

Modelling the Influence of Durable Goods Possession on Subjective Wellbeing of Households

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Abstract:

The purpose of this study is to indicate new developments in households' subjective wellbeing perception. Typology of households is determined depending on their endowment with durables. The determinants of subjective wellbeing include material, financial and immaterial factors, which all are elements of quality of life. Crucial material wealth factors influencing the perceived wellbeing level are the type of households, possession of the house, principal place of residence and a car. New phenomena that aroused at the end of the second decade of the 21st century, circular and sharing economy elements are appreciated as an innovative, additional source of households' wellbeing perception.

The analytical econometric tool used here is the multinomial logit model with unordered categories. The typology of households is constructed, depending on their material wealth. There exists a substantial share of households claiming they are not interested in possession of analysed goods. It is considered a proxy measure of a percentage of a new type of families whose decisions are based on circular- and sharing-economy attitude. The analysis for selected material goods indicated influence potency of crucial factors on households' situation. The strength of the impact of individual characteristics was measured. The findings may be important policy design factor.

Keywords: subjective wellbeing; durable goods; multinomial logit; unordered categories; circular- and sharing-economy.

JEL Classification: I31; I32; C51; C52.

Introduction

The problem addressed in this study consists of an attempt to identify the factors that influence subjective wellbeing perception in households. Diener (1984) developed the concept of *Subjective Wellbeing* using the description of high-level satisfaction in life, along with the experience of high-level emotions. Here, the self-perception of satisfaction and emotions is of interest.

The novelty of authors findings consists of the innovative approach to wellbeing measurement in the context of the circular- and sharing economy. There exist three types of families. The first type consists of those who possess considered durable good. Two others lack those values, households where members of which consider ownership of certain durable goods unnecessary. They refrain from acquiring them, even though they could finance the purchase from their own or borrowed funds. The third type in homes endowment with durables is because some households cannot finance their purchases either from their financial resources or from loans. The second type is following the circular- and sharing economy. The measurement of subjective wellbeing gives insight into the range, spread and share size of such households. The multinomial logit model with unordered categories is the appropriate econometric tool. The supplementary result is the identification of the most critical factors determining the belonging to each group. The estimated parameter values indicate the direction and strength of the influence of each variable.

The supplementary task is more in-depth analysis aiming in determining factors that cause differences in the level of household equipment. The classical, combined approach to endowment assessment consists of both the quantitative measurement, *i.e.* counting the number of durable items in household possession, and the value indicator – an attempt to measure the age and quality of durable goods. Possible solutions, known from the literature, include an acquisition approach, a rental equivalent approach, and an end-user cost approach (Amendola and Vecchi 2014, Diewert 2009, Dziechciarz and Dziechciarz-Duda 2017, 116-117).

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The empirical analysis concerns housing conditions in Poland. The multinomial logit model with unordered categories was used to recognise the types of households depending on their material wealth, equipment shortages and reasons for differentiation. Alternatively, the technique may be referred to as the multinomial logit model with disordered categories. The data used for econometric analyses comes from the *Social Diagnosis* survey (Czapiński, Panek 2015). A considerable difference exists depending on the type of household, place of living, class, and source of income (Czapiński and Panek 2015). It was observed that the material wealth of Polish families is determined mainly by the state of possession of high-value goods, *i.e.* property, car and other tangible assets.

1. Research Background

1.1. Problem Formulation

For simplicity, the author will use the term "households' subjective wellbeing perception", meaning subjective wellbeing perception formed by people, by members of a household, usually by the head of a house. The multifaceted problem of household definition and household representation (head of household) is beyond the scope of this study. Interested readers should refer to interpretations which are widely described in the literature, among others in (Brückweh 2016, *Principles ...* 2015, Zahoor, Zainab 2011, *Glossary ...* 2006).

The initial assumption is that durables possession strongly influences the sustainability of households' subjective wellbeing perception. In-depth analyses prove the disproportionately high importance of households' endowment with durable goods in assessing welfare levels by household heads (Sirgy 2018, 2012, *Supplemental ...* 2005).

Therefore, the precise measurement of durables possession is crucial for determining the sustainability of material and subjective wellbeing. An additional step in assessing the role of household endowment with durable goods is a statistical analysis and econometric modelling aiming to identify and to quantify its influence on the subjective perception of material wellbeing. Such a solution is applicable in a research situation where households' endowment with durable goods serves as a proxy for measurement of the latent variable representing material wealth. The observation justifies that the durable products in households are a universal phenomenon; there is no household without some durables. Based on the statements above, the author undertakes to develop further the problem of improving the methodology used for measuring and describing the level to which durable goods furnish a household. It is an essential step in the process of determining the level of material wellbeing of ménages. The author will additionally attempt to measure the strength and direction of influence of the individual type of households' durable product on wellbeing perception.

The author is trying to avoid the use of term *prosperity*, and the terms *quality of life*, *the dignity of life* or *standard of living*, commonly existing in a similar context. The reason is that the author intends to emphasise the subjectivity of the households' assessment of their situation. Respondents, household heads, when assessing endowment of their family with durables, are not counting items and estimating the financial value of the accumulated material wealth. They compare their quantifiable situations with the material conditions of the people around them: neighbours, relatives, friends and acquaintances.

