

## Is there a development gap in decision-making quality?

### I. Principal investigators (PIs)

**PI:** Shachar Kariv (University of California, Berkeley)

**Co-PIs:** Alexander Cappelen, Bertil Tungodden, and Erik Ø. Sørensen (NHH Norwegian School of Economics)

### II. Aims and objectives

We propose to conduct and analyze the results of several field experiments. Drawing on the methods developed in prior research, the experiments will provide a rich set of information about individual preferences for personal and social consumption, particularly attitudes toward risk and time. These preferences and attitudes enter nearly all realms of individual decision-making and are thus important inputs into any measure of welfare. While better information about individual preferences will improve prediction and refine economic models for all people, this project will have special application to development economics.

Several strands of empirical research consider heterogeneity in choices driven by differences in the quality of decision-making. More specifically, new economics research emphasizes a gap between what poor people actually choose and what they would choose if they were fully attentive to their choices and had the skills and knowledge necessary to weigh costs and benefits in often complex settings. This literature shows survey evidence of very low levels of basic financial knowledge, and evidence of decisions that clearly leave “money on the table.” In this view, there are important wedges between the choices that poor people actually make and the choices they would make if they had the skills and/or knowledge to make better decisions.

In this project, we propose to measure aspects of decision-making quality by the compliance of choices with economic rationality. We call choices high quality if there exists a well-defined (utility) function that the choices maximize, and classical revealed preference theory tells us that choices are consistent with maximizing a utility function if and only if they satisfy the Generalized Axiom of Revealed Preference (GARP). We view this approach as complementing those based on one of the many tests of cognitive ability (IQ). That said, consistency with GARP thus offers a theoretically disciplined metric for quality of economic decisions. The measure has a well-established economic interpretation that permits, among other things, the disentangling of quality from preferences. There is no comparable, theoretically disciplined, means using, interpreting, and evaluating an IQ test.

### III. Research methods

In the experiment, we present subjects with a sequence of standard consumer decision problems: selection of a bundle of commodities from a budget set. The approach has two important advantages over earlier methods: First, because the experimental interface is user-friendly, we can present each subject with many choices, yielding a much larger data set. We can thus analyze behavior at the level of the individual subject. Second, because choices are from standard budget sets, we can use classical revealed preference analysis to determine if behavior is consistent with utility maximization, and classical demand analysis to recover underlying preferences.

To account for the possibility of errors or mistakes, one assess how closely individual choice behavior complies with GARP by using the Critical Cost Efficiency Index (CCEI). By definition, the CCEI is between 0 and 1: indices closer to 1 mean the data are closer to perfect consistency with GARP and hence to perfect consistency with utility maximization. Since GARP imposes the complete set of conditions implied by utility-maximization, the CCEI provides a stringent test of decision-making quality. The difference between the CCEI score and 1 can be interpreted as the fraction of income that the individual is ‘wasting’ by making inefficient choices.

In Feb-Mar 2012, we conducted pilot experiments with students from the University of California, Berkeley, and from the University of Dar es Salaam, Tanzania. The experiments Tanzania demonstrate the feasibility of implementing our experimental platform in underdeveloped countries. The table below provides a population-level summary of the individual-level results by reporting summary statistics and percentile values. The CCEI scores in the Berkeley sample averaged 0.950 over all subjects. We interpret these numbers as confirmation that the choices of the Berkeley students are generally consistent with utility maximization. The CCEI scores in the Tanzania sample averaged 0.856 and 0.869 in low-stakes (hourly wage) and high-stakes (monthly wage) experiments, respectively. The magnitudes imply that the Tanzania subjects on average ‘waste’ as much as 9.4 and 8.1 percentage points more of their earnings by making inefficient choices relative to the Berkeley students. Nevertheless, many of the Tanzanians have very high CCEI's. To our knowledge, this is the first elicitation of an economically interpretable measure of decision-making quality -- the consistency of the experimental data with the utility maximization hypothesis -- across socialites.

The critical cost efficiency index (CCEI) -- Berkeley and Tanzania

	Mean	Standard deviation	Percentile values						
			5	10	25	50	75	90	95
UC Berkeley	0.950	0.079	0.803	0.866	0.933	0.986	0.999	1.000	1.000
Tanzania low-stakes	0.856	0.143	0.648	0.687	0.783	0.890	0.971	1.000	1.000
Tanzania high-stakes	0.869	0.149	0.585	0.669	0.755	0.932	0.990	1.000	1.000

#### **IV. Relevance for equitable growth**

Differences in decision-making quality have important consequences for economic growth and inequality. Clearly, such differences may dampen the impact of efforts aimed at promoting economic growth and/or reducing inequality. The primary aim of the request for funding is to generate and analyze more experimental data with a much larger and much more diverse pools of subjects than the collection of university students. From CEG we are only requesting research funds to cover some of the costs of further experimentation and data collection (subject fees). The experiments already conducted were funded by NHH Norwegian School of Economics. We are not requesting research funds to analyze and interpret the data already collected.

Finally, we note that we are drawing on the methods developed with prior CEG support (Wealth Differentials and Decision-Making Quality: A Combined Survey and Field Experiment, 2011-12). The difference is that in prior experiments our field environment has been limited to the CentERdata, a representative web-based survey of Dutch-speaking households in the Netherlands. Distinctively, we are now requesting research funds to cover experimentation and data collection across societies. Since all

experimental designs share the same interface, we are building on the extensive expertise we have acquired in previous work.