

“On the measurement of polarization for ordinal data”

Martyna Kobus, Institute of Economics, Polish Academy of Sciences

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Non-Technical Summary

For several decades now, studies of well-being have sought to come to grips with measuring non-income dimensions. Increasingly, this stance has also pervaded policy making, as exemplified by the announcement of a happiness index by the British Prime Minister in November 2011, and by the launching of the OECD Better Life index in May 2012. Policymakers around the world, in particular in countries such as UK, France, Canada and Japan, claim that to go beyond income in measuring socioeconomic progress is one of the central political issues of our time. In 2008 French government set up a commission led by Professors Sen, Stiglitz and Fitoussi with the goal to design a methodology for measuring well-being.

To go beyond income means to use non-income data, such as the widely used self-reported health status data and the happiness data. Such data are, however, ordinal i.e. there are no numbers but there are ordered categories to which any monotone sequence of numbers can be assigned. Ordinal nature of the data causes problems for measuring inequality, poverty or welfare, as standard measures are designed for data that are cardinal e.g. income. In particular, the scale assigned to categories is arbitrary, but standard inequality measures are scale sensitive. That is, the way they rank two distributions change depending on the scale used. This undesired feature of standard measures calls for developing a theory of how to measure inequality for ordinal data. The project contributes to this line of research.

Typical approaches in the field measure inequality as bi-polarization, that is, a distribution is more polarized if it is more concentrated around the tails. Typically a criterion used to compare distributions is the polarization relation as proposed by Allison and Foster (AF) (2004). It is therefore interesting to check how robust comparisons via AF relation are. Namely, we show that when distribution A dominates distribution B in the sense of AF relation, then all indices in a broad class of measures must confirm A as less unequal than B. In the project the class of measures is characterized explicitly. Thus, up to this class, the conclusions about inequality in two ordinal distributions are freed from arbitrariness involved in choosing a particular measure. That is, no matter what polarization measure is used, as long as it belongs to the specified class, the ranking of distributions do not change.

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