Discussion of "Collateral Runs"
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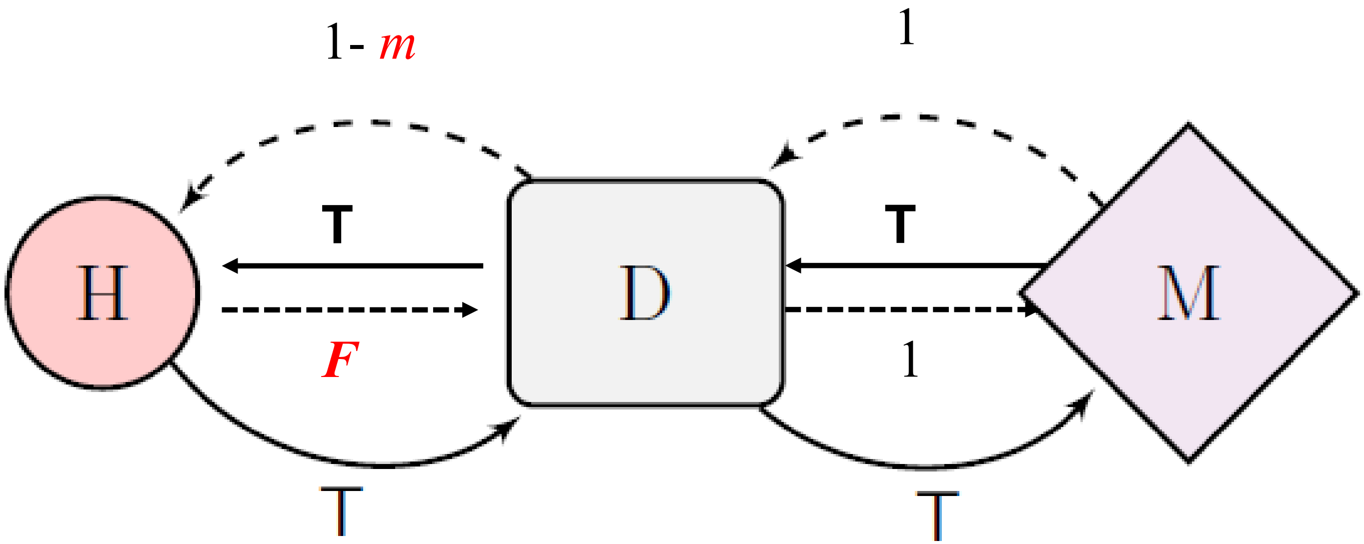
Summary

- A model of collateral runs
  - The dealer who lends cash to hedge funds engages in risky investments.
  - When the dealer's balance sheet deteriorates, hedge funds refuse to roll over repo contracts.
  - The authors characterizes conditions under which a unique threshold equilibrium exists.

Comments

- An interesting paper.
- It needs to be more reader-friendly.
- Comparison with a one-period model illustrates the paper’s strengths and weaknesses.

