



A model of a systemic bank run[☆]

Harald Uhlig

Department of Economics, University of Chicago, 1126 East 59th Street, Chicago, IL 60637, USA, CentER, NBER and CEPR

ARTICLE INFO

Article history:

Received 28 May 2009

Received in revised form

29 October 2009

Accepted 29 October 2009

Available online 1 December 2009

JEL classification:

G21

G12

G14

G01

E58

Keywords:

Systemic bank run

Bank run

Systemic risk

Financial crisis

Firesale pricing

Adverse selection

Uncertainty aversion

ABSTRACT

This paper provides a model of the view that the 2008 financial crisis is reminiscent of a bank run, focussing on six stylized key features. In particular, core financial institutions have invested their funds in asset-backed securities rather than committed to long-term projects: in distress, these can potentially be sold to a large pool of outside investors at steep discounts. I consider two different motives for outside investors and their interaction with banks trading asset-backed securities: uncertainty aversion versus adverse selection. I shall argue that the version with uncertainty averse investors is more consistent with the stylized facts than the adverse selection perspective: in the former, the crisis deepens, the larger the market share of distressed core banks, while a run becomes less likely instead as a result in the adverse selection version. Therefore, the outright purchase of troubled assets by the government at prices above current market prices may both alleviate the financial crises as well as provide tax payers with returns above those for safe securities.

© 2009 Elsevier B.V. All rights reserved.

1. Introduction

Bryant (1980) and Diamond and Dybvig (1983) have provided us with the classic benchmark model for a bank run. The financial crisis of 2007 and 2008 is reminiscent of a bank run, but not quite, see Brunnermeier (2008) and Gorton (2009). The following six features summarize the prevalent view by many observers:

1. The withdrawal of funds was done by financial institutions (in particular, money market funds and other banks) at some core financial institutions (I shall call them “core banks” for the purpose of this paper), rather than depositors at their local bank.
2. The troubled financial institutions held their portfolio in asset-backed securities (most notably tranches of mortgage-backed securities and credit default swaps) rather than being invested directly in long-term projects.
3. These securities are traded on markets.

[☆] I am grateful to Douglas Diamond for a two very useful conversation at an early stage of this project. I am grateful to Todd Keister, Phil Reny, Stanley Zin and Andrea Eisfeldt for some particularly useful comments. I am grateful to a number of seminar audiences, in particular Wisconsin, the Carnegie-Rochester Conference, the University of Chicago, the ECB and Tilburg University. This research has been supported by the NSF Grant SES-0922550.

E-mail address: huhlig@uchicago.edu

4. There is a large pool of investors willing to purchase securities. For example, in the 2008 financial crisis, newly issued US government bonds were purchased at moderate discounts and the volume on stock markets was not low.
5. Nonetheless, investors were willing to buy the asset-backed securities during the crisis only at prices that are low compared to standard discounting of the entire pool of these securities.
6. The larger the market share of troubled financial institutions, the steeper the required discounts.

This perspective has possibly been crucial for a number of policy interventions, despite the inapplicability of the original Diamond–Dybvig framework. This creates a gap in our understanding. A new or at least a modified theory is needed.

This paper seeks to contribute to filling that gap, and provide a model (in two variants) of a systemic bank run. A systemic bank run is a situation, in which early liquidity withdrawals by long-term depositors at some bank are larger and a bank run more likely, if other banks are affected by liquidity withdrawals too, i.e. the market interaction of the distressed banks is crucial. This is different from a system-wide run, which may occur if all depositors view their banks as not viable, regardless of whether the depositors at other banks do to.

The goal is for the model to produce the stylized view, i.e. the six items listed above. That stylized view may be entirely incorrect as a description of the 2008 financial crisis. It is possible that the appropriate perspective is one of insolvency rather than illiquidity, and future research will hopefully sort this out. Absent that clarification, it is worthwhile to analyze the situation from a variety of perspectives, including the one above.

