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A Theory of Kindness, Reluctance, and Shame

Two decades of experimental research on dictator games have found behavior in those games to be very robust. In a typical dictator game experiment, two subjects are randomly paired and one subject, designated the proposer, is given \$10 and told that she can split the \$10 between herself and her partner in any way she wishes. Many subjects keep the entire \$10, but a majority gives some away, and the average contribution is around 20 - 25% of the surplus.

Some recent research, however, calls the robustness of the dictator game evidence into question. Specifically, the research finds that generosity in dictator games may be an artifact of an experimental design that precludes the proposer from taking money away from her partner. While this work finds that proposers do give money away when giving is the only option, they tend to take money away when taking is also an option. This may be an indication that other-regarding preferences are context-dependent. For years, evidence has accumulated from other settings that suggests an individual's choice may not be independent of irrelevant changes to the problem she faces. For example, adding a dominated alternative to a choice problem makes decision-makers more likely to choose the dominating alternative. Others show alternative instances in which preferences are context-dependent, with the attractiveness of one option compared to another depending on the presence of a third option.

Perhaps most importantly, more recent research finds evidence that perceptions of fairness are context-dependent. Subjects are presented with a scenario in which a firm chooses an allocation between itself and an employee or between itself and a customer, and are then asked to rate the fairness of the allocation. In one treatment, the researchers only reported the final allocation, and in the other treatment, they also reported an alternative allocation that the firm

considered but rejected. They found that the presence of an unchosen alternative affected perceptions of fairness, with subjects perceiving an allocation to be more unfair when the rejected alternative was fairer than the chosen alternative, and an allocation to be less unfair when the rejected alternative was less fair than the chosen alternative.

Evidence of context-dependence is not the only new development in the experimental literature on dictator games. Other recent research finds evidence that many proposers strictly prefer not having to make a choice in the dictator game, which has been interpreted as either reluctance to be a dictator or as shame. For example, when given a choice between being the proposer in a \$10 dictator game or opting out of the dictator game and receiving \$9 with the subject's partner getting nothing, many subjects opt out. This evidence suggests that not only are preferences choice-set-dependent, but individuals have preferences over choice sets. Moreover, they sometimes prefer fewer options, in contrast to the large literature on preferences for freedom.

Why is the behavior of proposers, in dictator games, dependent on context? And why are many proposers reluctant to play the dictator game in the first place? *PERC Jordon Professor*, William Neilson, sets out to answer these questions in a research paper on other-regarding behavior (Working Paper #0521). In this paper, Neilson presents a theoretical model of context-dependent behavior in dictator games in response to recent experimental evidence suggesting that (1) although proposers give money to receivers when they do not have the option of taking money away, they tend not to give money away when taking is an option; and (2) many proposers are reluctant to play the dictator game and, in order to avoid playing the game, are willing to accept a smaller payment than they would have



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received had they played the game. The model has two components: a choice correspondence that depends on the endowed allocation and the menu of allocations available, and a preference ordering over endowment/menu pairs. The choice correspondence governs behavior when the proposer actually plays a dictator game, and the preference ordering governs the proposer's willingness to play a particular dictator game. The choice correspondence can be used to characterize kindness and the propensity to give, while the preference ordering can be used to characterize reluctance and construct a reluctance premium. Finally, the two components together can be used to characterize shame, which arises when proposers wish to avoid the dictator game in order to avoid revealing how little they would be willing to give away.

In the model presented in this paper, choices in dictator games are context-dependent and preferences over choice problems can exhibit reluctance. In contrast, existing models of other-regarding preferences assume the existence of a utility representation over payoff allocations. The two approaches can accommodate the same other-regarding attitudes but differ in several important ways. First, in a utility-based model, preferences over choice problems are governed by an indirect utility function. That is, one choice problem is preferred to a second if and only if the most-preferred allocation in the first choice problem generates higher utility than the most-preferred allocation in the second

choice problem. It is impossible for such preferences to exhibit reluctance, which requires an individual to prefer the endowment allocation to a choice problem that includes another allocation which generates higher utility than the endowment. To allow for reluctance, the model proposed here relies on a preference ordering over choice problems instead of a utility function over allocations.