1.2. Theoretical Background

The theoretical background adopted here comes from classical political-economic thought. Adam Smith argued that consumption is, in reality, the objective (the goal) and production processes are merely the means for consumption growth, though nowadays we should maybe talk of consumption optimisation instead (Smith 1937). The need to enhance the accuracy of quantifying various aspects of wellbeing is widely appreciated (Stiglitz, Fitoussi, Durand 2018a, 2018b, Stiglitz, Sen, Fitoussi 2009a, 2009b).

Cited authors stressed that complex multidimensional concepts determined by material living standards, as well as health, education, environmental factors and others, all influence subjective perception of wellbeing. This observation does not exclude the appreciation of the importance of non-material factors, which are increasingly influencing living standards metrics. Among the well-known measures are the Human Development Index and the OECD Better Life Index (Roser 2019, *Better ...* 2019). Said observation justifies focusing on the measurement of the subjective evaluation of households' endowment with durables. Wellbeing obtained from the consumption of goods and services remains decisive in the overall assessment.

The author contribution consists of enriching the current state of the art. The enrichment includes the real-life empirical application and an attempt to solve a new theoretical problem. The planned goal rises from a need to analyse a contemporary, practical issue. New and improved tools designed for measurement and analysis will allow for better assessment of the influence of durable goods possession on the subjective perception of a household situation. An important aspect which influences the assessment process is the subjectivity in situation

perception and assessment. It shows its influence plainly in that the impression resulting from a comparison of respondents' situation with their social environment replaces a measurement of their actual state. Fortunately, objective elements temper this subjectivity. Subjectively felt comparative perception determines assessments given by household heads. On the other hand, their expert judgement based on real, accurate knowledge influences their opinions. In other words, a sober assessment, based on respondents' best expert knowledge concerning reality, concerning the current state of the art when judging the quantity, age and quality of durable goods in the household's possession is involved along with the subjective approach.

Material wellbeing is a broad term that describes the possession of durable goods in terms of a range of concepts (Grimes, Hyland 2020). The measurable material wellbeing is hard to define (*Better ...* 2019, Roser 2019, Stiglitz, Fitoussi, Durand 2018a, 2018b, Stiglitz, Sen, Fitoussi 2009a, 2009b).

One of those approaches consists of measuring material goods possession complemented with financial means accumulated by the household. Objective, income-based recording of the individual household material standard involves both listings of possession and financial means estimation. Better, the adequate alternative approach consists of the assumption that subjective assessment, understood as a personal perception. Such a type of evaluation requires the researcher to ask individuals for their valuation of the level of their perceived standard of living, e.g., satisfaction with family income, satisfaction with the level of consumption. In reality, it is the overall subjective assessment of household wellbeing perception. In literature, both above-discussed concepts are considered indicators of material wellbeing (Sirgy 2018). Regardless of which approach measurement, there exist broad agreement that the fundamental base for determination of households' material wealth depends on the possession of high-value goods, which include real estate, a car and other tangible assets.

1.3. The Concepts and Approaches in Households Wellbeing Determination

As already mentioned, the disproportionately high importance of endowment with durable goods in assessing subjective wellbeing levels substantiates the need for precise measurement of durable goods possession. Traditional concepts, including saturation level and priority patterns in demand for durable goods, lose their validity (Pyatt 1964). Saturation level entails a maximum of one item per household and only a few models of individual durable products. Nowadays, a family may own more than one count of even the most expensive products, such as a house, apartment or vehicle (Elliott 1980).

New criteria for classifying durable goods, including standard, higher-order, and luxury, became necessary. Differences in endowment level are defined instead by the quality (value) of durable goods owned by the household, not by the number of items. In other words, counting pieces and registering their types and details of individual belongings lost its role in measuring wellbeing. The picture is becoming even more complicated because there is no obvious interpretation for the absence of a specific durable product. Deficiency of certain goods may result from insufficient financial means for purchase or a conscious decision to abstain if a household pursues a policy of circular economy or adheres to the philosophy of shared consumption.

In the decades since the mid-twentieth century, the interest in household situation went through several stages. Since the mid-twentieth century, an essential part of the scientific effort in the area of material wellbeing was dealing with poverty. Research concerning the level and scope of the poverty resulted in definition diversification and methodology development along with the establishment of standards and rules for forming policy recommendations. The need for a change of the perspective was evident. Poverty research indicates interest in a small percentage of society (poor citizens). A different, but to some extent parallel approach was dealing with the prosperity and wealth concentration.

Newer concepts include elements constituting the quality of life and standard of living. Poverty range and wealth concentration research were designed to address the interest in these parts of society: poverty analysis for the lower quintiles and wealth research for the high quintiles.

Since the second decade of the twenty-first century, more and more importance is attributed to the different aspects of quality of life. In contrast to earlier research, the examination of the quality (dignity) of life indicates interest in all of society.

