-1998 to 64.8% in 2007-2008. This tendency is sharper in the North-Central areas (with small but not irrelevant differences between them) with respect to the South and Islands, where there is an increase from 52.4% in 1997-1998 to 55.6% in 2007-2008. Still, the combination of a lower starting point with a less intense trend makes the difference of the latter areas from the rest of the country.

A rather different picture emerges for the youth. The Italian average of the corresponding occupation rate is a rather stable figure over the 12 years considered, with an end-period value of 18.1%. The Centre is close to it, with approximately one percent point above each corresponding figure. Both northern areas have higher values at the beginning of the period, with a tendency to decrease which is stronger in the North-East where the initial value is the highest (34.5% in 1997-1998). At the end of the period, rather significant differences remain among the national figure and those corresponding to the northern areas, as well as between the latter (24.5% and 27.5% are the occupation rate in 2007-2008 corresponding, respectively, to the North-West and the North-East).

Opposite circumstances affect the South and Islands area where a lower value at the beginning, i.e. 9% in 1997-1998, is coupled with a slow rising tendency, which ends in the value of 11.2% for the 2007-2008 period. However, it is not possible to get a full outline for the youth occupation rate since a significant number of missing values occurs in 2004 (see note [b] of table 7). Moreover, the figures may indicate the presence of some kind of discontinuity in the data generating process between the two sub-periods separated out by the year 2004.

[11] The number of families with 2 adult members is 124,632 (45.3%), that with more than 2 adult members is 31,588 (11.5%). Moreover, 59,844 families (21.7%) have no adult member.

Table 7. Occupation rate of household members per age classes, percent distribution per 2-year periods between 97-1998 and 2007-2008.

Household member age classes[a]	% distribution per 2-year periods					
	1997-1998	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008
			Italy			
Elderly	3.0	2.8	2.7	3.2	2.8	3.0
Adults	59.0	59.8	61.2	62.7	64.3	64.8
Youngs	18.9	18.3	20.0	n.d.[b]	17.2	18.1
			North-West			
Elderly	3.6	3.1	2.8	3.3	2.7	2.7
Adults	63.6	64.3	66.2	67.8	69.4	70.4
Youngs	28.7	28.3	29.9	n.d.[b]	24.7	24.5
			North-East			
Elderly	3.4	2.4	2.9	3.2	2.8	3.4
Adults	64.0	66.5	67.0	69.8	72.1	72.0
Youngs	34.5	31.8	34.6	n.d.[b]	26.4	27.5
			Centre			
Elderly	2.3	3.0	2.2	3.3	3.0	3.2
Adults	61.5	62.7	65.3	66.8	67.9	68.7
Youngs	19.6	19.5	21.5	n.d.[b]	19.1	19.4
			South and Islands			
Elderly	2.7	2.7	2.7	3.1	2.8	2.8
Adults	52.4	52.3	53.3	54.2	55.0	55.6
Youngs	9.0	9.8	10.7	n.d.[b]	9.9	11.2

[a] See tables 3 or 5 for the definition of the age classes.
[b] In 2004 there is a high number of missing values about the occupational status of young household members, i.e. for 909 over a total number of 6.782 younths surveyed.

The picture of the occupation conditions may appear in a more clear-cut shape in terms of distribution of the number of working adults for families with 2 adult members (table 8). In 1997-1998, families with 1 working adult prevailed (47.3% against 40.2% for 2 working adults), as a synthesis of rather heterogeneous conditions over the 4 macro-areas. In both the Northern areas the more common condition was already that of 2 working adults; in the Centre there was a balance between the two categories, but in the South and Islands the 1-working-adult families were largely dominant. From then, Centre and North areas have evolved in a rather similar way, but in the South and Islands the 1 working families still remains the largely prevailing condition

Table 8. Number of working adults in households with 2 adult members, percent distribution per 2-year periods between 1997-1998 and 2007-2008.

Number of working adults	% distribution per 2-year periods					
	1997-1998	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008
			Italy			
0	12.5	12.5	11.4	10.8	9.9	10.8
1	47.3	46.0	45.2	43.2	42.8	41.0
2	40.2	41.6	43.4	45.9	47.3	48.2
			North-West			
0	12.6	12.7	10.6	11.0	9.1	9.3
1	37.9	37.4	36.3	34.1	35.3	32.7
2	49.5	49.9	53.1	55.0	55.7	58.0
			North-East			
0	11.2	10.7	10.5	9.8	8.4	8.6
1	40.1	36.8	35.7	32.6	31.0	31.0
2	48.7	52.4	53.8	57.7	60.6	60.4
			Centre			
0	10.3	11.0	10.4	8.9	8.0	9.9
1	45.5	41.4	40.7	39.7	38.6	36.3
2	44.2	47.7	48.9	51.4	53.4	53.8
			South and Islands			
0	14.1	13.9	12.8	12.2	12.3	13.5
1	57.2	57.4	57.5	56.3	56.7	54.1
2	28.8	28.7	29.7	31.5	31.1	32.4

As a concluding remark, it seems that the descriptive examination proposed in this section points out some substantial heterogeneity, which has still lasted up to recent years, between the South and Islands and the rest of the country. The other areas seem rather homogeneous with respect to the demographic and economic profiles taken into consideration, or, when heterogeneity remains, it seems to follow similar patterns or converge towards fairly similar conditions. As a consequence, it seems that the analysis based on the geographical division in the traditional four areas as done above could be replaced by a simpler division in two areas (Centre and North, South and Islands), especially when only most recent years are considered.

