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Contagion of self-fulfilling financial crises due to diversification of investment portfolios

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Abstract

We look at two countries that have independent fundamentals, but share the same group of investors. Each country might face a self-fulfilling crisis: Agents withdrawing their investments fearing that others will. A crisis in one country reduces agents' wealth. This makes them more averse to the strategic risk associated with the unknown behavior of other agents in the second country, increasing their incentive to withdraw their investments. Consequently, the probability of a crisis there increases. This generates a positive correlation between the returns in the two countries. Since diversification affects returns in our model, its welfare implications are non-trivial.

JEL classification: G15; E32; D84

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1. Introduction

In recent years, financial markets have become increasingly open to international capital flows.[1] This process of globalization is usually praised for creating opportunities to diversify investment portfolios. At the same time, the financial world has witnessed a number of cases in which financial crises spread from one

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[1] See, for example [2].

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country to another.[2] In some cases, crises spread even between countries which do not appear to have any common economic fundamentals.

In this paper, we present a model in which contagion of financial crises occurs precisely because investment portfolios are diversified across countries. The fact that different countries share the same group of investors leads to the transmission of negative shocks from one part of the world to another. Thus, the realization of a financial crisis in one country can induce a crisis in other countries as well. This generates a positive correlation between the returns on investments in different countries and thus reduces the effectiveness of diversifying investments across countries.

We focus on *self-fulfilling crises*: crises that occur just because agents believe they are going to occur. This is an important feature since financial crises are often viewed as the result of a coordination failure among economic agents.[3] While recent literature has provided theoretical foundations for either the contagion of crises or for the possibility of self-fulfilling crises, models in which both co-exist have rarely been studied. The difficulty in demonstrating contagion in a model of self-fulfilling beliefs derives from the fact that such models are often characterized by multiple equilibrium outcomes. Since models with multiple equilibria do not predict the likelihood of each particular equilibrium, they cannot capture a contagion effect in which a crisis in one country affects the likelihood of a crisis in another.

To tackle this difficulty, we employ a technique introduced by Carlsson and van-Damme [6] which has recently been applied in a number of papers exploring financial crises.[4] This technique allows us to determine the likelihood of each outcome and relate it to observable variables. We find that the likelihood of a crisis decreases with agents' wealth. Hence, the occurrence of a crisis in one country, which reduces this wealth, increases the likelihood of a self-fulfilling crisis in a second country.

Agents in our model hold investments in two countries. Investments can either be held to maturity, in which case returns are an increasing function of the fundamentals of the country and the number of agents who keep their investments there,[5] or can be withdrawn prematurely for a fixed payoff. In most cases, if no one withdraws their investments in a certain country early, then each agent will obtain a higher return by keeping her investment in that country until it matures. But if all agents withdraw early, the long-term return is reduced to below the return for early withdrawal. As a result, agents might coordinate on withdrawing early in a country, even though they could obtain higher returns by coordinating on keeping their investments there until maturity. Agents' beliefs regarding the behavior of other agents in that country will determine whether there will be a financial crisis, i.e., a mass withdrawal of investments.[6]

[2] See, for example [24].

[3] See [24,34] for a description of the recent crises in South East Asia, and [12,32] for models of self-fulfilling financial crises.

[4] See, for example [8,11,14,15,28,31,36], and two excellent surveys by Morris and Shin [29,30].

[5] This can be due, for example, to increasing returns to scale in aggregate investment or to liquidity constraints.

[6] This kind of financial crisis is similar to the one described by Diamond and Dybvig [12].