2. Methodology

2.1. Introductory Remark

The purpose of the study is to indicate new developments in sustainability of household subjective wellbeing perception. The determinants of subjectively perceived wellbeing include immaterial and material factors, along with financial assets. The focus is placed on one type of quantifiable (material) determinants, namely household

possession of durables. The author presents result of an attempt to determine the factors causing differences in the level of household equipment, using housing conditions and car ownership as an illustrative case.

An additional aim of this analysis is to show to what extent the declared and perceived needs identified by the head of the household affect the subjective perception of wellbeing based on the household's material wealth. Identifying factors affecting the diversity of material wealth leads to identifying the determinants of the ownership status of durable goods found in various classes of households.

2.2. The Data

The research was conducted using data collected by the *Social Diagnosis* project in the last available wave of the survey (Czapiński, Panek 2015). In 2015, as many as 26685 households were surveyed, with 84,479 members and 62,541 respondents. For the purpose of the study, households (and their members aged 16 and above) were described using numerous socio-economic factors, such as the socio-economic group, household type, class of the place of residence, and economic activity. Household members were identified by such criteria as: gender, age, education, *per capita* household income, social and professional status, and disability. One of the vital elements of household typology was the household possession of consumer durables, including house/flat ownership and car ownership.

The econometric instrument of polynomial logit model of unordered categories was used to identify types of households in relation to their material wealth, the wealth of durables in their possession, and reasons for the observed diversities. As mentioned, analyses were performed on the basis of data provided by the 2015 Social Diagnosis survey (Czapiński, Panek 2015). It was assumed that the material wealth of households is mainly determined by possession of high-value durables, *i.e.* real estate, a car and other high value tangible fixed assets. The diversity of material wealth depends on: the type of household; class of town where the place of residence is situated; the source of income.

The differences in endowment exist because some households cannot finance purchases, either from their accumulated resources or through loans. In addition, families may choose to abstain from certain durables, even those perceived by them as affordable. In such households, refusal to acquire certain durable goods is an expression of a conscious will or deliberate choice on the part of the head of the household.

The author defines a household as the analytical unit. The income category used in the survey was the annual equivalent disposable income of the family (Czapiński, Panek 2015).

The following categories of assets and liabilities were defined as the quantifiable wealth indicators, divided into groups starting from the most liquid categories:

- cash and high liquidity assets;
- bonds, shares, and other equity;
- balance value of fixed assets after household debt.

The definition of empirical measures of household wealth includes early concepts of the household consumption function. Such functions are usually estimated based on the asset (and liability) categories mentioned above (Elliott 1980). Here, the primary residence is among the essential elements constituting the household's material assets volume. For an average Polish home, the perception of wealth is mainly associated with durables, such as additional real estate and one or more cars. Financial assets in Polish families still play a relatively subordinate role.

Differences in ownership are determined by the socio-economic characteristics of households (Dziechciarz, Dziechciarz-Duda and Przybysz 2010, 735–742). There is a significant variation in the material wealth of families. Due to insufficient income, a large share of households cannot afford some of the goods they need, and external resources (loans) are also unavailable to them due to their inadequate income. There are also households, mentioned already, that declare no need or intention of owning certain affordable goods. An interesting alternative for measuring preferences regarding the characteristics of durable goods based is based on hedonic regression.

2.3. The Multinomial Logit Models

For problems with more than two possible discrete outcomes, the most suitable analytical tool comes in the form of multinomial logit regression models, which are an extension of binary logistic regression (Greene 2018, Train 2009, Winkelmann 2005, Bhat 1995, McFadden 1974). Multinomial logit models (MNL) are the most appropriate to determine dependence between a variable with a finite number of possible outcomes (polynomial dependent variable) and a set of regressor variables. If the dependent variable has a finite number of possible values (with more than two options), the critical issue is to determine whether it has an ordered or unordered structure.

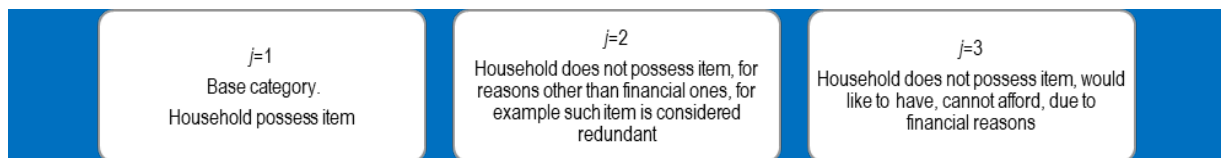
These types of models can be divided into two broad categories, depending on the structure of the dependent variable. The ordered choice models and the unordered choice models are variants of the multinomial models. A comprehensive discussion of both types of models can be found in (Brooks, Harris, Spencer 2007, Halcoussis 2005).

As the name suggests, multinomial ordered logit models are used in situations when the categories for the dependent variable follow some order (Greene 2018). Multinomial unordered logit models are models where the dependent variable with more than two possible discrete outcomes does not have an ordered structure. In other words, dependent variable choices (values, variants) have no intrinsic ordering. For this type of nominal response data, the generalised logit models and the conditional logit models are suitable (McFadden 1974, 105–142). General references on the unordered choice model topics include (Greene 2018, 801-823 and Winkelmann 2005, 749–761).