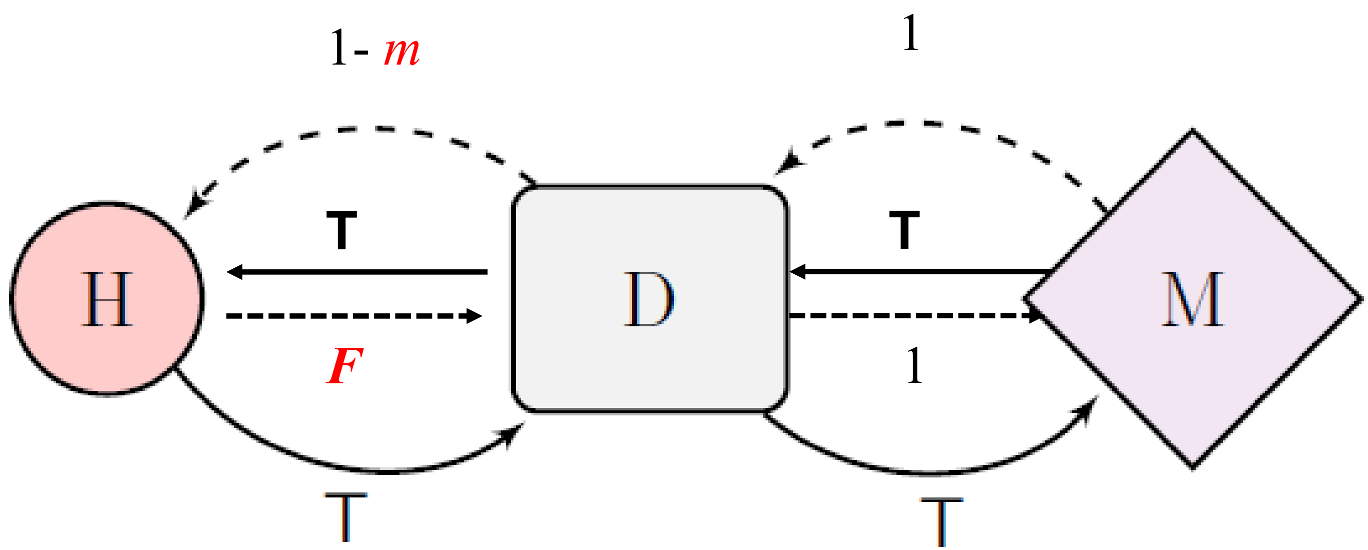
A One-period Model



Comments

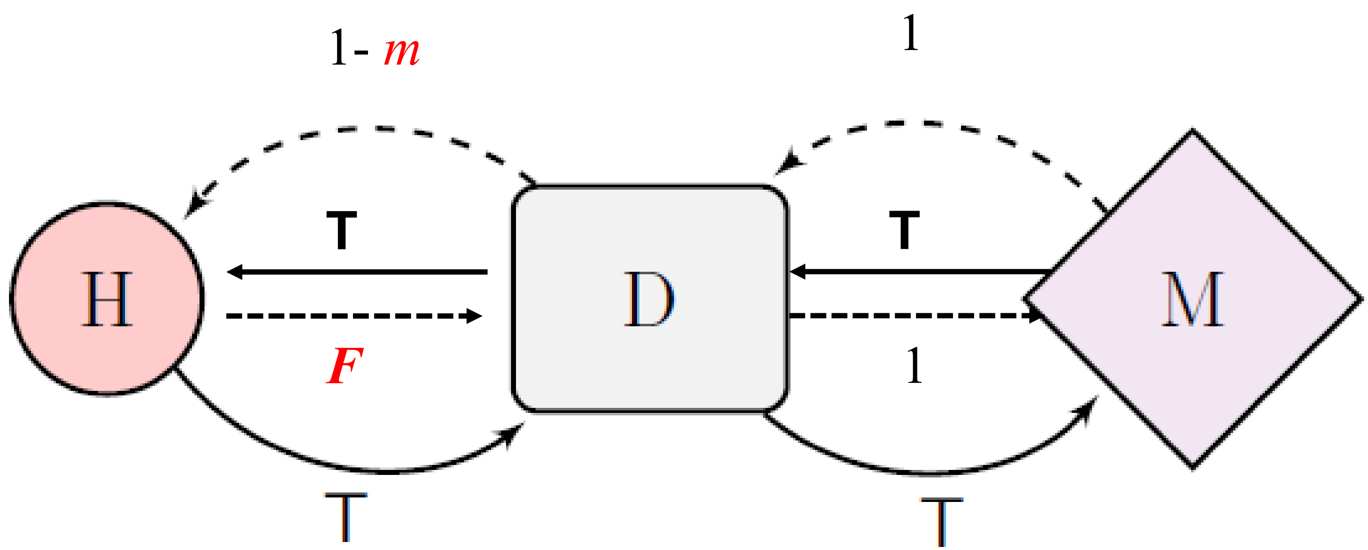
- By assuming that the money market fund is extremely risk averse, there is no spill-over effect.

