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Coordinated strategic defaults and financial fragility in a costly state verification model [☆]



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ABSTRACT

Diversification through a financial intermediary has the benefit of transforming loans that need costly monitoring into bank deposits that do not. We show that financial intermediation in a costly state verification model has a cost not yet analyzed: it allows for the existence of multiple equilibria, some of which are characterized by borrowers defaulting on their loans because they expect other borrowers to do the same (i.e. bad equilibria arise due to strategic complementarities in entrepreneurs' actions). We propose two mechanisms that fully implement the desired equilibrium allocation.

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1. Introduction

A run on a bank takes place when a large number of its clients simultaneously renege on its services, promoting its disintermediation and occasionally its demise. The most common form of bank run occurs when depositors rush to withdraw their money because they fear the bank will be unable to honor all its liabilities at par. In this paper, we explore a different form of bank run; that which originates on the bank's asset side when a borrower defaults on his loan because he expects other borrowers to do the same. We refer to such a situation as a *coordinated strategic default*.¹

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¹ A strategic default occurs when the debtor has the financial means to pay off his debt, but chooses not to. It is thus an issue of the debtor's willingness to pay, not of his capability to do so.

There is evidence that coordinated strategic defaults occur across a variety of institutional arrangements. Krueger and Tornell (1999) document how the lack of transparent and effective bankruptcy procedures in Mexico during the 1995 crises led many borrowers to default, despite their full capacity to service their debt. Another case is Childreach, a microfinance program in Ecuador. According to Goering and Marx (1998) the program collapsed when “*the number of residents defaulting on their loans multiplied as the word spread that few people were paying*”. Even the US, arguably the world’s most financially developed country, has not gone unscathed. Guiso et al. (2013) document how underwater mortgage lenders are more likely to strategically default on their loans if they are acquainted with someone who is defaulting strategically as well.²

We analyze the issue of coordinated strategic defaults in a canonical model of entrepreneurial finance characterized by costly state verification (Townsend, 1979; Gale and Hellwig, 1985), where a financial intermediary lends to a continuum of entrepreneurs at contractual terms endogenously chosen.³ We start our analysis by looking at how a bank chooses to finance entrepreneurs when it either ignores or is unaware of the possibility that borrowers coordinate on strategic defaults. In this setting, we show that, in the *good* equilibrium, a standard debt contract minimizes monitoring costs while providing entrepreneurs with incentives to repay their loan whenever they can.

However, while repayment is *one* equilibrium of the optimal financial arrangement through which the bank finances projects (standard debt contract), it is not the only one. In the model the default by a group of debtors weakens the bank’s financial position and hurts its monitoring capabilities, which ultimately makes the decision to default by any other entrepreneur more attractive. Such strategic complementarities in entrepreneurs’ actions lead to multiplicity of equilibria. In some of them, a debtor declares default because he expects other debtors to default as well.

We establish that, apart from the good equilibrium, there is always an equilibrium in which *all* entrepreneurs default strategically. We refer to such an outcome as a *fully coordinated default*. One may argue that, due to communication and coordination costs, joint deviations by the whole set of entrepreneurs are not particularly worrisome. Nevertheless, we show that when the bank adopts a symmetric audit strategy, *partially coordinated default* equilibria always exist as well. In these equilibria, although some entrepreneurs repay their debt, strategic default by a non-negligible subsets of entrepreneurs also takes place.

In addition to establishing that banks may fall victim to coordinated defaults in a canonical model of financial contracting, the second goal of this paper is to consider alternatives banks may have to rule out these *bad* equilibria. We propose two main solutions, both of them sharing the following features: (i) to break the strategic complementarities among borrowers the bank must use what we call a *sequential audit strategy*, and (ii) to be able to audit a given group that plays a special role in the sequential audit strategy the bank must secure a given amount of resources. The solutions differ mainly in the way the bank secures such resources.⁴

The sequential audit strategy consists of dividing entrepreneurs into groups, which are then randomly ordered. Once the bank starts auditing, it will do so sequentially, auditing entrepreneurs in group $n + 1$ only after it has audited all defaulted projects in group n . If the bank can fully commit to audit entrepreneurs in the first group, such entrepreneurs will find it optimal to report truthfully regardless of the announcements made by other entrepreneurs. With the payments collected from entrepreneurs belonging to the first group the bank’s monitoring resources increase and it can credibly commit to audit entrepreneurs in the second group as well. Proceeding inductively, we show that coordinated strategic defaults unravel and the good equilibrium is restored.

² Bond and Rai (2009) present more evidence on coordinated strategic defaults in microfinance programs, while Vlahu (2008) focuses on corporate credit in Eastern Europe and Asia.

³ The main feature of costly state verification models is that the entrepreneur observes his project’s return free of charge, while the financial intermediary must perform a costly audit if it wishes to become informed.

⁴ What if the bank held, as opposed to debt, an alternative security issued against future proceeds from project returns? This would be of no help. For example, by holding equity the bank would need to monitor the entrepreneur in all states of the world, rather than just in a subset of states as with debt. This would magnify the bank’s exposition to a coordinated default, by stretching its limited budget even more. Debt is optimal because it is the security that minimizes the bank’s monitoring costs (and, consequently, its exposure to coordinated defaults).

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