In this study, the multinomial logit model is the specification used to model discrete choices of households (HH). Specifically, MNL was used to model the probability that the i -th HH chooses the j -th alternative. Since it is not possible to rank the dependent variable categories, the obvious choice is the unordered category model.

It is assumed that the dependent variable y_i for the i -th household ($i = 1, \dots, N$) has J unordered categories to choose from (Figure 7). The base category in the model ($j = 1$) is a *Household possess an item*. A variable outcome that has a value of 2 or 3 means respectively: *Household does not hold the item, for reasons other than financial ones, for example, such durable product is considered redundant, and household does not own item, would like to have, cannot afford, due to financial reasons*.

Figure 1. Unordered outcomes of dependent variable



Source: own elaboration.

The model is used to estimate the chance that the i -th household chooses the alternative variant j of the selected durable good, under the condition x_i .

$$\Pr(y_i = j|x_i) = p_{ij} \tag{1}$$

where $x_i = (x_{i0}, x_{i1}, \dots, x_{ik})$ is a vector of exogenous variables independent of the category of dimension $(k + 1) \times 1$.

The probabilities of selecting individual categories in this model would be:

$$p_{i1} = \frac{1}{1 + \sum_{r=2}^J \exp(x_i' b_r)} \tag{2}$$

$$p_{ij} = \frac{\exp(x_i' b_j)}{1 + \sum_{r=2}^J \exp(x_i' b_r)}, \quad j = 2, \dots, J. \tag{3}$$

The model implies that it is possible to compute J log-odds. Provided $J = 3$ and assuming that variable for intercept ($x_{i0} = 1$), is included in the model; there are two equations:

$$\ln\left(\frac{p_{i2}}{p_{i1}}\right) = \beta_{20} + \beta_{21}x_{i1} + \beta_{22}x_{i2} + \dots + \beta_{2k}x_{ik} \tag{4}$$

$$\ln\left(\frac{p_{i3}}{p_{i1}}\right) = \beta_{30} + \beta_{31}x_{i1} + \beta_{32}x_{i2} + \dots + \beta_{3k}x_{ik} \tag{5}$$

Parameters of the multinomial logit model are estimated by the maximum likelihood method (Cramer 2011). One of the categories is taken as a base category $j = 1$ (*Household possess item*). As explained above, the base category serves as a reference in interpreting the parameters for other variants. The odds ratio is used to assess the impact of an exogenous variable on the probability of observing a given option of the category.

3. The Modelling. Possession of Own House, Flat and Car

The dependent variables in each model is the choice made by the household. The dependent variable is discrete with a finite number of values, here categories 1, 2 ..., J ; $J = 3$, and the variants of this variable are unordered. The

base category in models ($j = 1$) is a *Household possesses their own house (flat, car)*. A variable outcome with a value of 2 or 3 means, respectively: *Household does not own the house (flat, car), for reasons other than financial ones, for example, such item is considered redundant, and household does not possess own house (flat, car), would like to acquire, cannot afford, due to financial reasons*. There are three separate models for house, flat and car possession. Parameters of the multinomial logit model are estimated to predict the probability of being in each of the remaining categories (two and three) compared to the baseline in each model. The dependent variable includes three unordered categories. The first variant of the dependent variable is the baseline: *HOUSE=1* (first model), *FLAT=1* (second model) and *CAR=1* (third model) - *Household possesses an item*.

Independent variables in each model describe both the household and its head (when suitable, and for the remainder of this article, the abbreviation *HH* will stand for household). Some variables determine possession of some additional durable goods:

- Household characteristics: Monthly equivalent income: *INCOME_EQ* [PLN 1,000]; Number of persons in a household over 15 years of age: *HH_SIZE*; Type of the place of residence: *RESIDENCE*, rural areas (6) and urban areas subdivided by resident size units of 500k (1), 200k-500k (2), 100k-200k (3), 20k-100k (4) and fewer than 20k (5); Household type: *HH_TYPE*, one-family households: married couples with no children (1), married couples with children: one child (2), two children (3), and three or more children (4), single-parent families (5), multi-family households (6), non-family one-person households (7), non-family multi-person households (8);
- Characteristics of the household head: Age of the household head: *AGE* (respectively 1 to 6: under 24 y.o., 25-34 y.o., 35-44 y.o., 45-59 y.o., 60-64 y.o., 65 y.o. and above); Number of years of education completed by the head of household *EDUCATION* [the number of years of schooling], Head of the family with driving licence: *DRIVING_LICENCE* (value 1 assigned for HH heads with a valid driving licence);
- Perceiving of an entire life: *SATISFACTION*, delightful (1), pleasing (2), mostly satisfying (3), neither good nor bad (4), mostly dissatisfying (5), unhappy (6), terrible (7); Assessment of housing conditions: *CONDITIONS*, from very satisfied (1), to strongly dissatisfied (6);
- Possession of other goods: Own house: *HOUSE_2*, *HOUSE_3*; Other real estate items: *REAL_ESTATE_2*, *REAL_ESTATE_3*; Own flat: *FLAT_2*, *FLAT_3*.