Second, for a utility-based model to accommodate evidence that proposers tend to give when giving is the only option but not when taking is also an option, the utility function would have to be non-quasiconcave so that both giving and taking are preferred to the endowment point. Given that the evidence covers a variety of different endowment points, failures of quasiconcavity are unlikely to provide the explanation. In contrast, the model proposed by Neilson assumes that any utility function depends not only on the final allocation but also on characteristics of the choice problem faced, specifically the endowment allocation and the set of alternatives available. For such an approach to be useful, it must allow for simple restrictions that characterize prominent behavioral patterns. The model proposed here can do just that, and the paper shows how one can use the model to characterize such patterns as kindness, meanness, and inequality aversion. When combined with the preference ordering over choice problems, the model can also characterize shame, the desire of uncharitable proposers to hide their stinginess.

Forecasting Using Structural Factor Analysis

Macroeconomic forecasters and those who use macroeconomic forecasts, including policy makers at the Federal Reserve Board, are often confronted with the practical problem of extracting useful information from a huge set of available data. The problem is one of an embarrassment of riches, in that there is simply too much data to use in estimating a forecasting model. Moreover, it is well known that simply adding large numbers of variables

to a forecasting model will almost certainly reduce the accuracy of the resulting forecasts. Thus the traditional approach has been to construct forecasting models that use a small subset of the available data.

An alternative approach is to somehow aggregate the information in the large set of available data before incorporating that information into a forecasting model. Thus researchers might construct indices that



summarize information, and use these indices as explanatory variables in a forecasting model. Decades ago Sargent and Sims proposed an index model to summarize features important to business cycle modeling. More recently, Stock and Watson have provided several pioneering papers in this area, building forecasting models that use estimated “factors” as data inputs into their models.

The estimated factors used in the previous literature cannot always be interpreted structurally, and the estimated factors are chosen by statistical methods and not on the basis of standard economic theory. Is there an approach that would allow the underlying factors to be estimated based on economic theory? *PERC Research Fellow* Dennis Jansen and Assistant Professor Dandan Liu of Bowling Green State University give a positive answer to this question in their recent working paper (Working Paper # 0517).

In their paper, the authors propose a general *structural factor forecasting model* and use it to forecast some key macroeconomic variables in a data rich environment. This structural factor model combines an ability to summarize information contained in a large set of predictor variables with an ability to use economic theory to impose some structure on the factors. In this model the factors are given structural meaning, thus allowing a greater role for theory in choosing the factors. They then compare the forecasting performance of the *structural factor forecasting model* with a variety of alternative models including a baseline univariate autoregressive (AR(1)) model, a standard vector autoregressive (VAR) model, and a non-structural factor forecasting model.

Specifically, the authors apply their method of structural factor analysis to a large and updated data set containing 308 monthly U.S. macroeconomic time series from January 1972 until December 2003, providing 383 observations on each variable. The authors classify 172 as real variables, 80 as inflation or price variables, and 56 as monetary or financial variables. They simulate an out-of-sample forecasting exercise using their

proposed *structural dynamic factor forecasting model* and its several variants to forecast certain key macroeconomic variables. The estimation period is defined as January 1972 to December 1989 with the forecasting period defined over the remainder of the time period, January 1990 to December 2003. They then calculate forecasts for 1, 3, 6, 12, and 24-month forecasting horizons for the four key variables - industrial production, real personal income, nonagricultural employment, and the consumer price index.

The initial step in the estimation is to transform all series to be stationary. The four variables to be forecast are all treated as being $I(1)$ series in logarithms, and are transformed to give annualized rates of change. They then produce several alternative forecasts, which include the AR(1), VAR, and a dynamic factor forecasts, to compare to their structural dynamic factor forecast.

The final models they consider are more restrictive and forecast subsets of the variables. The first is limited to the real variables - industrial production, real personal income and nonagricultural employment. These forecasts are made using only factors selected from the group of variables related to the activity. The authors also consider a model limited to forecasting CPI, and again, only factors selected from the group of variables related to inflation and price changes are used.

For each model, the authors estimate factors, model parameters, and select models recursively. Each model is then compared to the benchmark AR(1) model using the relative forecasting mean squared error over the forecast period from January 1990 to December 2003.

The models proposed in this paper allow selecting the factors structurally for each variable to be forecasted. Based on their alternative forecasts, they find advantages of their *structural dynamic factor forecasting models* when compared to alternatives. The advantages are most prevalent when forecasting real variables and for shorter forecasting horizons.