A One-period Model



- F=(1- m) (1+r)>1- m: $F + m > 1$
- The dealer invests m in a risky asset
- The dealer's equity is $m\tilde{R} + F - 1$

A One-period Model



- If $m\tilde{R} + F - 1 < 0$, then the dealer is insolvent.
- It is assumed that M has seniority over H, then H suffers.

Comments

- Both m and F are endogenous.

- It is not obvious why:
  - $F < 1$
  - The dealer has to invest everything in the risky asset; if the dealer invests a fraction α of m in the risky asset, then the dealer's equity becomes $\alpha m\tilde{R} + (1 - \alpha)m + F - 1$

Comments

- The dealer is assumed to be risk-averse. If the dealer is sufficiently risk-averse, then the dealer is going to choose a very small α to make sure $(1-\alpha)m + F > 1$.

- Consider U'(0)= ∞.

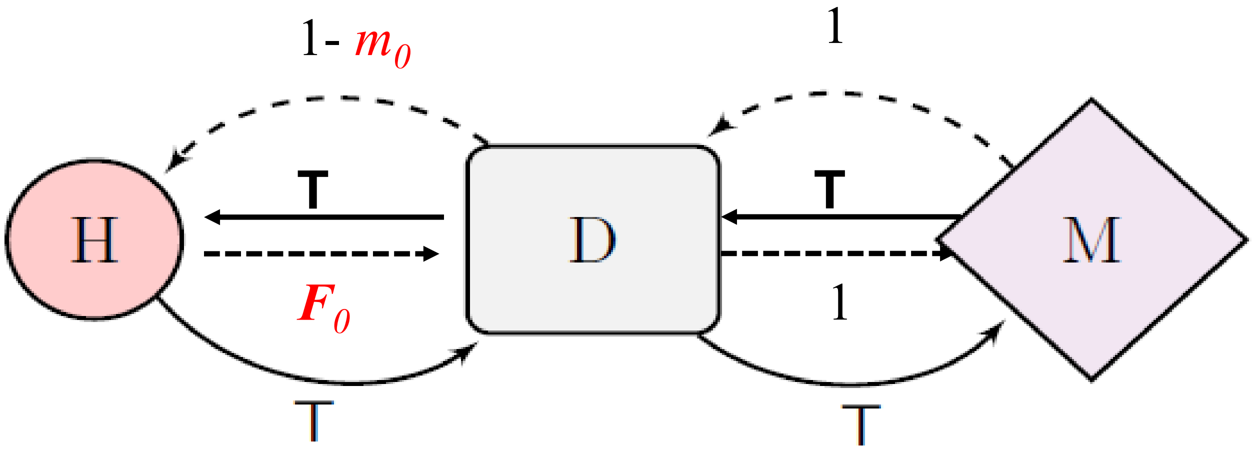
Comments

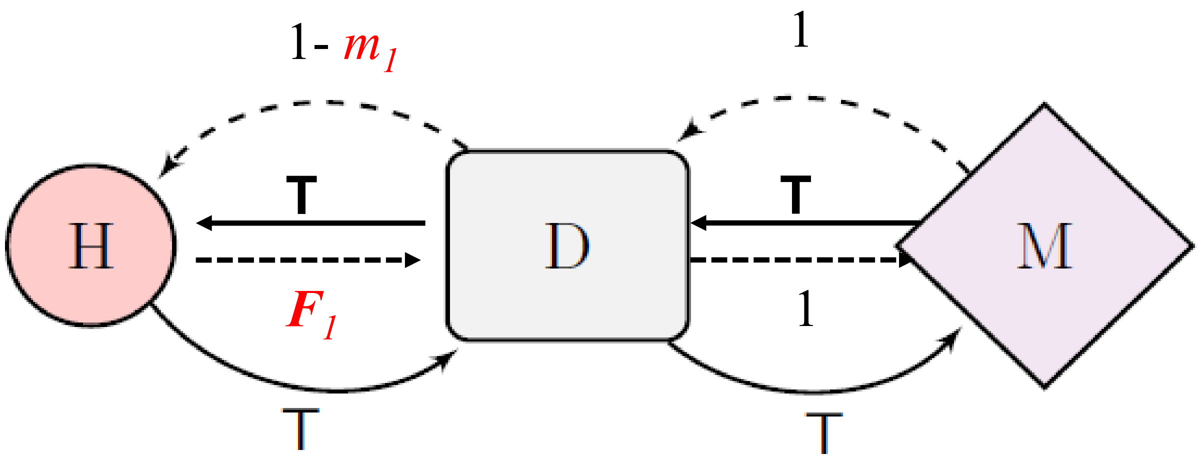
- In the good state, $R=R^U$, hedge funds get *T* back by paying *F*
- In the bad state, $R=R^D$, hedge funds lose *T*
- The authors assume that hedge funds receive a non-pecuniary value by owning *T*.
- How to interpret the non-pecuniary value ?

Equilibrium

- Equilibrium depends on the distribution of R.
- If the probability of R^U is high enough, then hedge funds want to borrow from the dealer.
- If the probability of R^U is low enough, then hedge funds refuse to borrow from the dealer.
- A typical borrower moral hazard problem.

A Two-period Model





Comments

- At the end of period 1, $\xi\lambda m_0\tilde{R} + (1-\mu)m_1 + F_0 - 1$
- At the end of period 2, (1-ξ)$m_0\tilde{R}$ + $\{\xi\lambda m_0\tilde{R}$ +

Hence, the dealer chooses $\{\Delta m_0, \Delta m_1, \Delta F_0, \Delta F_1, \theta^*\}$ to maximize (27)

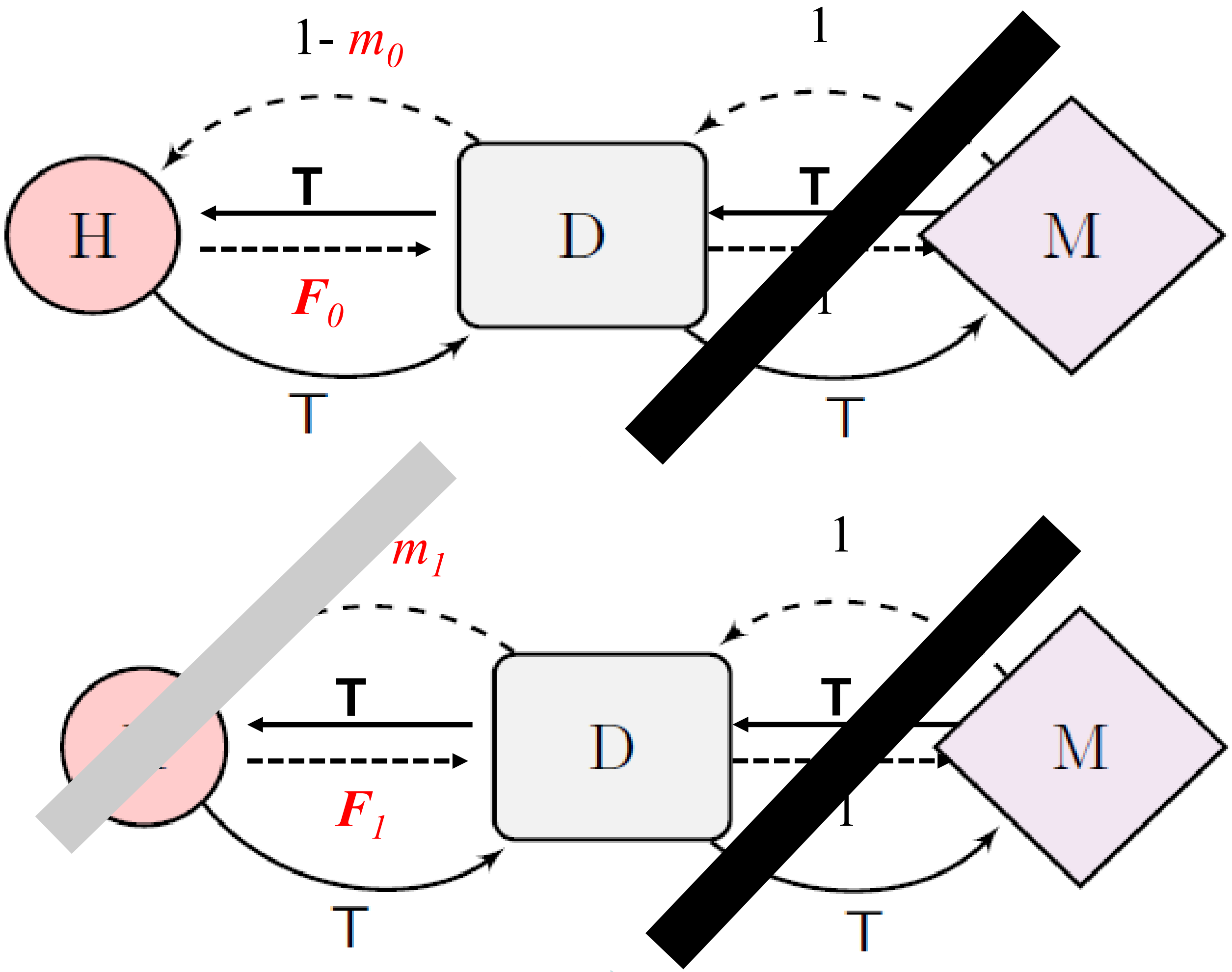
Comments

- Why not a long term repo?
- The second period's repo contract should be conditional on the outcome and the available information at the end of the first period.
- If the dealer and hedge funds can agree on m_1 and F_1, then it is a long-term contract that does not allow renegotiation, but gives borrowers the option to quit.

Comments

- Backward induction:
  - $m_1(m_0, F_0, \mathcal{F}(\tilde{R})), F_1(m_0, F_0, \mathcal{F}(\tilde{R}))$
  - m_0, F_0
- If (m_1, F_1) are unconditional, then the difference between a one-period model and a two-period model is insignificant.

A Two-period Model



Comments