Table 1 contains results of three multinomial logit models estimation for the dependent variable (*possession of own house – model 1; possession of own flat – model 2; possession of own car – model 3*). Percentage of correctly predicted cases in the first model (*count R²*) is 81.5%, *Pseudo-R²_{McFadden}* measure is 64.7%, while in the second model percentage of correctly predicted cases (*count R²*) is 75.4% and *Pseudo-R²_{McFadden}* measure is 56.1%. For third model percentage of correctly predicted cases (*count R²*) is 79.4%, *Pseudo-R²_{McFadden}* measure is 53.2%. Coefficients estimates are statistically significant ($\alpha = 5\%$). All the following inferences are under *ceteris paribus* condition. Models are checked as suggested in (Akaike 1974, Schwarz 1978).

The negative sign of the coefficient next to the independent variable indicates that probability for this category to occur decreases with the increasing value of the independent variable. The reference in the interpretation of parameters is the base category in the model ($j = 1$). In other words, the base category means *Household possesses their own house (flat; car)*.

For example, in the first model, providing income increases by one unit, it is less likely for the household to be in the second category *HOUSE=2; Household does not possess own house, for reasons other than financial ones, for example, such item is redundant*. It is also less likely for an HH to be in the third category *HOUSE=3; Household does not possess own house, would like to have, cannot afford, due to financial reasons*, the odds ratio here is -32.75. In other words, the estimated value of the odds ratio means that, with an increase in income by PLN 1,000, one can expect a decrease in the response *HOUSE=2* by 23.82%. As far as option three is concerned, providing income increases by one unit, the probability that there will be households without a house for financial reasons will decrease by 32.75% in favour of families with their own home.

Similar conclusions can be drawn for second model: when income increases by one unit (1,000 PLN), it is by 26.28% less likely for a household to be in the category *FLAT=2; The household does not possess its flat (for reasons other than financial ones, for example, such item is considered redundant)*. It is by 25.53% less likely for such a house to place in the third category *FLAT=3; Household does not possess its flat, would like to have, cannot afford, due to financial reasons*.

For model 3, when income increases by one unit (1,000 PLN) it is 32.69% less likely that the household does not possess a car (e.g. because it is redundant). It is also 63.73% less likely for the HH to be in the third category (*Household does not possess its car, due to financial reasons*). In this case, income is a condition for

meeting the needs of the household in terms of owning a house (flat or car), but to a greater extent in the case of families that feel this need: *HOUSE=3* (or *FLAT=3*, or *CAR=3*) – Household does not possess item, would like to have, cannot afford, due to financial reasons.

The influence of the level of education in the first model: in the situation when the number of education years increases by one year, on average, it can be expected that it is 6.55% less likely that household does not possess their own house (second category *HOUSE=2*) and it is 6.90% less likely to be in the third category *HOUSE=3*; Household does not possess own house, would like to have, cannot afford, due to financial reasons. Also in the second model, when the number of completed education years increases by one unit, it is 7.87% less likely that the household has no flat ownership (second category *FLAT=2*) and 8.81% less likely for the HH to be in the third category (*FLAT=3*). In the third model, the base category is: Household possesses own car ($j = 1$). With all other variables kept constant, on average, and for every additional year of completed education it is 6.88% less likely that household does not possess own car (second category *CAR=2*), and it is 3.66% less likely for the household to be in the third category (*CAR=3*) Household does not possess a car, due to financial reasons.

Table 1. Multinomial Logit Models: 1 – *HOUSE* (N = 8703); 2 – *FLAT*(N = 8703); 3 – *CAR*(N = 10402)