It will turn out, that items 1–3 are straightforward to incorporate, merely requiring some additional notation. Item 4 is easy to incorporate in principle, but hard once one demands item 5 and 6 as well. Item 6 will turn out to be particularly thorny to achieve, and decisive in selecting one of two variants for modeling outside investors.

Here is the key argument. Common to both variants, suppose that there are some unforeseen early withdrawals. Therefore, core financial institutions need to sell part of their long-term securities, thereby incurring opportunity costs in terms of giving up returns at some later date. Suppose that the remaining depositors (or depositing institutions) are the more inclined to withdraw early as well, the larger these opportunity costs are. If a larger market share of distressed banks and therefore larger additional liquidity needs drive these opportunity costs up, then a wide spread run on the core banks is more likely: this creates a systemic bank run. Whether this happens depends on the market for the long-term securities, the outside investors, and the reasons for steep discounts of these securities, and it is here where the two variants differ.

In the first variant, I hypothesize that expert investors have finite resources, while the remaining vast majority of investors is highly uncertainty averse: they fear getting “stuck” with the worst asset among a diverse portfolio, and are therefore not willing to bid more than the lowest price, see Section 3. For the second variant, I assume that risk-neutral investors together with adverse selection create an Akerlof-style lemons problem: liquid core banks have an incentive to sell their worst assets at a given market price, leading to a low equilibrium price, see Section 5. Both models generate a downward sloping demand curve or, more accurately, an upward sloping period-2 opportunity cost for providing period-1 resources per selling long-term securities from the perspective of the individual core bank, holding aggregate liquidity demands unchanged.

However, the two variants have sharply different implications regarding the last feature in the list above. With uncertainty aversion, a larger market share of troubled institutions dilutes the set of expert investors faster, leading more quickly to steep period-2 opportunity costs for providing period-1 liquidity, and thereby setting the stage for a systemic bank run. By contrast and with adverse selection, a larger pool of distressed institutions leads to less free-riding of unaffected core banks, thereby lowering the opportunity costs for providing liquidity, see Section 6. I shall therefore argue to rather analyze the 2008 financial crisis and draw policy conclusions, using the tools of uncertainty aversion. For example, with uncertainty aversion, a government purchase of assets above market price may be a good deal for the tax payers under uncertainty aversion, but not under adverse selection.

There obviously is a large literature expanding the Diamond–Dybvig bank run paradigm, including investigations of systemic risk and the occurrence of fire sales. A thorough discussion is beyond the scope here, but is available elsewhere. Allen and Gale (2007) have succinctly summarized much of the bank run literature and in particular their own contributions. Rochet (2008) has collected a number of his contributions with his co-authors on banking crises and bank regulation. Several papers on the recent financial crises and on resolution proposals have been collected in Acharya and Richardson (2009).

Nonetheless, it may be good to provide to explore at least some relationships. While the Diamond–Dybvig model is originally about multiple equilibria (“bank run” vs “no bank run”), Allen and Gale (2007) have emphasized fundamental equilibria, in which it is individually rational for a depositor to “run”, even if nobody else does. Here, I also employ this fundamental view. Heterogeneous beliefs by depositors will create partial bank runs here. Allen and Gale (1994, 2004b) have investigated the scope and consequences of cash-in-the-market pricing to generate fire sale pricing and bank runs. Technical and legal details as well as institutional frictions and barriers surely play a key role in preventing outside investors to enter this market quickly, see Duffie (2009). It still remains surprising that outside investors remain reluctant to enter, if there truly is underpricing. Thinking about this reluctance and its implications is a goal of this paper.

Diamond and Rajan (2009) have argued that banks have become reluctant to sell their securities at present, if they foresee the possibility of insolvency due to firesale prices in the future, as they will gain on the upside. Additional reasons are needed to generate the firesale price in the first place: the latter is the focus of this paper.

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