



Contagion of a liquidity crisis between two firms[☆]



Frederick Dongchuhl Oh*

KAIST College of Business, Korea Advanced Institute of Science and Technology, 85 Hoegi-Ro, Dongdaemooon-Gu, Seoul 130-722, Republic of Korea

ARTICLE INFO

Article history:

Received 6 February 2012

Received in revised form

28 March 2012

Accepted 30 April 2012

Available online 28 August 2012

JEL classifications:

G33

G38

D82

D83

Keywords:

Contagion

Liquidity crisis

Global game

Learning

Coordination failure

Information structure

ABSTRACT

This paper presents a model in which the contagion of a liquidity crisis between two nonfinancial institutions occurs because of learning activity within a common creditor pool. After creditors observe what occurs in a rollover game for a firm, they conjecture one another's "type" or attitude toward the risk associated with the firm's investment project. Creditors' inference about one another's type then influences their decision to lend to the next firm. By providing an analysis of the "incidence of failure" (the threshold for a liquidity crisis) for each firm, this paper demonstrates that the risk of contagion increases sharply if it originates *ex ante* from a firm facing a low probability of failure. In addition, the paper proposes some policy measures for mitigating the severity of contagion during a liquidity crisis.

© 2012 Elsevier B.V. All rights reserved.

1. Introduction

Financial contagion refers to the spread of solvency problems of a single institution to other institutions and is one of the most striking features of any financial crisis because it can spread a crisis across countries and institutions. In the late 1990s, most East Asian countries suffered severe financial crises via contagion across

countries (the so-called "Asian Flu"). When South Korea (hereafter "Korea") caught the Asian Flu, the liquidity crisis spread from one firm to another, even though they represented different business areas. For example, in January 1997, Hanbo Steel Group (the country's fourteenth largest conglomerate) declared bankruptcy, and within several months, Jinro (the largest liquor group in Korea) also failed. Of course, these two firms were exposed to the same aggregate demand shock in the same country, but the noteworthy connection they had was common creditors.¹ This raises the question of why serial (contagious) failures of nonfinancial firms in unrelated business areas occur.

In this regard, this paper presents a model in which the contagion of a liquidity crisis between two unrelated nonfinancial institutions occurs because co-creditors

[☆] This paper is revised from Chapter 1 of my Ph.D. thesis at Washington University in St. Louis. My deepest thanks go to my advisors – Armando Gomes, Todd Milbourn, Anjan Thakor, and especially David Levine – for their exceptional guidance and discussions with me about this paper. I am also grateful to Marcus Berliant, Indraneel Chakraborty, Sylvain Chassang, Haluk Ergin, Steve Fazzari, Itay Goldstein, Todd Gormley, Ohad Kadan, Stephanie Lau, In Ho Lee, Stephen Morris, John Nachbar, Bruce Petersen, Bill Schwert (the editor), Hyun Song Shin, and an anonymous referee for their helpful comments on this work. Any remaining errors are mine.

* Tel.: +82 2 958 3416; fax: +82 2 958 3180.

E-mail address: dcoh415@kaist.ac.kr.

¹ This 1997 financial crisis in Korea is explained more specifically in Section 5.

(e.g., common bank creditors for the two nonfinancial firms) learn about one another's "type" or attitude toward the risk associated with a firm's investment project. A number of studies have addressed the contagion of financial crises among financial institutions and/or international financial markets based on their interlinkages and changes in asset prices.² However, few studies have focused on the contagion of liquidity crises among nonfinancial institutions whose businesses are not directly linked to each other.³ In this regard, the present study provides a better understanding of the contagion phenomenon by considering nonfinancial institutions in unrelated business sectors and subscribing to the idea that the mechanism triggering contagion is the learning within a common creditor pool. Specifically, this study suggests that when co-creditors learn about one another's "type", contagion is triggered.

