Overview

The authors propose a general modeling framework for operational risk management of financial firms.

- Operational risk events are shocks to a financial firm’s value process
- Investments in *preventive controls* reduce the frequency of operational risk events
- Investments in *corrective controls* reduce the severity of operational risk events
- Model is calibrated using data from a commercial bank in China
Provides a framework to study operational risk management in the form of preventive and corrective controls

Gives insights into optimal control policies as a function of the investor’s risk sensitivity and the stochastic nature of operational risk events

Quantify the potential performance improvement through investment in corrective and preventive controls for a commercial bank in China
Model

\[ dX_t = \left( r(t) - \frac{1}{2} \sigma(t)^2 - u(t) - \nu(t) \right) dt + \sigma(t) dB_t - dJ_t^{G,K} \]

\[ J_t^{G,K} = \sum_{i: \tau_i \geq t} N_t^G K(\tau_i, v(\tau_i), Y_i) \]

\[ N_t^G \text{ SPP with } \tilde{\lambda}(t) = G(t, u_t, \lambda_t) \]
Theoretical Predictions

- When the risk tolerance level increases, the investment in preventive controls decreases, because the investor becomes less risk averse (P1)

- The optimal corrective investment increases in investor’s risk aversion under certain conditions (P4)

- When investment in both controls is optimal, the optimal preventive investment ratio increases and the optimal corrective investment ratio decreases as the investor becomes more risk averse (P10)
Comments - Investment in infrastructure

- Investment in infrastructure is not a first order concern in the banking and financial industry
- Operational controls and risk management are primary focus
- Controls impact either the frequency or the severity but not both at the same time

→ The model framework can still be convincingly used but the authors are probably better off rethinking the rationale or motivation
Losses and investment in controls are assumed to be proportional to firm value

- Literature shows that losses are related to size, but is the same true for the value of the firm?
- Investment in controls have a significant fixed component which likely makes the relation non-linear
- Firm with higher value may need lower investments in controls if already priced
Comments - Interpretation of results

It would be very helpful if the authors would provide more intuition on the following results:

- In the analysis where controls are studied separately, why would a more risk-averse investor always invest in preventive controls and not always more in corrective controls?
- In the corrective control region for the joint investment scenario, why does a less risk-averse investor invest more in corrective controls?
To derive the optimal level of investment, the model introduces a risk-averse investor that invests in the firm and chooses optimal investment in controls. How should we think of this investor?

Why finite horizon?
How representative is the sample?

Severity of losses is determined by the Bank of China through a score system and then transformed into a value for the study.

The empirical results are simulation based. Has the bank made any investment during the sample period that could be used to assess the impact?

The empirical experiment is a nice addition to the paper but, in the current state, it may create problems.

Why not use one of operational risk databases available to the public?
The operational risk literature is lacking theory papers and works like this one are very appreciated.

We really enjoyed reading it and we believe it has good potential.

For publication in a finance journal it probably needs a few improvements on the motivation side:
- The operational literature section seems to be missing a few milestone papers.