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Modelling ordinal data from repeated surveys

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Business and consumers survey data are the basis for several indicators describing the trend of macro-economic variables that are fundamental for monitoring the overall performance of the economic system. Qualitative surveys typically ask interviewees to express their perceptions or expectations about the current or future tendency of a reference economic variable (such as inflation or industrial output) using a trichotomous or a finer-tuned ordered scale. Surveys are carried out at regular interval by statistical offices, and collected data are traditionally published in aggregate form, reporting the proportions of positive, neutral or negative assessments. This contribution presents an innovative dynamic model that describes the probability distributions of ordered categorical variables observed over time. For this aim, we extend the definition of the mixture distribution obtained from the Combination of a Uniform and a shifted Binomial distribution (CUB model), introducing time varying parameters. The model parameters identify the main components ruling the respondent evaluation process: the degree of attraction towards the object under assessment, the uncertainty related to the answer, and the weight of the refuge category that is selected when a respondent is unwilling to elaborate a thoughtful judgement. We suggest to use the model time-varying parameters as indicators of the diversity of respondents' opinions, shifting from an optimistic to a pessimistic state as the surrounding conditions evolve. For illustrative purpose, the dynamic CUB model is applied to the consumers' perception and expectations of inflation in Italy to investigate: a) the effect of the COVID pandemic on the respondents' perceptions; b) the impact of the respondents' income level on expectations.

Keywords: ordinal data; CUB model; consumers' perceptions; consumers' expectations

References

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Primary author(s) : CORDUAS, Marcella (Departmento of Political Sciences, University of Naples Federico II)

Presenter(s) : CORDUAS, Marcella (Departmento of Political Sciences, University of Naples Federico II)

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