（続紙 １ ）

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| 論文題目 | Essays on Strategic Information Transmission and Spreading Information |
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（論文内容の要旨）

This dissertation is concerned with two topics on information transmission in games with asymmetric information. One is strategic information transmission, where an informed player decides how to convey her private information to an uninformed player who in turn infers the private information from her behavior. The other is informational phenomena caused by equilibrium behavior, which reveals the players' private information and spreads it over the economy.

This dissertation has four chapters, and Chapter 1 is an introduction.

Chapters 2 and 3 analyze reputational cheap talk games. An expert who does not know her own ability is asked to give advice to an evaluator, who will judge the expert's ability based on the quality of her advice. The expert receives signals of the prospect of the evaluator's project over two periods. The signals reflect not only the project's prospect but also the expert's ability. In each period, she receives a signal and then sends a message, which is cheap talk in the sense that she may tell a lie. After the two periods, the evaluator learns the true quality of the project and updates his belief about the expert's ability, based on her messages and the project's realized quality. The expert's primary objective is to make the evaluator believe that she is more likely to be competent.

In this setting, the author asks when an equilibrium exists such that the expert truthfully reveals her signal in both periods. This is not a trivial question, because the expert who was truthful in the first period may not want to be truthful when she receives the same signal in the next period. If she reports the same message in a row and if the project goes against her advice later, that strongly indicates her poor ability. To avoid the worst evaluation, the expert may tell a lie and will be content with moderate reputation. Indeed, earlier papers on this setting emphasize that logic and examine what type of untruthful behaviors is consistent with an equilibrium.

A main result of Chapters 2 and 3 is to derive a necessary and sufficient condition for existence of a truthful equilibrium. The author distinguishes two types of truthful behavior. One is full truthfulness, where the expert reports her signal in any period, whether she told a lie in a previous period or not. The other is on-path truthfulness, where she reports her signal in any period on the path. The necessary and sufficient condition is provided for both equilibrium notions. Since the model has multiple equilibria (such as babbling), the author compares the truthful equilibrium with other equilibria. A sufficient condition for the expert to

prefer the truthful equilibrium to any other equilibrium is presented. Chapter 2 derives those results in a simple setting with two ability types, and Chapter 3 generalizes the model to the case of continuous types.

Chapter 4 considers a model of trade in a network and explores a possibility of rational bubbles. The economy consists of traders located on a graph and one indivisible good. Only one of the traders is an expert who values the good. The good is valueless to all other traders, and one of them possesses it initially. Trade may occur only between two directly connected traders.

If all traders know the entire graph and if the initial owner and the expert are not connected in the graph, trade with a positive price would not take place. However, this observation is not valid if they do not know the entire structure of the graph. Even if a trader knows that he is not connected to the expert, he may buy the good and will sell it to someone who rather believes to be connected to the expert. Building on this idea and by way of example, the author shows existence of an equilibrium with a property the author calls network bubble. Namely, trade with a positive price takes place even under a state where all traders know that the initial owner and the expert are not connected.

（続紙　2　）

（論文審査の結果の要旨）

This dissertation consists of three papers on information transmission in games with asymmetric information. The author focuses on two distinct frameworks. One is reputational cheap talk games, where an informed sender chooses her message over time, so that the receiver believes that the sender is of high ability. The other is a model of trade in a network, and the author examines a possibility of rational bubbles.

The main contribution of this dissertation is in Chapters 2 and 3. In these chapters, the author formulates a dynamic cheap talk game where a sender gives advice to a receiver over time. The sender's utility depends on the receiver's belief about her ability. A key observation is that the sender who was truthful in the previous period may not want to be so in the next period, to avoid a big failure of insisting on similar advice over time, only to see a poor outcome later. Because of this insight, earlier papers on this setting mainly study untruthful equilibria. In contrast, the author focuses on truthful equilibrium behavior, including both on-path truthfulness and full truthfulness. The characterization result of such equilibria is interesting in itself, and also enabled the author to find a gap in the argument of an earlier paper which discusses plausibility of untruthful equilibria. This is a nice contribution to the literature.

Chapter 4 analyzes a simple model of trade in a network of traders and points out a possibility of rational bubbles even under such a simple framework. A crucial assumption is that the traders only know their nearby structure of the network graph. Therefore, a trader knowing that no one connected to him values a good may buy it, anticipating that he can sell it to another trader who rather believes a graph with different structure. The author develops this line of arguments and defines a network bubble, a phenomenon where a good is traded at a positive price even if each trader knows that she is not connected to any trader who values it. Analysis of equilibria with network bubbles and presentation of an example with such an equilibrium are, though somewhat rudimentary, interesting findings and may be an interesting direction of research on bubble phenomena in economies.

The dissertation has considerable substance, although it also leaves something to be desired. First, analysis of the reputational cheap talk games in Chapters 2 and 3 lack comparative statics results. Hence, it is hard to fully understand what features of the model make truthful equilibrium behavior more likely to emerge. Second, in the analysis of rational bubbles in Chapter 4, the example showing existence of an equilibrium with a network bubble is numerical and depends on a particular prior distribution over the set of possible graphs. In

other words, the bubble in the example seems to be a knife-edge case, and the argument does not tell us whether an equilibrium with bubbles exists which is robust to changes of parameters. Given that whether bubbles are robust phenomena or not has important policy implications, further analysis on robustness will make the author's contribution clearer.

However, those critiques can be addressed in the author's future research and do not negate the overall contribution of this dissertation.

Due to those evaluations, this dissertation is recognized as worthy of a doctoral degree in economics. This decision has been made after the thesis defense on January 25, 2024.

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