Discussion of: “Transparency and Bank Runs”*

Ettore Panetti

Banco de Portugal

6th Banco de Portugal Conference on Financial Intermediation

*The analyses, opinions and findings of this paper represent my own views, and are not necessarily those of Banco de Portugal or the Eurosystem.
Plan of the Presentation

- Introduction
- Recap and comments
- Comments on policy implications
Introduction

Question
- How does transparency affect the fragility and the efficiency of the financial system?

Motivation
- Hot topic in the policy agenda as well as in academia

Methodology
- A Diamond-Dybvig model with asymmetric information
- The agents receive a signal about the aggregate state of the economy, with some degree of “transparency”

Punchline
- Transparency has two effects:
  - Ex post: it increases the incentives to run
  - Ex ante: it reduces risk sharing
Recap: Preferences and Technology

- The preferences of the agents are:

\[ U_i(c_1, c_2) = \rho_i u(c_1) + (1 - \rho_i)(c_1 + c_2) \]

where:

\[ \rho_i = \begin{cases} 
0 & \text{with prob. } 1 - \lambda \quad \text{“Late consumer”} \\
1 & \text{with prob. } \lambda \quad \text{“Early consumer”} 
\end{cases} \]

- A long-term asset, yielding \( \{\theta^H, \theta^L\} \) with probability \( \{\nu^H, \nu^L\} \) at date 2, and \( \{\theta^H, r\theta^L\} \) at date 1, for every \( j = H, L \)
Recap: Information

- The agents do not observe the realization of the state, but only a signal $\tilde{\theta}_i$ with some precision:

$$p \equiv \text{prob}\left\{ \tilde{\theta}_i = \theta^j | \theta = \theta^j \right\} \geq \frac{1}{2} \quad \forall j = H, L$$

- Using Bayes’ Law, the agents calculate their posterior belief:

$$q^j \equiv \text{prob}\left\{ \theta = \theta^j | \tilde{\theta}_i = \theta^j \right\} = \frac{p \nu^j}{p \nu^j + (1 - p)(1 - \nu^i)} \quad \forall j = H, L \text{ and } j \neq i$$
Recap: Withdrawal Game

- Define $\alpha^j \equiv \text{prob. that a late consumer with signal } \tilde{\theta} = \theta^j \text{ withdraws early}$
- Then, the fraction of agents who withdraws early in state $j$ is:
  $$\mu^j = \lambda + (1 - \lambda)(p\alpha^j + (1 - p)\alpha^i) \quad i \neq j$$
- $\mu^j$ affects the ex-post gains of withdrawing early $h(\theta^j)$, through a strategic complementarity
  - Before bankruptcy, the gains from withdrawing early $h(\theta^j)$ are increasing in $\mu^j$
  - After bankruptcy, equal service $\Rightarrow$ the higher $\mu^j$, the less each agent gets
- NB: The gains from withdrawing early $h(\theta^j)$ are function of the banking contract $\{c, L\}$
Recap: Withdrawal Game

- A late consumer with signal $\theta^j$ withdraws early iff:

  $$\Delta(\theta^j) = q^j h(\theta^j) + (1 - q^j) h(\theta^i) > 0 \quad i \neq j$$

- $\Delta(\theta^L)_{p=1} > \Delta(\theta^L)_{p<1}$: lack of transparency lowers the incentive to run for the agents with low signal

- $\Delta(\theta^H)_{p=1} \leq \Delta(\theta^H)_{p<1}$: not clear
Recap: Withdrawal Game

(Tentative) Comparative Statics:

\[
\frac{\partial \Delta(\theta^L)}{\partial p} = [h(\theta^L) - h(\theta^H)] + p \frac{\partial h(\theta^L)}{\partial \mu^L} \frac{\partial \mu^L}{\partial p} + (1 - p) \frac{\partial h(\theta^H)}{\partial \mu^H} \frac{\partial \mu^H}{\partial p} =
\]

\[= [h(\theta^L) - h(\theta^H)] + (1 - \lambda) (\alpha^L - \alpha^H) \]

\[> 0 \text{ by corollary 1} \]

\[\text{claim } > 0 \]

\[\text{claim } > 0\]
Recap: Withdrawal Game

(Tentative) Comparative Statics:

\[
\frac{\partial \Delta(\theta^L)}{\partial p} = [h(\theta^L) - h(\theta^H)] + p \frac{\partial h(\theta^L)}{\partial \mu^L} \frac{\partial \mu^L}{\partial p} + (1 - p) \frac{\partial h(\theta^H)}{\partial \mu^H} \frac{\partial \mu^H}{\partial p} =
\]

\[
= [h(\theta^L) - h(\theta^H)] + (1 - \lambda) (\alpha^L - \alpha^H)
\]

claim >0

>0 by corollary 1

claim >0

\[
\frac{\partial \Delta(\theta^H)}{\partial p} = [h(\theta^H) - h(\theta^L)] + (1 - \lambda) (\alpha^L - \alpha^H)
\]

claim <0

>0 by corollary 1

<0 for p high enough
Recap: Fragility

- Proposition 1 shows that there are banking contracts \( \{c, L\} \) inducing multiple equilibria in the withdrawal game.
- Introduce a sunspot equilibrium with pdf \( f(s) \).
- Define the banking problem as:

\[
\max_{c,L} \int_{A(c,L)} f(s)EU(c, L, \alpha)d\alpha ds
\]

subject to:

\[
\begin{align*}
    c &\geq 0 \\
    L &\in [0, 1]
\end{align*}
\]
Recap: Fragility

- How does transparency affect the fragility of the system? By affecting the possibility of making the contract run-proof.
- Mechanism: as $p \uparrow$, coordination motives are stronger, and the bank must promise lower risk sharing (i.e. lower $c$) to avoid runs.
- Based on the ex-ante incentive compatibility constraint:
  \[ c \leq \mathbb{E}_p(c_2(\theta)|\theta^j) \quad \forall j = H, L \]
- The contract is run-proof iff:
  \[ \Delta(\theta^j) < 0 \quad \forall j = H, L \]
- Need to impose this and fully characterize the equilibrium.
Policy Implications: Optimal Transparency?

- The optimal level of transparency is $p^* < 1$
- Two caveats:
  1. Moral hazard
  2. Regulator in full control of transparency (impossible?)
- No failure of the first theorem of welfare economics
- Difficult to draw normative conclusions
- Two ways out:
  1. Introduce a regulator that values transparency (time consistency: Bouvard et al., 2015)
  2. A positive perspective: a rationale for banks’ opaqueness in times of financial turmoil (supporting empirical evidence by Flannery et al., 2013)
Summary of the Comments

- Clarify the issue of one-sided strategic complementarities
- Run comparative statics
- Impose the run-proof constraint and characterize the equilibrium
- Interpret your results as a way to rationalize opaqueness
- Introduce a regulator and analyze time consistency