

# **COLLATERAL AND MARGINS: DISCUSSION**

**E.C.B.-Chicago Fed Conference  
“Issues related to C.C.P. clearing”**

**Frankfurt, April 3-4, 2006**

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# INTRODUCTION (1)

Risk management policy of the Securities Clearing and Settlement industry (and not only of Central Counterparties) is of crucial importance:

- Determines ability of financial system to resist large variations in asset prices (**systematic shocks**) and to avoid contagion when a large participant fails (**systemic shocks**)
- Determines the **confidence of investors** in the financial system
- But also determines the **efficiency of trading system**: costs to participants (collateral, margins, regulations,...) trading behaviours, liquidity, price discovery

# INTRODUCTION (2)

Three papers : useful contributions for improving Risk Management (RM) in the Securities Clearing and Settlement industry

- **1st paper (Wendt):** presentation of the different RM tools and their costs and benefits, with a particular emphasis on intraday margins
- **2nd paper ( Garcia and Gençay):** shows how Extreme Value Theory (EVT) can be used to improve evaluation of collateral losses due to systematic shocks
- **3rd paper (Cotter and Dowd):** proposes a new class of risk measures (Extreme Spectral Risk Measures or ESRM) to guide setting of margin requirements by CCPs


# “Intraday Margining of C.C.P.s” (Wendt)

Very clear presentation of recent changes in Risk Management (RM)  
methods used by CCPs

- CCPs now used not only for derivatives but also for cash markets (anonymity of electronic order books requires anonymity of settlements)
- Intraday margins are more and more introduced as a complement to traditional (overnight) clearing margins: increased concern for safety
- 3 types of intraday margins:
  - routine**: margin call twice a day instead of once
  - price driven**: conditional on price change, uniform
  - position driven**: conditional on position size

# Intraday Margining of C.C.P.s (Wendt)(2)

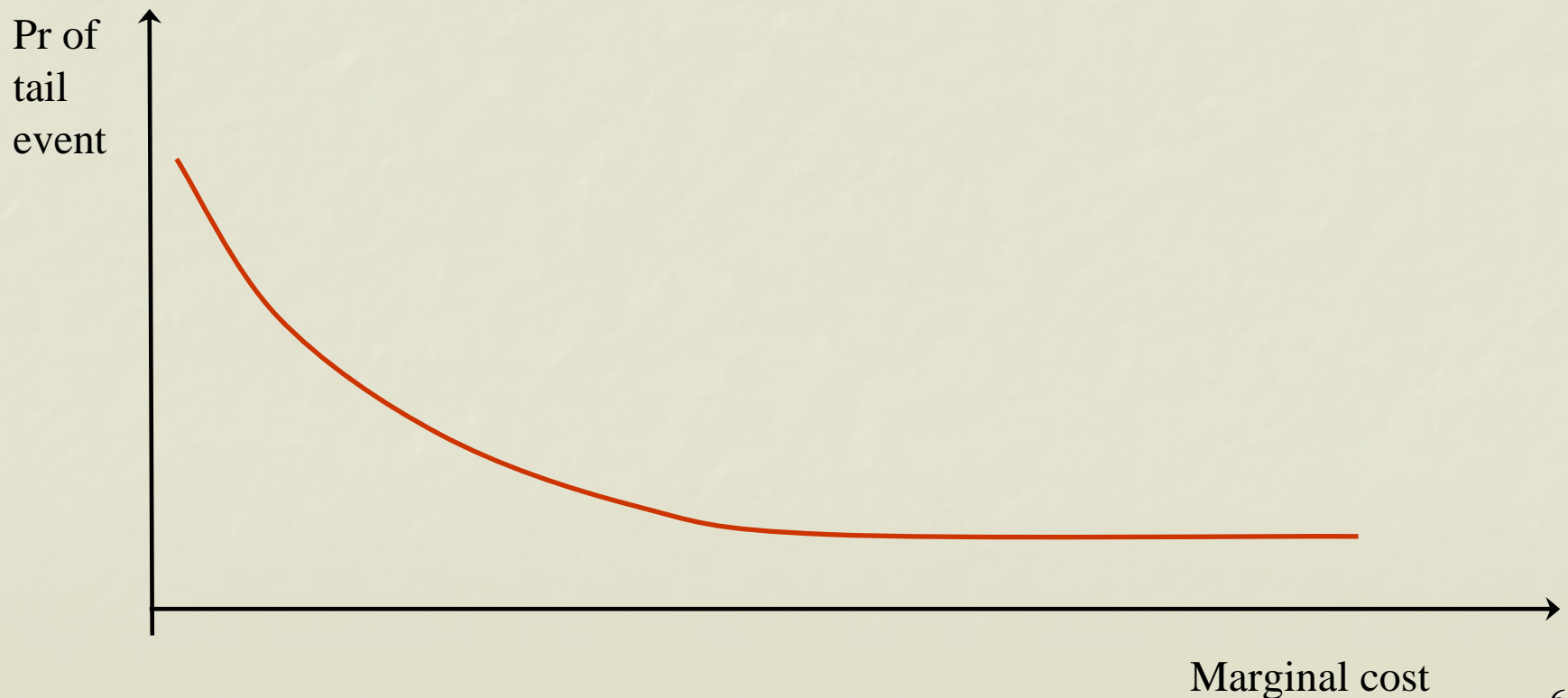
Paper examines the costs and benefits of these new requirements:

- **Risk reduction** (Fenn and Kupiec 1994) : daily price changes exceed margin requirements less often  less exposure for C.C.P.
- **Less moral hazard** (defaulter pays more)
- **Cost for C.C.P.:** operating procedures, human resources
- **Cost for clearing members** (collateral)



# “Valuation of Collateral in SSSs for extreme market events”( Garcia and Gencay)

Paper combines statistical methods (Extreme Value Theory) and risk measures (Value at Risk and Expected Shortfall) to evaluate “haircuts” in collateral valuation for margin requirements:  
Risk-cost trade-off represented in a “user friendly way”



# “Valuation of Collateral in SSSs for extreme market events”( Garcia and Gencay) (2)

Cost of risk can be measured in different ways:

- Value at Risk (VaR): amount of capital needed to cover losses with a certain probability
- Expected Shortfall (ES): average loss given that VaR has been exceeded
- Abstract risk measures, defined axiomatically

Several estimation methods are possible:

- Normal specification: simple but not very accurate
- Extreme value theory: well adapted to systemic risk events
- Historical simulations: non parametric but needs a lot of data

# **“Valuation of Collateral in SSSs for extreme market events”( Garcia and Gencay) (3)**

Method is used on two different sets of data:

- Data simulated from a Student-t distribution
- Real data on Air Canada stock

Results are remarkably similar:

- Normal distribution not very accurate (except for thresholds between 1% and 3%)
- EVT gives good results, both for VaR and ES



# **“Extreme Spectral Risk Measures: an Application fo Futures Clearinghouse Margin Requirements” ( Cotter and Dowd) (1)**

Paper also uses Extreme Value Theory but focuses on the choice of a Risk Measure:

- VaR
- Expected Shortfall
- Extreme Spectral Risk Measure

Data are real data (1991-2003) :

- S&P500
- FTSE100
- DAX
- Hang Seng
- Nikei 225 futures

# “Extreme Spectral Risk Measures: an Application to Futures Clearinghouse Margin Requirements” (Cotter and Dowd) (2)

## RESULTS:

- All risk measures lead to similar estimations
- S&P500 and FTSE100 are the least risky, while Hang Seng is the most risky
- Long and short positions have similar risks
- VaR measures are insufficient (no indication of expected losses)
- ES measures are better (sub-additive: no incentive for investors to break down their positions) but give same weight to all losses
- ESRM are better because allow to incorporate risk tolerance of clearing house (corporate policy)

# My comments(1)

All three papers are useful and complementary, but

## **Should discuss also costs and benefits to the trading members**

- Margin requirements passed on by clearing members
- Presumably increases transaction costs (bid-ask spreads)
- Changes trading behavior and thus markets liquidity

## **More importantly: lack of a clear conceptual framework**

- **What are we trying to do?**
- **How should we combine different RM tools (margins, clearing funds, capital)?**
- **How to trade-off risks and costs?**

## My comments(2)

Extreme Spectral Risk Measures (Cotter and Dowd) is an interesting concept, because takes into account risk tolerance of the Clearing House: large losses are given more weight. It is also flexible (risk tolerance index: corporate decision) but

**Risk Measures are still too abstract and somewhat arbitrary:**

Risk Tolerance should be related to the cost of capital, both for Clearinghouse and for Clearing and Trading members (general equilibrium effect)

## My comments(3)

### Should distinguish systemic and systematic risks:

- **Systemic event:** large participant fails but others are in good shape  
instrument= position driven margin  
failure not necessarily driven by extreme event
- **Systematic event:** large variation in asset prices that hurts simultaneously all participants (including Clearinghouse)  
Instrument= price driven margin  
Extreme Value Theory useful

**Finally, one should not overlook that risk management is costly!**