Discussion of “Structural and Reduced-form Approaches to Calculating CVA for Portfolios of CDSs” by Alexander Lipton
Bank of America Merrill Lynch

Discussant: Semyon Malamud, EPF Lausanne and SFI
Modeling Defaults

- Reduced form models: model directly (joint) default intensities of all counter-parties
- Structural models: counter-party defaults when assets fall below a certain (time-varying) level
- Major conclusions from Lipton’s work: counterparty risk and simultaneous jumps are crucial for replicating observed empirical properties
Structural Models

- Merton (1974): GBM firm value
- Numerous extensions to more complicated processes and debt contracts
- Very hard to generate the observed high short term CDS spreads
- Main ideas: make default barriers curvilinear or incorporate jumps
- Multi-dimensional extensions
First Paper: Credit Value Adjustment in the Extended Structural Default Model

- Multi-dimensional structural model *with counter-party risk*
- Use the Marshall-Olkin idea to allow for simultaneous defaults of any subset of counter-parties: for every subset $A$ there is a Poisson process $N_t^\pi$. This is a common jump component for all counter-parties in the set $\pi$
- Non-local partial integro-differential equations (PIDE) need to be solved
- time varying (but deterministic) volatilities and correlations of firm values allow to fit both the CDS spreads and the CDS option volatilities implied by the market
- the model can be fitted to an arbitrary term structure of CDS spreads and market prices of CDS and equity options
Second paper: Credit Default Swaps With and Without Counterparty and Collateral Adjustments

- Reduced form model
- need for Credit Value Adjustment (CVA) as CDS deals are never fully collateralised
- simultaneous jumps describing the dynamics of credit spreads of buyer, seller and reference
- single common factor $X_t$ so that the default intensity of entity $i$ is $X_i = \alpha_i(t) + \beta_i X_t$
- $\alpha_i(t)$ is the deterministic, calibrated from initial term structure calibration
- a jump component in $X_t$ is necessary to replicate the observed behavior: otherwise insufficient default correlation
- in the absence of jumps, closed form solution is possible
- with jumps, analytical approximations are possible for small values of the jump intensity (perturbation expansions)
Illiquidity

- CDS are OTC deals
- Resale option? (Scheinkman and Xiong (JPE 2003))
- Illiquidity discounts and response to big illiquidity shocks? (Duffie, Garleanu and Pedersen (Econometrica 2005, RFS 2008))
- Bargaining and Market Power?
Credit Contagion

- Giesecke and Weber (JEDC 2006)
- Jorion and Zhang (JFE 2007)
- Egloff, Leippold and Vanini (JBF 2007)
- cross-holdings
Asymmetric Information and Moral Hazard

- Signaling the loan quality (Duffie and Demarzo (Econometrica 1999))
- The empty creditor problem (Bolton and Oehmke (2009))
- Lender’s screening effort and moral hazard (Hartman-Glaser, Piskorski and Tchistyi (2009))
- Performance-Sensitive CDS spreads? (Manso, Strulovici and Tchistyi (RFS 2010))