This study focuses on "self-fulfilling crises", those crises that arise just because creditors believe that they are going to occur. This self-fulfilling nature is important because a firm's liquidity crisis is often viewed as a result of a coordination failure among creditors. However, considering a crisis to be self-fulfilling tends to produce multiple equilibrium outcomes, making it difficult to demonstrate the contagion effect. Models with multiple equilibria cannot capture the contagion effect in which a firm's liquidity crisis affects the likelihood of another firm having a liquidity crisis because such models do not predict the likelihood of each particular equilibrium. Therefore, to obtain a unique equilibrium outcome, this study employs the global game method introduced by Carlsson and van Damme (1993). This method allows for unique equilibrium outcomes for each firm and thus the determination of the contagion effect, which refers to an adverse effect of one firm's liquidity crisis on the likelihood of another firm's liquidity crisis.

Specifically, the global game setting of firms and that of creditors are similar to those in Morris and Shin (2004), who analyze the coordination game in the debt market by using global game tools and suggest that a distressed borrower's creditors face a coordination problem (a rollover game among creditors). Further, they demonstrate that, without common knowledge of the fundamentals of the distressed borrower, the probability of failure is uniquely determined, given that the creditors' private information on the fundamentals is precise enough. Bruche (2011) develops a continuous-time version of Morris and Shin's (2004) model, and Takeda and Takeda (2008) investigate the role of large creditors in determining the price of corporate bonds based on Morris and Shin (2004). However, these studies address the rollover game

for only one firm among creditors of the same type and do not investigate the contagion of a liquidity crisis between firms, which is the present study's central topic of interest. In this regard, the present study extends Morris and Shin's (2004) model to the case of two firms with two different types of creditors. In doing so, this study provides a better understanding of the phenomenon of contagion between two firms.

For the contagion setting, this study generally refers to Goldstein and Puzner (2004), who use the global game method to explain the phenomenon of contagion between two countries. They examine two countries having independent fundamentals but sharing the same group of investors. In their model, a crisis in one country reduces agents' wealth, which makes them more averse to the strategic risk associated with the unknown behavior of other agents in the other country. This increases agents' incentive to withdraw their investments in the latter. That is, the mechanism that triggers contagion in their model originates in the wealth effect. However, the present paper focuses on the case in which creditors learn about one another's type, which serves as the contagion mechanism. In a coordination game setting, such a learning process is critical because it can directly explain the creditors' strategic behavior, which in turn can influence the probability of a firm having a liquidity crisis.

Angeletos, Hellwig, and Pavan (2007) examine how learning about the underlying fundamentals influences the dynamics of coordination in a global game of regime change. Similarly, Manz (2010) shows that one firm's failure can trigger a chain of failures when investors learn about a common state influencing all firms within an industry, such as a proxy variable for the demand for their products. Lando and Nielsen (2010) conduct an empirical analysis of default contagion effects across firms based on rating covariates. However, instead of focusing on the learning process concerning economic fundamentals, the present paper examines how creditors' learning process involving one another's strategies plays a role in the contagion of a liquidity crisis from one firm to another. That is, based on Chamley (1999) and Steiner (2008), who investigate a repeated coordination game among the same players, the present paper shows how creditors' action in an initial coordination game (i.e., the first firm) influences other creditors' strategic behavior and then the result of a subsequent game (i.e., the second firm). This approach highlights the importance of such a coordination mechanism among creditors in crisis episodes (e.g., Fischer, 1999; Radelet and Sachs, 2000).

This study examines a sequential framework in which the rollover game among creditors for firm *A* takes place before that for firm *B*. In the proposed model, creditors hold loans for two firms' investment projects. For each firm, they can either roll over their loans until the maturity date (in this case, they can get a full repayment from the firm if the investment project succeeds) or recall their loans in the interim stage (in this case, they can get some premature liquidation value, i.e., collateral debt, but less than the full repayment amount). The success of an investment project depends on the fundamentals of the firm and on the number of the firm's creditors who

² Rochet (2004) provides a survey of explanations about the contagion of financial crises.

³ Note that in the contagion of a financial crisis among financial institutions and/or countries, the crisis generally spreads through a direct linkage. A contagion phenomenon from capital links between financial institutions is examined by Allen and Gale (2000), Cifuentes, Ferrucci, and Shin (2005), and Dasgupta (2004). Gerlach and Smets (1995) provide a contagion mechanism based on the trade linkage among countries.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات