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Microcredit games with noisy signals: Contagion and free-riding ☆

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ABSTRACT

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The advent of microcredit financing has remarkably improved access to credit for the poor in many developing countries. Although several microcredit programs have adopted the joint liability scheme, economic theory suggests that joint liability could increase strategic default through contagion and free-riding. This paper aims at studying the extent of free-riding and contagion in joint liability lending. By using data from experimental repayment games conducted in Vietnam, with noisy signals that resemble actual microcredit programs, we found that subjects were motivated to free-ride under the joint liability scheme. While most empirical research in this area has focused on the problem of contagion, our findings point to the significance of investigating free-riding behavior under joint liability schemes. Analyses reveal that the free-riding tendency may be led by the irresponsiveness of repayment and shouldering behavior to the partner's seemingly strategic default in the previous round. *J. Japanese Int. Economies* **xxx** (xx) (2014) xxx–xxx. Graduate School of Economics, Kyoto University, Yoshida-honmachi, Sakyo-ku, Kyoto 606-8501.

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1. Introduction

Microcredit financing, or unsecured small loans, have remarkably improved access to credit for the poor in developing countries since the last two decades. According to Microcredit Summit Campaign (2013), as of 2011, 3703 microfinance institutions (MFIs) had succeeded in reaching out to 195 million clients, 124 million of whom were among the poorest category at the time of initial loan disbursement. Most MFIs sanction loans under the joint liability scheme, whereby group members are jointly liable for loan repayment. This scheme is believed to be an important factor for achieving high repayment rates. Economists have theoretically proved that joint liability can solve the asymmetric information problem in lending to the poor without collaterals.[1]

However, some MFIs departed from this widely used joint liability scheme over the last decade. Randomized experiment by Giné and Karlan (forthcoming) supports this trend by detecting no difference in repayment rates between joint liability centers and individual liability centers. Through a framed field experiment conducted in Vietnam, Kono (2013) finds that joint liability does not reduce, and sometimes increases, strategic default and default rates. Recent papers have provided evidence for contagion under joint liability in Mexico (Allen, 2012), India (Breza, 2012), and Pakistan (Kurosaki and Khan, 2012). They have noted that a borrower tends to choose the option of defaulting when other members in the same group are likely to default. Joint liability requires other group members to shoulder for the defaulting borrowers, discouraging them from repaying their own loans. Free-riding is the other, little-studied and less-documented, incentive problem under joint liability. Since joint liability makes it necessary for other members in the group to help defaulting members, a borrower has the incentive to strategically default, expecting other members to shoulder for him/her. The purpose of this paper is to analyze the extent of contagion and free-riding. To the best of our knowledge, this is the first study to investigate both the problems of free-riding and contagion associated with joint liability lending.[2]

To identify contagion and free-riding, we rely on predictions from the economic theory. Contagion predicts less strategic default in cases where group members have higher income as it lowers the chances of shouldering for partners. On the contrary, free-riding predicts more strategic default in cases where the partners have higher income since it generates the belief that the partners have sufficient money to shoulder for the defaulting borrower. We use original data from our experimental repayment games conducted in the villages of central Vietnam to examine repayment behavior in both cases.[3] Without experimental games, it will be difficult to capture free-riding behavior, especially in cases where shouldering of debts occurs through informal transfers and precedes the repayment date.[4]

Villages in rural Vietnam are geographically small and characterized by strong close-knit communities. Moreover, since joint liability requires strong social relationship among group members, subjects collected from such villages would be an appropriate sample to examine the behavior of microcredit clients. The games were played across a two-month period in August–September 2008 in a non-anonymous manner to resemble real microcredit settings where the group members know each other, thus, allowing them to utilize social sanctions outside the games. To address ethical concerns that may arise from the experiments negatively influencing social relationships, we introduced noisy income signals so the subjects could not perfectly know each other's decisions. Although we believe that this incomplete information setting is an adequately realistic portrayal, it may also lead to free-riding under individual liability. To account for this, we analyze repayment decisions under both joint liability and individual liability, and investigate the extent of free-riding and strategic default in both cases.

[1] See (Ghatak, 1999) for adverse selection, (Stiglitz, 1990) for moral hazard, and (Besley and Coate, 1995) for strategic default.

[2] Giné and Karlan (forthcoming) observed the combined effect of strategic default and moral hazard. In this paper, we solely focus on the incentive for strategic default.

[3] Kono (2013) also uses the same data to compare strategic default rates under various schemes but does not focus on identifying contagion and free-riding behavior separately.

[4] Oo and Toth (2014) provide another excellent example of using experimental games for economic analysis. They manipulate the market condition in the games to investigate a social institution of punishment as the cause of stagnancy of microenterprises.

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