A.3 - Structure of the Household Consumption Database (HCDB)

A significant portion of the information into ISTAT files has been imported into the HCDB. A set of household level and member specific information are just copied from ISTAT files into the HCDB. In other cases, further processing has been done to produce useful additional information. Table 9 gives a (not exhaustive) list of demographic variables available from the HDCB. The table is followed by a list of selected variables with additional information.

Table 9. Demographic variables available from the HCDB, corresponding ISTAT variables and description of the processing procedure.

Type of information	data process	HCDB output data	ISTAT input data
Household level demographic information	1.	unchanged	▪ Year of the survey ▪ Month of the survey ▪ Region ▪ Location* ▪ Household Typology* ▪ Household Size
Member-specific demographic information	2.	unchanged	▪ Sex ▪ Age* ▪ Civil status ▪ Education* ▪ Occupational status ▪ Working position ▪ Working economic sector ▪ Presence during the survey period*
Aggregation (household level) of member specific demographic information	3.1	▪ N. of present members during the survey period ▪ N. of missing data on member ages* ▪ N. of elderly (> 64) ▪ N. of senior adults (50-64)* ▪ N. of middle adults (35-49)* ▪ N. of junior adults (25-34)* ▪ N. of youth (15-24) ▪ N. of children (< 15) ▪ N. of working senior adults ▪ N. of working middle adults ▪ N. of working junior adults ▪ N. of working younth ▪ Senior adulteducation* ▪ Middle adulteducation* ▪ Junior adult education* ▪ Youth education* ▪ Senior adult age* ▪ Middle adultage* ▪ Junior adult age* ▪ Youth age* ▪ Childs age*	▪ Presence during the survey period* ▪ Age* ▪ Education* ▪ Occupational status
	3.2	▪ N. of working parents* ▪ Parent education* ▪ Parent age* ▪ Childs age*	▪ Household Typology* ▪ Presence during the survey period* ▪ Age* ▪ Education* ▪ Occupational status
	3.3	▪ Household Typology (2)*	▪ Household Typology* ▪ Age*

* For variables indicated with an asterisk, further details are listed above

Location. A rather vague and outdated classification in 3 categories whose definitions may be roughly summarized as (i) built-up area with services implying some sort of social life, (ii) built-up area without services and (iii) scattered houses. This classification does not discriminate between rural and urban areas: a built-up area with services may be everywhere

and a very small and isolated mountain village may belong to this category. However, all urban areas should always be classified as such.

Household Typology. Available since 2002. A classification in 11 categories that distinguishes between 'single' (further subdivided into three categories according to age: less than 35, 35-64, more than 64), 'couple without children' (further subdivided into three categories according to the age of the reference person - same ranges as the single), 'couple with children' (further subdivided into three categories according to the number of children: 1, 2, 3 or more), 'single parent', and 'other typology'.

Age. A classification in 14 age categories is available since 2002. Full age figures available up to 2001 have been transformed into the mentioned categories.

Education. A 8-category classification, from 1, meaning a PhD qualification, to 8, meaning no qualification (including being illiterate).

Number of missing data on member ages. It is a critical variable since a lack of information on the age of one member produces a lack of information on all the family-level aggregated demographic variables. These are calculated only when such a variables is zero.

Household Typology (2).

The ISTAT family type is unavailable before 2002. To deal with such a lack of information, an alternative household type has been created, by adopting a conventional classification based only on family members' ages. For example, a household with 2 adults and two children is classified as a "couple with two children", which is clearly the most likely occurrence, even though others are possible. This variable has been calculated for the all observations from 1997 to 2008.

A.3.3 - Economic information processing

Economic information available in the ISTAT files may be distinguished between expenditure and non-expenditure data, the latter being a large set of variables about housing conditions, durables, expenditure habits, and other. Non-expenditure data are not been imported.

There are about 280 distinct expenditure items in the ISTAT files (see the ISTAT manual for the complete list). These figures are added up to create, into the HCDB, a set of aggregate goods for which ISTAT produces monthly price indexes.

A further distinction has been done between current and other kind of expenditures. A set of 12 current aggregate monthly expenditures has been obtained by adding up ISTAT elementary data as shown in table 11. For each good, a corresponding price index is also given, matching with respect to the month and the administrative region.