Variable	Coefficient (Std. Error)	Odds	Coefficient (Std. Error)	Odds	Coefficient (Std. Error)	Odds
Household does not possess item, for any other reasons, for example, such element is redundant	<i>HOUSE=2</i>		<i>FLAT=2</i>		<i>CAR=2</i>	
<i>CONSTANT</i>	3.844 (0.419)	46.720	6.375 (0.515)	587.079	-1.020 (0.547)	0.361
<i>EDUCATION</i>	-0.068 (0.015)	0.934	-0.082 (0.013)	0.921	-0.071 (0.014)	0.931
<i>INCOME_EQ</i>	-0.272 (0.042)	0.762	-0.305 (0.041)	0.737	-0.396 (0.055)	0.673
<i>HH_SIZE</i>	-0.254 (0.069)	0.775	0.108 (0.052)	1.114	-0.908 (0.064)	0.403
<i>HH_TYPE_1</i>	-0.623 (0.135)	0.537	-0.299 (0.108)	0.741	-0.497 (0.102)	0.608
<i>HH_TYPE_2</i>	-0.770 (0.191)	0.463	-0.490 (0.143)	0.613	-0.901 (0.165)	0.406
<i>HH_TYPE_3</i>	-0.909 (0.223)	0.403	-0.521 (0.163)	0.594	-0.958 (0.212)	0.384
<i>HH_TYPE_4</i>	-0.949 (0.302)	0.387	-0.551 (0.225)	0.577	-0.461 (0.305)	0.631
<i>HH_TYPE_5</i>	-0.370 (0.167)	0.691	-	-	-	-
<i>HH_TYPE_6</i>	-1.296 (0.310)	0.274	-0.658 (0.224)	0.518	-0.735 (0.268)	0.479
<i>RESIDENCE_1</i>	2.694 (0.178)	14.791	-0.607 (0.167)	0.545	-	-
<i>RESIDENCE_2</i>	2.656 (0.164)	14.236	-0.634 (0.151)	0.531	-	-
<i>RESIDENCE_3</i>	2.759 (0.172)	15.784	-0.394 (0.157)	0.674	-0.529 (0.156)	0.589
<i>RESIDENCE_4</i>	1.808 (0.114)	6.098	-0.749 (0.107)	0.473	-0.562 (0.120)	0.570
<i>RESIDENCE_5</i>	1.246 (0.129)	3.476	-0.681 (0.119)	0.506	-0.502 (0.138)	0.605
<i>RESIDENCE_6</i>	-	-	-	-	-0.778 (0.130)	0.459
<i>AGE_2</i>	-	-	-1.316 (0.460)	0.268	-0.717 (0.430)	0.488
<i>AGE_3</i>	-1.031 (0.201)	0.357	-2.073 (0.449)	0.126	-0.764 (0.416)	0.466
<i>AGE_4</i>	-0.981 (0.187)	0.375	-2.168 (0.442)	0.114	-0.244 (0.402)	0.784
<i>AGE_5</i>	-1.115 (0.206)	0.328	-2.395 (0.447)	0.091	0.046 (0.406)	1.048
<i>AGE_6</i>	-1.221 (0.194)	0.295	-2.413 (0.441)	0.090	0.600 (0.399)	1.822
<i>FLAT_2</i>	-4.035 (0.108)	0.018	-	-	0.478 (0.126)	1.613
<i>FLAT_3</i>	-3.514 (0.144)	0.030	-	-	0.019 (0.124)	1.019
<i>REAL_ESTATE_2</i>	1.624 (0.173)	5.074	1.158 (0.154)	3.184	0.656 (0.193)	1.927

Variable	Coefficient (Std. Error)	Odds	Coefficient (Std. Error)	Odds	Coefficient (Std. Error)	Odds
REAL_ESTATE_3	-1.606 (0.216)	0.201	-0.578 (0.162)	0.561	-0.055 (0.207)	0.946
HOUSE_2	-	-	-4.163 (0.110)	0.016	1.178 (0.134)	3.246
HOUSE_3	-	-	-5.298 (0.163)	0.005	0.800 (0.141)	2.225
SATISFACTION_1	-	-	0.103 (0.229)	1.108	-0.035 (0.264)	0.966
SATISFACTION_2	-0.880 (0.247)	0.415	-0.136 (0.107)	0.873	-0.191 (0.107)	0.826
SATISFACTION_3	-0.802 (0.250)	0.449	-0.200 (0.100)	0.819	-0.030 (0.098)	0.971
SATISFACTION_4	-0.675 (0.263)	0.509	-	-	-	-
SATISFACTION_5	-0.773 (0.301)	0.462	-	-	-	-
SATISFACTION_6	-1.030 (0.464)	0.357	-	-	-	-
SATISFACTION_7	-1.861(0.844)	0.155	-	-	-	-
CONDITIONS_1	-0.625 (0.135)	0.535	-0.343 (0.156)	0.709	-0.501 (0.165)	0.606
CONDITIONS_2	-	-	-0.576 (0.119)	0.562	-0.401 (0.121)	0.670
CONDITIONS_3	-	-	-0.352 (0.123)	0.703	-0.250 (0.124)	0.779
DRIVING_LICENCE	-	-	-	-	2.485 (0.082)	12.005
Household does not possess item, would like to have, cannot afford, due to financial reasons	<i>HOUSE=3</i>		<i>FLAT=3</i>		<i>CAR=3</i>	
CONSTANT	3.672 (0.423)	39.312	6.051 (0.425)	424.516	0.426 (0.548)	1.531
EDUCATION	-0.072 (0.015)	0.931	-0.092 (0.012)	0.912	-0.037 (0.016)	0.963
INCOME_EQ	-0.397 (0.048)	0.673	-0.295 (0.039)	0.745	-1.014 (0.074)	0.363
HH_SIZE	-0.107 (0.057)	0.898	0.234 (0.043)	1.264	-0.277 (0.054)	0.758
HH_TYPE_1	-0.224 (0.138)	0.799	-0.440 (0.093)	0.644	-0.598 (0.113)	0.550
HH_TYPE_2	-0.397 (0.177)	0.673	-0.498 (0.114)	0.608	-1.133 (0.151)	0.322
HH_TYPE_3	-0.679 (0.198)	0.507	-0.319 (0.127)	0.727	-1.247 (0.174)	0.287
HH_TYPE_4	-0.485 (0.257)	0.616	-0.379 (0.177)	0.684	-0.911 (0.232)	0.402
HH_TYPE_5	0.013 (0.162)	1.013	-	-	-	-
HH_TYPE_6	-0.832 (0.262)	0.435	-0.673(0.185)	0.510	-1.376 (0.243)	0.253
RESIDENCE_1	3.063 (0.178)	21.394	-0.064 (0.126)	0.938	-	-
RESIDENCE_2	2.882 (0.168)	17.849	-0.405 (0.126)	0.667	-	-
RESIDENCE_3	3.101 (0.177)	22.217	0.084 (0.126)	1.088	-0.645 (0.174)	0.525
RESIDENCE_4	1.899 (0.113)	6.682	-0.504 (0.094)	0.604	-0.660 (0.132)	0.517
RESIDENCE_5	1.543 (0.125)	4.679	-0.667 (0.106)	0.513	-0.494 (0.148)	0.610
RESIDENCE_6	-	-	-	-	-0.807 (0.139)	0.446
AGE_2	-	-	-1.387 (0.370)	0.250	-0.691 (0.391)	0.501
AGE_3	-1.227 (0.179)	0.293	-2.595 (0.366)	0.075	-1.088 (0.384)	0.337
AGE_4	-1.564 (0.170)	0.209	-2.670 (0.361)	0.069	-0.627 (0.373)	0.534
AGE_5	-1.949 (0.195)	0.142	-2.932 (0.366)	0.053	-0.502 (0.380)	0.606

