Reputation in a Public Goods Game:
Taking the Design of Credit Bureaus to the Lab

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Results.

We present the results of a new laboratory experiment designed to mimic the process of cooperation and ejection in microfinance groups. This modified public goods game was played with 292 Guatemalan microentrepreneurs, and is intended to inform the design of microfinance credit bureaus. The games allow us to study how different systems for building reputation alter player behavior, and particularly whether sharing information over individual quality or group quality is more efficient in an environment of strategic play at the group level. We present a simple theoretical model that derives the expected effects of each treatment on adverse selection and moral hazard. Our empirical results show that both information sharing systems result in significantly higher contributions to the public good, and higher ejection from groups conditional on contributions. As expected, we find that the group incentives make ejection decisions more sensitive to individual play, but we fail to find the expected concentration of individual incentives on moral hazard. Given the substantial costs of transitioning microfinance bureaus to the sharing of individual information, our results present no evidence that this change would be cost effective.

Methodology.

This paper grows out of an extended empirical project designed to analyze the impact of the introduction of credit bureaus into microfinance markets. That larger project showed that bureaus are extremely effective at improving repayment performance while allowing for an expansion in access to credit, and that these beneficial impacts are fortified when borrowers have a clear understanding of the way the bureau operates. That analysis of Guatemala's new bureau, Crediref, however, left unanswered an important and theoretically interesting question about the optimal design of bureaus for microfinance markets.

Microfinance credit bureaus, which must use individual identifiers to form unique identities, represent an individualization of the incentives in an environment which previously focuses on the use of group incentives. Moral hazard will be more effectively combated when these incentives are fully individualized, but adverse selection (meaning who is permitted into microfinance groups) can be weakened if group incentives are undermined. The aggregate effect of this individualization of incentives is thus unclear.

Because the design of a credit bureau is a network attribute, and not easily amenable to experimentation, we chose to address this policy question in a laboratory environment. The public goods game, where individuals are asked to contribute to a common pot which is then doubled and split evenly among members of the group, is the canonical laboratory setting for capturing dynamic prisoner's dilemmas in groups. We create a more complex version of this game in which randomly

selected group leaders are shown the contributions of fellow group members and permitted to eject them for a fixed cost. Ejected players are then reassigned to the game through a rule which is varied across three treatments: the 'no information' treatment, in which players are randomly reassigned, a 'group information' treatment in which only players from the best *groups* are reassigned, and an 'individual information' treatment, in which the best players are reassigned.

This variation in reassignment rules mimics the potential designs of credit bureaus, in which even moral hazard incentives are provided purely through the probability of selection into credit markets on the extensive margin. We develop a theoretical model which shows that the individual treatment provides the strongest check against moral hazard, but the group treatment generates an additional reason for leaders to be selective in group membership, because the leaders' own future fate depends on the composition of their groups.

The sequence of the group and individual treatments is randomized across days of play, and this allows us to examine the impact of information sharing of any kind on composition, the relative strength of the two sets of incentives, and the sequencing effects of the two. In this way we gain detailed, though stylistic, evidence over a policy question which would otherwise be difficult to examine. Our results confirm the expected effects of group incentives on ejection: the slope of ejection probabilities on contribution amounts is higher under the group treatment than either of the other reassignment rules. While both information sharing rules generate substantially higher overall contributions than the no information game, moral hazard is not held in check better by the individual game than the group game. Indeed, the move from individual incentives to group generates a significant jump in average contributions whereas the move in the reverse direction does not.

Implications for Policy & Research

Very few microfinance lenders who make group loans have Management Information Systems (MIS) that permit them to track individual repayment in group loans. Further, the law in certain countries (such as Peru) forbids them from reporting individual repayment on group loans, because the legal recipient of the loan was the group and not the individual borrower. Hence, the transition to individual repayment would require expensive modifications at the institutional level, as well as (potentially) legal reform at the national level.

Using a laboratory setting, we find the group reporting mechanism to be indistinguishable from individual reporting in terms of average contributions, and agents are more selective when operating under group incentives. Our results therefore indicate that the expensive transition to the use of fully individualized credit reporting in microfinance markets is unlikely to be justified by improved repayment performance.