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Behavioral and welfare implications of reference-dependent shortlisting behavior

Behavioral and welfare implications of reference-dependent shortlisting behavior

Qin, Dan

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Reference alternatives play a significant role in shaping individual behavior. This study shows how to distinguish reference-dependent behavior and reference-independent behavior by examining the characteristic properties of reference-dependent behavior. These properties can be used in data analysis to determine people's underlying decision procedure. This study also shows how should we evaluate welfare gains and losses of economic policies when people's behavior is reference-dependent. We find that if people's behavior is reference-dependent, then traditional welfare analysis can be biased. We analyze how to avoid such bias. These results are summarized in 3 articles.

bounded rationality revealed preference

In traditional rational choice theory, a decision maker is modeled as a global maximizer who possesses a preference over all conceivable alternatives. Normatively appealing as it may be, the maximization hypothesis does not gain much empirical support. In particular, cyclical choice and status quo bias (a preference for the current state of affairs) are persistently observed in both empirical and experimental data. To incorporate the observed phenomenon, many nonstandard models have been studied. Two lines of research are closely related to our work. Among nonstandard approaches, two-stage shortlisting models attract much attention recently (e.g. Tadenuma K. J Econ Theo. 2002 in social choice setting and Manzini P. et al. Am Econ Rev. 2007 in individual choice setting). These models involve two (or more) decision criterions, one applying on each stage. The initial stage is modeled as a shortlisting stage where one criterion is applied on the opportunity set to create a shortlist that in turn forms the opportunity set in the following stage. Two-stage shortlisting models can explain many choice anomalies, including cyclical choice. Another line of research is the reference-dependent model (e.g. Masatlioglu Y. et al. J Econ Theo. 2005 and Bossert W. and Suzumura K. Analyse & Kritik 2007). These works study choice models that allow the presence of status quo bias. Most non-standard models in the literature incorporate either cyclical choice behavior or status quo bias. We proposed to expand the two-stage model to incorporate reference-dependency so that both cyclical choice and status quo bias can be explained.

The primary objective of this research is to study the behavioral and policy implication of an important nonstandard choice model. We seek to (1) provide a non-standard choice model that can incorporate both cyclical choice and status quo bias; (2) examine the behavioral implication of the proposed choice procedure (two-stage reference-dependent shortlisting behavior); (3) analyze welfare implication of such nonstandard choice behavior.

The models we study features two stages. In the first stage, alternatives at least as good as the reference according to some criterion are selected to form the shortlist. In the second stage, shortlisted alternatives are evaluated by a second criterion and the choice set contains best alternatives (according to the second criterion) in the shortlist. For example, when an individual decides which car to purchase, she may first come up with a shortlist of cars that looks at least as good as her current car (the reference), and makes a final decision over the shortlisted cars with some other criterion (e.g. price-performance ratio). This procedure requires much less cognitive ability and information than doing global maximization.

The method we adopt in this research is axiomatic, i.e., we seek to provide axiomatic basis for a family of reference-dependent behavior.

We successfully constructed models of bounded rational choice that accommodate both cyclic choice and status quo bias. We also successfully characterized these models and examined the implication on economic policy evaluation. In the first place, we provided axiomatic basis for two-stage reference-dependent choice behavior. The primary objective of providing the axiomatic basis is to facilitate experimental and empirical tests. Therefore, we studied the problem under two different domain conditions (full domain and general domain). Results achieved on these domains are applicable on experimental data and empirical data from actual markets respectively. In the second place, we examined the possibility of extracting relevant information for welfare judgment when individuals are assumed to behave according to two-stage shortlisting models.

The following is a list of models we examined, which is arranged in ascending chronological order. (1) Gerasimou (Econ Theory 61(1):127–145, 2016) characterizes partially dominant choice with acyclic underlying preferences. We characterized partially dominant choice with transitive underlying preferences. Transitivity is a more appropriate assumption on the underlying preference because the model is interpreted in a way that the deviation from standard rational choice procedures is due to multi-dimensionality and incommensurability of desirable attributes. (2) We studied and characterized a family of reference-dependent choice procedures. The decision maker is assumed to compare alternatives with a reference alternative by a single

criterion or multiple criteria. The choice set contains all alternatives passing the threshold (set by the reference alternative) in terms of all criteria. Characterizations are provided for variants of such choice procedures. (3) We considered reference-dependent choice procedures shaped by a utility function and a threshold function. Alternatives are considered only when the utility gain of moving from the reference is bigger than the threshold. We imposed no requirement on the threshold functions whereas previous works characterize the special case of strictly positive threshold functions. We also examined the case when the threshold function depends on both compared alternatives. (4) We considered a hybrid model of rational shortlisting and reference-dependent choice. In our two-stage model, Decision Maker (DM) generates a shortlist by eliminating alternatives inferior to the reference in the first stage. Preference maximization is then conducted on the shortlist in the second stage. We characterized such procedures with transitive/acyclic first-stage criterion. (5) We characterized choice procedures shaped by multi-dimensional objective functions and reference alternatives. The procedure we study features a stage of shortlisting followed by a phase of utility maximization with respect to an overall assessment aggregated from the multi-dimensional objective function. We showed most common aggregation methods are behaviorally indistinguishable. We also examined the implication of different screening methods in the shortlisting stage.

The first 3 models are summarized in published papers whereas the last two are summarized in under-review articles.

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Qin D (2017), "Partially dominant choice with transitive preferences", Economic theory bulletin, 5(2): 191–198

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