A complementary set of noncurrent expenses has also been produced. These latter variables, shown in table 12, together with the first, exhaust all family expenditures.

Table 11. Current expenditures for 12 aggregate goods, definitions in terms of ISTAT elementary expenditures (see the ISTAT manuals for the list of elementary items).

(1) Food: C_1101+C_1103+C_1104+C_1102+C_1105+C_1106+C_1701+C_1702+C_1703+C_1704+C_1705+C_1107+C_1801+C_1802+C_1201+C_1202+C_1203+C_1206+C_1204+C_1205+C_1207+C_1208+C_1209+C_1297+C_1301+C_1302+C_1303+C_1304+C_1501+C_1502+C_1503+C_1504+C_1505+C_1401+C_1402+C_1403+C_1406+C_1404+C_1405+C_1621+C_1622+C_1631+C_1625+C_1626+C_1623+C_1624+C_1627+C_1601+C_1602+C_1603+C_1604+C_1605+C_1606+C_1607+C_1608+C_1609+C_1806+C_1807+C_1808
(2) Alcholic beverages and tobacco: C_1803+C_1804+C_1805+C_1901
(3) Clothing: C_2101+C_2102+C_2103+C_2104+C_2105+C_2106+C_2107+C_2108+C_2201+C_2202+C_2203+C_2109+C_2204+C_2110
(4.1) Housing, current expenditure: C_3401+C_3402+C_3403+C_3404+C_3405+C_3406+C_3407+C_3301+C_3421+C_3422+C_3423+C_3424+C_3425+C_3426+C_3321+C_3427
(5.1) House operations, current expenditure: C_4601+C_4602+C_4607+C_4404+C_4603+C_4604+C_4605+C_4502+C_4697+C_4503+C_4108+C_4312+C_4313+C_4202+C_4606
(6) Health: C_5301+C_5302+C_5303+C_5201+C_5202+C_5203+C_5204+C_5205+C_5101+C_5102+C_5103+C_5104+C_5105+C_5106+C_5107
(7.1) Transportation, current expenditure: C_6204+C_6205+C_6206+C_6301+C_6302+C_6303+C_6304+C_6209+C_6210+C_6211+C_6306+C_6307
(8.1) Communications, current expenditure: C_9301+C_9321+C_9306+C_9307
(9.1) Free time, current expenditure: C_7201+C_7202+C_7203+C_7204+C_7301+C_7206+C_7207+C_7208+C_7120+C_7297+C_7116+C_7117+C_7118+C_7119+C_7197+C_7302+C_7303+C_7304+C_7121+C_7134+C_7205
(10) Education: C_8101+C_8102+C_8103+C_8104+C_8105+C_8201
(11) Hotels and restaurants: C_9901+C_9911+C_9902+C_9903+C_9912+C_9913+C_9801+C_9802+C_9803+C_9804
(12.1) Other goods and services, current expenditure: C_9201+C_9202+C_9203+C_9204+C_9205+C_9103+C_9297+C_9101+C_9102+C_9104

Table 12. Other (non-current) aggregate expenditures, definitions in terms of ISTAT elementary expenditures (see the ISTAT manuals for the list of elementary items).

(4.2) Housing, rent (including implicit rent): C_3101+C_3102+ C_3121+C_3122+C_3123
(4.3) Housing, ordinary maintenance: C_3201+C_3202+C_3203+C_3204+C_3205+C_3221+C_3222+C_3223+C_3224+C_3225
(4.4) Housing, extraordinary maintenance: C_3207+C_3208+C_3209+C_3210+C_3211+C_3212+C_3227+C_3228+C_3229+C_3230+C_3231+ C_3232
(5.2) House operations, furnishings: C_4101+C_4102+C_4103+C_4104+C_4105+C_4106+C_4107+C_4201+C_4501
(5.3) House operations, appliances: C_4301+C_4302+C_4303+C_4304+C_4305+C_4306+C_4307+C_4308+C_4309
(5.4) House operations, small appliances: C_4310+C_4311+C_4401+C_4402+C_4403
(7.2) Transportation, durables: C_6101+C_6102+C_6103+C_6104+C_6105+C_6203
(8.2) Communications, durables: C_7130+C_7131+C_7132+C_7133
(9.2) Free time, durables: C_7101+C_7102+C_7104+C_7105+C_7107+C_7108+C_7109+C_7103+C_7110+C_7111+C_7112+ C_7113+C_7114+C_7115
(12.2) Other goods and services, insurances: C_3302+C_3322+C_5401+ C_6201+C_6207
(12.3) Other goods and services, fees (lawyers, business consultants, driving schools, etc.): C_6208+C_6305+C_9403+C_9404+C_9405
(12.4) Other goods and services, repayments: C_9412+C_9413
(12.5) Other goods and services, various: C_9406+C_9497+C_9401+C_9411