Report on Bachelor Thesis

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Title: Global Games and its Applications in Economics: Creditor Coordination Puzzle

Overall assessment

The theory of global games is a relatively novel and attractive game theoretic methodology. It is applied mainly in financial and macroeconomic literature to address strategic uncertainty of large-player actions involving strategic complementarities (coordination problems), such as currency attacks. The thesis is a very ambitious attempt to introduce the methodology in the context of creditors' coordination and make a few slight extensions to the founding models.

It is just a pity that motivation for the use of global games in the context of creditors' coordination is not strongly justified in the thesis: The global games approach is showed to be just one of the stones upon which a more complex model should be built, but that is a property of all seminal theoretical models. The puzzle of the non-monotonicity of credit events in the large creditor's size is not so striking once it is recognized that the size of the creditors has consequences not only to coordination but also to bargaining in insolvency procedures. The major contribution of global games, namely that markets can coordinate through relatively very simple (switching) strategies, is somewhat lost. In fact, as Chap. 4 also reveals, global games have re-shaped thinking about how signals are transmitted in financial markets through disclosure and transparency.

I have a couple of technical remarks to the thesis:

Chapter 2 The elements should be better structured. For instance, T is not just a set of all players' action profiles, but a set of the actions of Nature; Nature selects for each player i to be of a type t_i. In a bilateral coordination game, risk-dominance by Harsanyi should be mentioned. Since utility is not restricted, the conditions $\int_{l=0}^{1} u(1,l,x) > 0 > \int_{l=0}^{1} u(0,l,x)$ are not guaranteed. (Recall that in the sample game, all payoffs are non-negative.)

Chapter 3.2 The meaning of $v(\theta, l)$ payoff function should be clarified; it is not any player's payoff, but an ex post value of the collateralized debt for a realization θ and a subsequent equilibrium decisions, resulting to l foreclosures. Then, however, we have not only $V(k)$, but $V(k, \theta, l)$, since both (θ, l) are ex post already realized once we define $v(\cdot)$.

Chapter 3.2.1 In this key section, there are numerous shortcuts that complicate understanding of the setup. First, (3.3) does not define the proportion of the foreclosing creditors, but the i-th player's expectation of the proportion, subject to a private signal x_i. It is also necessary to state that the i-th player's expectation of θ (posterior) is equal to the private signal, so (3.3) represents not the objective θ, but the posterior. Second, I would not present (3.7) because it gives a misleading impression that it solves x^* as a function of θ^*, but in fact it is (3.10) that solves x^* as a function of θ^*. To call a signal x_i to be a "signal $x_i = \theta + \sigma\varepsilon_i$ about fundamentals θ^*" is wrong; θ^* represents the posterior of fundamentals where a player

expects that the creditors using switching strategy x^* are just allowing for a rollover, whereas the fundamentals are simply θ derived from an improper distribution. Also, λ should be introduced sooner than on p. 18 (it is used on p. 16 already). There must be errors in the derivation of $(\underline{\theta}, \bar{\theta})$ since in (3.23), we simply get $1 - \lambda - (1 - \lambda) = 0$. For symmetric information, why don't you use x instead of a (a was used for action in general)?

Chapter 3.3 This chapter gives the large creditor an early-loan option. A key assumption (not discussed) is that early loan α is not observable, unlike the total debt. It would be fine to discuss the effects of having an observable α, where the early loan serves as an extra signal correlated with the creditor's signal. This aspect is not reflected here in (3.49). Otherwise, this solution just replicates the standard solution for small creditors, only with an extra condition for the early loan. I do not understand contribution of the related Chapter 3.4.

The thesis largely suffers from dozens of typos (reffers, marg instead of arg, commong, posibble), frequent inconsistencies, and minor issues. It would deserve a complete and careful re-editing. On the other hand, it contains a selection of highly relevant papers in the recent literature and covers a very interesting theoretical topic with important insights for economic policy. I applaud the ambition to undertake this mission, but have strong reservations to the structure and the outcome. The state of the thesis is far from being perfect. I recommend to grade the thesis with 2.

Table 1: Summary of points

Category	Points
Literature	18
Methods	27
Contribution	23
Manuscript Form	7
Total Points	75
Grade	2

Martin Gregor, June 1, 2011