Proposition 2. *For* $\lambda R^U > 2$, $R^D < \eta R^U/(\eta + R^U)$, *and dealer's risk-aversion not sufficiently low, there exist optimal contracting terms* $\Delta m_t(\theta^*)$ *and* $\Delta F_t(\theta^*)$ *under which hedge funds adopt a threshold strategy* θ^*.

Corollary 2. *For* $R^D = 0$, $\lambda R^U \in \left(2, \frac{4+8\sqrt{2}}{7}\right)$, *and risk neutral dealer, there exist optimal contracting terms*

$$\Delta m_0(\theta^*) = \frac{\theta^*(\eta-1)}{\eta g(\theta^*)\left(1-\ln\left(\frac{\lambda \overline{R}_\theta}{g(\theta)}\right)\right)}, \quad \Delta m_1(\theta^*) = g(\theta^*)\Delta m_0(\theta^*)$$

$$\Delta F_0(\theta^*) = -g(\theta^*)\Delta m_0(\theta^*), \qquad \Delta F_1(\theta^*) = 0$$

under which hedge funds adopt a threshold strategy θ^* *that solves,*

$$2\left(1-\theta^* - 3\theta^{*2} + \theta^*(1+\theta^*)\frac{\lambda \overline{R}_{\theta^*}}{g(\theta^*)}\right) = \ln\left(\frac{\lambda \overline{R}_{\theta^*}}{g(\theta^*)}\right)\left(1-\theta^* - 4\theta^{*2} + \theta^*(1+\theta^*)\frac{\lambda \overline{R}_{\theta^*}}{g(\theta^*)}\right)$$

with $\frac{\partial \theta^*}{\partial R^U} < 0$.

Conclusion

- A very good paper on a very important topic
- The dynamics could be enriched and refined to make the paper stronger