Discussion of “Collateral Crises”
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October 2011

Too much of a good thing is a bad thing.

Ignorance dynamically built up. Brought about a credit-boom but also fragility. An aggregate shock generated a disproportionately large crisis.

Story is interesting but somewhat forced onto the model.
The static model

Technology, $A \min(K, K^*)$, succeed with probability $q$
Positive NPV: $qA > 1$
Not pledgeable

Pledgeable collateral
Quality uncertain (for everyone)
Price $pC$ where $p \in [0, 1]$
Suppose noone knows anything.

- The most that can be borrowed is $pC$.
- When $pC > K^*$, this ensures:

$$K_{\text{ignorance}} = K^*$$

Expected net output,

$$Y_{\text{ignorance}} = (qA - 1)K^*.$$
Wisdom benchmark

Suppose everyone knows collateral type.

Then:

\[
\left\{ \begin{array}{l}
K = K^*, \text{ if good,} \\
K = 0, \text{ if bad.}
\end{array} \right.
\]

Expected credit:

\[K^{\text{wisdom}} = pK^* < K^* = K^{\text{ignorance}}\] (similarly for \(Y\)).

Ignorance is bliss for liquidity!

Reason: Credit and output are concave functions of collateral value.
Why wisdom might be desirable:

- Convex technology:
  Suppose $pC < K^* < C$ and the project requires at least $K^*$...

- Information that guides investment decisions:
  Suppose the collateral can be produced at some cost...
Central tension: Ignorance might be hard to sustain

Lenders can acquire info at some cost $\gamma > 0$. Would this be a desirable thing?

- Start with the ignorance equilibrium.
- Lend $K^*$ **only if collateral is good**.
- New return to lender:

$$qK^* + (1 - q) \underbrace{\frac{K^*}{p}}_{\text{borrower hands in valuable collateral}} > K^*.$$  

An informed lender is able to exploit the borrower!
When does the constraint bind?

Lender acquires info when:

\[ p \left( \frac{(1 - q)(1 - p)K}{p} \right) > \gamma \]  

lenders’ rents if project is good  

lenders’ info cost

1. More likely to bind when \( p \) is small (lender exploits undervaluation).
2. More likely to bind when \( K \) is large (exploitation scales up).

Concern: A similar story can be told if borrower can acquire info. But some results (e.g., 1 above) are not robust to this change.
How to deal with the constraint?

Borrower has two options to avoid being exploited:

1. Reduce $K$. Outcome is:

   $$K_{constrained} < K^* \ (\text{similarly for } Y).$$

2. Trigger information acquisition: information sensitive (IS) debt. Outcome is wisdom net of info costs:

   $$K^{IS} = K^{\text{wisdom}} \text{ and } Y^{IS} = Y^{\text{wisdom}} - \gamma.$$

In addition by Dang, Gorton, Holmstrom (2009): Debt is optimal.
Solution to static model

Output

ignorance-first best region

ignorance-constrained region

IS debt region

\( pK^*(qA - 1) - \gamma \)

\( K^*(qA - 1) \)
The rest: Combine the static model with dynamics for collateral $p$'s.

**Main assumptions:**

- Start with full information: All $p$’s are either 0 or 1.
- They mean mean-revert to $\hat{p} \in (0, 1)$.
- Aggregate shocks reduce $p$’s by a factor of $\eta$. 
Warmup result (the run-up): Ignorance and credit builds up
Warmup result (credit crunch): Aggregate shock triggers the constraint
Main result (amplification): The longer the ignorance build-up, the larger the credit crunch

\[ p = 0 \quad \quad p = \eta \hat{p} \quad \quad p = \eta \]
Amplification

![Graph showing the average quality of collateral and output over time.](image)
Strange aspect: It does not matter if the shock is anticipated

Perhaps ignorance wouldn’t build-up if the shock was anticipated.

But here, anticipation/surprise does not matter. How can that be?
Strange result: Larger shocks lead to faster recoveries
The source of the strange stuff

From Geanakoplos:

\[
\text{Asset price} = \text{PDV of dividends} + \text{Collateral value (CV).
Value of relaxing constraints}
\]

- Here, CV is suppressed. Assumptions on market structure ensure price is \( pC \).
- But CV is important because it depends on the value of relaxing all future constraints.
- This drives the strange results of the paper.
If shock is anticipated, CV is potentially very large.

Price of good collateral could be:
\[ C + CV_{50} + CV_{51} + CV_{52} + \ldots \]
How would CV change the results

- A large CV generates very strong incentives for info acquisition in the period right before the shock!
- Ignorance can be sustained only if $\gamma$ is even larger.
- But if $\gamma$ is very large, then the constraint stops binding and the crisis disappears!
Equilibrium with large information costs
Main result goes through if shock is unanticipated

What do we learn from the CV:

- Main result is more robust if the shock is unanticipated (which is reasonable).
- “Bigger shocks lead to faster recovery” does not sound right.
- The welfare results do not sound right.
Empirical evidence consistent with other models of uncertainty and leverage (e.g., Geanakoplos)

Open question: Is the relevant constraint asymmetric information (or fear of it) or heterogeneity of borrowers and lenders.

Figure 11: The Panic of 1893
Conclusion

Interesting and thought provoking paper.

Story is clear. Whether the model delivers is not.

Nonetheless, two important takeaways:

- Virtues of ignorance.
- New constraint: How to preserve ignorance.