Variable	Coefficient (Std. Error)	Odds	Coefficient (Std. Error)	Odds	Coefficient (Std. Error)	Odds
AGE_6	-2.174 (0.183)	0.114	-3.014 (0.361)	0.049	-0.603 (0.374)	0.547
FLAT_2	-5.139 (0.163)	0.006	-	-	0.042 (0.144)	1.043
FLAT_3	-2.427 (0.105)	0.088	-	-	0.447 (0.114)	1.564
ESTATE_2	0.509 (0.181)	1.663	0.051 (0.151)	1.052	0.001 (0.215)	1.001
ESTATE_3	1.771 (0.180)	5.874	1.127 (0.147)	3.087	0.509 (0.216)	1.663
HOUSE_2	-	-	-3.484 (0.141)	0.031	0.530 (0.159)	1.700
HOUSE_3	-	-	-2.669 (0.107)	0.069	0.893 (0.133)	2.441
SATISFACTION_1	-	-	-0.454 (0.226)	0.635	-0.484 (0.279)	0.616
SATISFACTION_2	-0.899 (0.251)	0.407	-0.314 (0.102)	0.730	-0.741 (0.117)	0.476
SATISFACTION_3	-0.674 (0.254)	0.509	-0.303 (0.094)	0.739	-0.273 (0.100)	0.761
SATISFACTION_4	-0.433 (0.266)	0.648	-	-	-	-
SATISFACTION_5	-0.403 (0.300)	0.668	-	-	-	-
SATISFACTION_6	-0.372 (0.449)	0.690	-	-	-	-
SATISFACTION_7	-0.248 (0.668)	0.780	-	-	-	-
CONDITIONS_1	-0.695 (0.146)	0.499	-1.184 (0.154)	0.306	-0.532 (0.184)	0.588
CONDITIONS_2	-	-	-1.025 (0.102)	0.359	-0.470 (0.117)	0.625
CONDITIONS_3	-	-	-0.635 (0.102)	0.530	-0.174 (0.116)	0.840
DRIVING_LICENCE	-	-	-	-	1.731 (0.087)	5.648

Source: own calculations.

For the analysis of the number of household members influence, the estimated value of the odds ratio means that, on average, and with every additional member of the household, the following hold true: it is 22.45% more likely that the household does not possess their own house (is in the second category *HOUSE=2*, do not want to have) and it is 10.17% more likely to be in the third category (*HOUSE=3*; Household does not possess its own house, would like to have, cannot afford, due to financial reasons). It is worth to underline that, with an increase in the number of people in the household, the need to own a house will often be redefined. As a result, the probability of the occurrence of households that do not have a home for financial reasons will decrease by 12.28%. In other words, an increase in household population may change the pre-existing attitudes towards the need to own a house. This phenomenon manifests itself more often in households declaring lack of the willingness to possess, rather than among those HHs which cannot satisfy this need for financial reasons. Concerning the second model, in the influence analysis of the number of household's members, the estimated value of the odds ratio means that, on average, and with every additional household member it is 11.40% more likely that the household does not have ownership of their flat, category *FLAT=2*, and it is 26.40% more likely for the HH to place in the category *FLAT=3*; Household does not possess own flat, would like to have, cannot afford, due to financial reasons. For the variable *HH_SIZE* in the third model, the estimated coefficient has a negative sign. It means that, on average, with every additional member of the household it is 59.68% less likely for the family to not have a car of their own (*CAR=2*, because it is redundant). It is also 24.19% less likely for the HH to place in *CAR=3* category of those without a car of their own because of financial reasons.

