

Central counterparty and the design of collateral requirements

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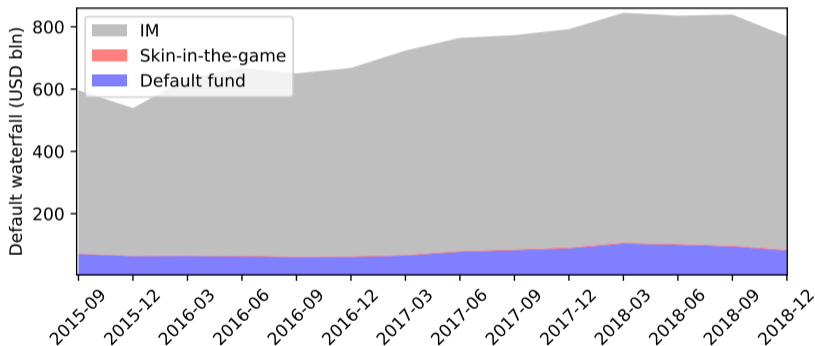
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Summary

- ▶ The paper studies the trade-off between risk-sharing and risk-shifting in central clearing collateral design
- ▶ Default fund (DF): mutualized resources
 - ▶ Good for risk-sharing, but encourage excessive risk-taking
- ▶ Initial margin (IM): polluter-pay principle
 - ▶ No risk-sharing, but curb risk-taking

DF vs IM

- ▶ The paper studies a unique/defining feature of CCPs: mutualization of losses
- ▶ How big are these two types of collateral?



- ▶ DF: <100 bln USD, IM: 600 bln USD

Model setup

- ▶ One CCP, N homogenous CDS dealers, and one unit mass of buyers
- ▶ The CDS contract promises to pay D w/ prob p_c
- ▶ The centrally-cleared contract has a price $1 + f$
- ▶ Each dealer can invest in a risky project or a safe one, getting return of R_a w/ prob q_a ($a = \{r, s\}$)
- ▶ The dealers pledge w/ the CCP initial margin I and default fund F , with per unit cost β

Key messages

- ▶ DF needs to be high enough to prevent risk-shifting, as DF is inefficient in aligning incentives
- ▶ “Cover x%” (instead of “cover 2”) is a more appropriate way to size DF
- ▶ Trade-off between IM and DF: *ex ante* cost vs *ex post* cost
 - ▶ If collateral cost is more expensive, only IM
 - ▶ If recapitalizing the CCP is more expensive, DF

Comment 1 - Heterogeneity across member size

- ▶ Two types of members: large and small
- ▶ When IM is large, one may still find symmetric equilibrium
- ▶ When IM is small, the default losses of large and small members are asymmetric
 - ▶ the default loss of the large members exhausts DF → recapitalization
 - ▶ the default loss of the small members can be covered by DF
- ▶ Asymmetric strategies
 - ▶ Small members take excessive risks, even when large members play safe
- ▶ Is it fair to cross-insure large and small members?
- ▶ Higher bar for CCP membership? But that leads to costly client clearing
- ▶ A trade-off between incentive compatibility and clearing coverage

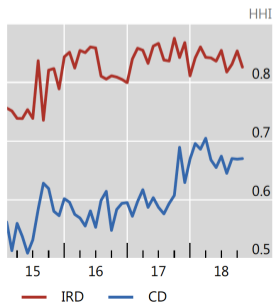
Comment 2 - Is “cover 2” so bad?

- ▶ Top 5 members in CDS (mainly ICE) contribute 60%
- ▶ Based on power law, top 2 members contribute more than 40%
- ▶ For stress testing in practice, “cover x%” needs to convert to “cover y”

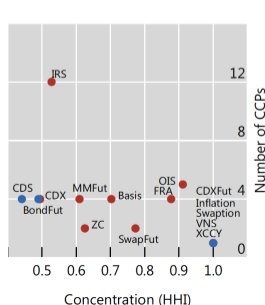
Central counterparties (CCPs) and clearing members are concentrated