In all models, some dummy variables have the logit coefficients estimates with the negative sign, to indicate that the probability of not having a house (flat and car) decreases compared to the reference group. A similar inference can be formulated for variables *CONDITIONS* and *SATISFACTION*. For example, in the first model heads of households who perceive the quality of their life as less satisfying – it is less likely that their respective family does not possess their own house (the second category and the third category). For second model such a situation occurs for variables *HH_TYPE*; *RESIDENCE*; and *AGE*. The estimated value of the coefficient for variable *RESIDENCE* is positive (in the first model), so the probability of not being a house owner (*HOUSE=2* and *HOUSE=3*) increases compared to the reference category (rural areas). It is not surprising, since rural families are, by rule, property owners – and such property typically includes a residential area. In the third model (analysing car), some dummy variables have positive value of estimated logit coefficients. These indicate that the probability of not having a car (*CAR=2*) increases compared to the base category. For example, age categories 60-64 and

over 65 years (variables *AGE_5* and *AGE_6*) display a higher probability of not having a car of their own (*finding it redundant*), by 4.76% and 82.25%, respectively.

Conclusions

The aim of the study was to explore new developments in sustainability of subjective wellbeing perception. The author defined a household as the analytical unit. For research purposes, the author assumed that determinants of subjectively perceived wellbeing include immaterial and material factors, along with financial assets.

The main finding is that there is no unique, universal source of subjective wellbeing. Households and their representatives define their preferences following two main paths. Still prevailing is the attitude to possess as many durables as possible. However, a substantial share of households reports an attitude of deeming possession of certain durables as redundant. The author considers such families as pursuers of a new philosophy of life, namely: the concept of the circular and sharing economy.

In addition, the author managed to identify characteristics describing the influence of households and household representatives upon their appurtenance in individual groups, along with estimates of measures illustrating the strength of influence of particular items. The author performed extensive and comprehensive studies of subject literature. In the review, the family wellbeing concept development proved of interest. The broad discussion of wellbeing typology sources identification leads to the conclusion that the measurement of diversity in possession of durable goods is an adequate tool needed to measure and to analyze the sources of wellbeing differentiation. The author concentrated only on quantifiable (material) determinants. As a result of the inquiry, the author managed to present the identified factors causing differences in the level of household endowment with durables. The author adopted the observation that households' endowment with durable goods is a disproportionately important factor in assessing the subjective perception of households' wellbeing, or at least in an evaluation of wellbeing level made by the head of the family. These statements substantiate the choice of endowment with durable goods as the topic of analysis. The author concentrates on one type of material determinants, namely durables possession. In this study, the author discusses the results of an attempt to determine the factors causing differences in the level of household equipment using housing conditions as an example.

Through the case studies of housing conditions and car ownership, the author illustrates the way how to identify the list of most significant factors and to quantify the strength of their influence on wellbeing. The author used econometric techniques for the quantitative analysis of the phenomenon of interest. The multinomial logit models served as the analytical tool. The specification of multinomial unordered logit models allows for the combination of data coming from strong (metric) and weak (nonmetric) measurement scales.

This author's contribution in the subject at hand includes real-life empirical application and an attempt to solve a new theoretical problem. The research arose from the need to analyze a contemporary, practical issue, namely: the need to measure the perception of subjective wellbeing in households. New and improved instruments of measurement and analysis allowed for a better assessment of the influence of durable goods possession on the subjective perception of a household situation.

The empirical results of the analysis confirmed the existence of objective elements that temper households' attitudes towards durables possession as a source of subjective wellbeing.

Implications

The main theoretical finding of this study is that, insofar as subjective wellbeing perception analysis is concerned, identification of sources and measurement of strengths of the individual factors requires the use of mixed-type data. Measurement data may come from metric measurement scales, *i.e.* interval and ratio scales, but it must be supplemented by data measured on weak scales, namely ordinal and nominal scales.

The consequence of the above statement is that statistical and econometric tools useful for such mixed data must be able to provide appreciation of the character of the available data. In other words, it is crucial to remember that most of the econometric tools are designed for metric data and, as such, may be inappropriate for the purpose at hand. Careful determination of specialized specifications is a sine qua non condition for meaningful and firm observations which may be used the formulation of policy recommendations.

From a practical standpoint, the findings of this study may serve as a source of recommendations for strategy and policy formulation aimed at increasing the subjective wellbeing perception.

The most significant conclusion comes from the observation that the level of subjective wellbeing has different sources. Therefore, to raise the desired level of subjective wellbeing, differentiated tools of socio-economic policy are necessary. The policy differentiation should take into account the variation in the attitudes toward

durables possession and its influence on wellbeing. The author provides estimates indicating the direction and the strength of individual factors influencing the level of the subjective wellbeing perception.

The author draws attention to the limitations in the practical use of findings from the empirical analysis presented in this study. The limits are twofold. Firstly, the findings describe only one, selected political and territorial unit. The modeling, analysis, and inference based on them are rooted in statistical data collected among Polish households. Secondly, the findings may be described in terms of a snapshot study; they concern a one-off segment of time.

Further research should include cross-sectional data from various countries. It would be equally important to try and identify trends in variation in sources and changes in the direction and strength of the impact of individual factors on the subjective perception of household's wellbeing. Such an analysis requires the use of time series of cross-sectional data.

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