Graph 2

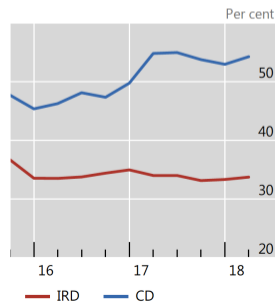
Concentration of CCPs in OTC derivatives markets¹



Concentration of CCPs in individual products²



Five largest clearing members' contribution to CCPs' prefunded resources³



Comment 2 - Asymmetry between risk contribution and DF contribution

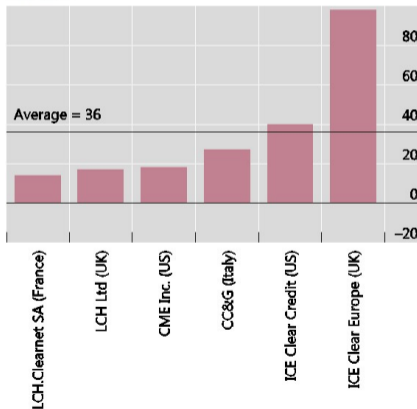
- ▶ More generally, when it comes to DF sizing, mismatch between traders' risk profile and their DF contribution is a big concern
- ▶ Traders with enormous intraday positions but flat end-of-day positions contribute little to the default waterfall, but expose a CCP to huge risks
- ▶ I see the contribution of the paper not on DF sizing
- ▶ I would motivate it from the fact that some CCPs only charge DF (e.g., DTCC), while others prefer IM (e.g., Nasdaq)

Comment 3 - what if a for-profit CCP

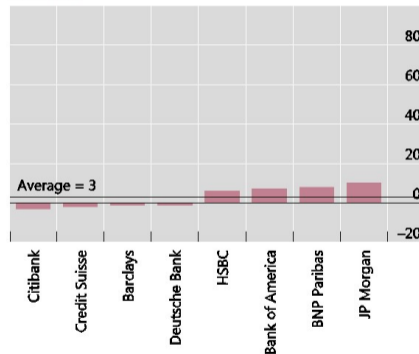
- ▶ CCPs have much higher return on equity (RoE) compared to banks

Profitability of CCPs and banks at end-2017

CCP ROE



Bank ROE

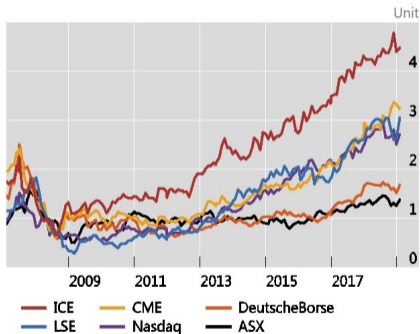


Comment 3 - what if a for-profit CCP

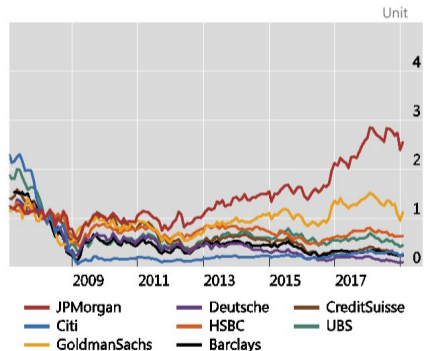
- ▶ CCPs have much higher stock prices compared to banks

Stock price (Jan 2007 as benchmark)

CCP



Bank



Minor comments

- ▶ How does the balance sheet of the dealers looks like? They borrow $I + F$ from outside investors?
- ▶ Should the dealers invest $1 + f$ or should it invest the rest of their balance sheet?
- ▶ Parameters in Figure 2: $q_r = 0.1, q_s = 0.05, R_r = 3, R_s = 2.9$ and $p_c = 1??$
- ▶ Assumption 3 requires α is not too large compared to β , i.e., $\alpha p_c \leq \beta$. Too strong? It seems not hold in Figure 2 where $\beta = 0.1, \alpha = 0.11??$
($\mathbb{P}^r(\mathcal{N}_d > 2) = 1?$)

Conclusion

- ▶ This is a nicely written paper on risk mutualization in central Clearing
- ▶ The model implies DF is desirable when recapitalizing CCP is expensive
- ▶ The flexible setup should allow more analysis on the heterogeneity across members