Figure 2: Nonparametric Estimation Results for CDXIG [8]

The black line is the function estimated from the CDXIG spreads, the blue lines are the [10%, 90%] Monte Carlo confidence bands simulated 1,000 times from equation (1) and the magenta line is the Monte Carlo median. The bottom right panel also contains an additional red line which is the total conditional variance or the second moment M_2; it is always higher than the diffusion coefficient line. The panels only report estimates for $S_t = [30.44, 286.86]$, which cover the [0.5%, 99.5%] quantiles of the spreads.
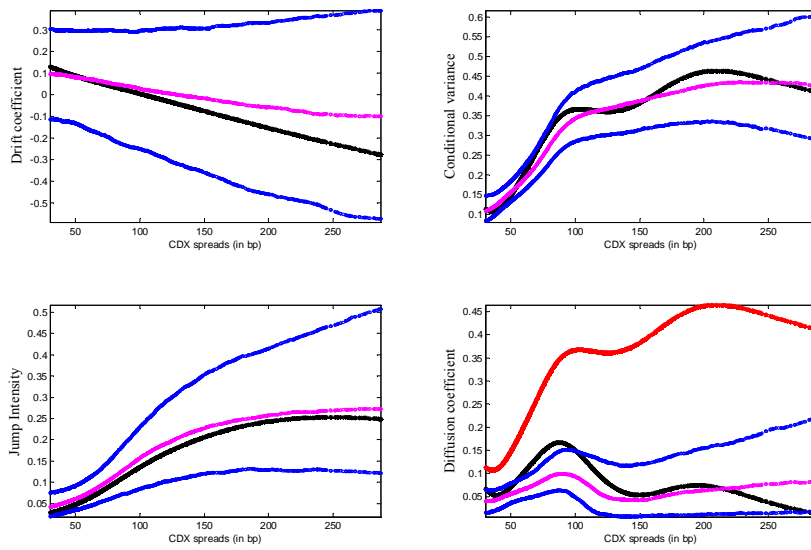

Figure 3: Nonparametric Estimation Results for CDXHY

The black line is the function estimated from the CDXHY spreads, the blue lines are the [10%, 90%] Monte Carlo confidence bands simulated 1,000 times from equation (1) and the magenta line is the Monte Carlo median. The bottom right panel also contains an additional red line which is the total conditional variance or the second moment M_2; it is always higher than the diffusion coefficient line. The panels only report estimates for $S_t = [165.04, 1651.90]$, which cover the [0.5%, 99.5%] quantiles of the spreads.

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[8] Color graphics are available at: http://www.revuedufinancier.fr : "Complements"
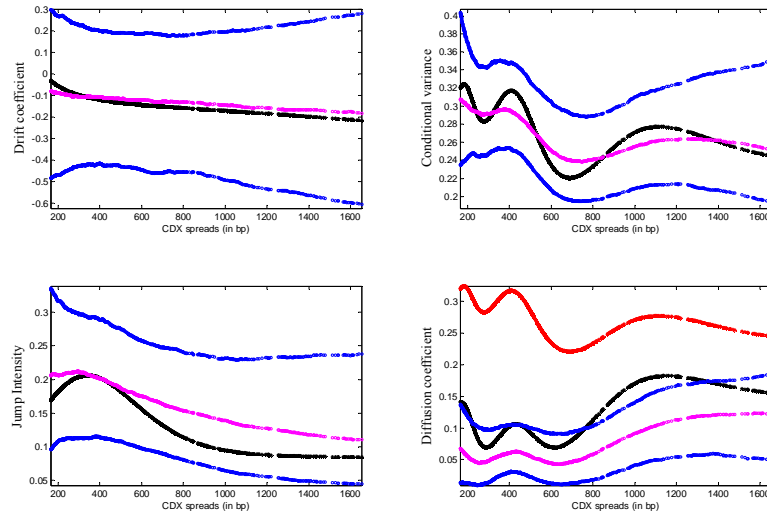
The upper-left panels of both figures show the drift coefficient estimates. Notice that the estimated drift is fairly linear for both CDX spreads. The wide confidence intervals observed in the panels, however, are unsurprising; Bandi and Phillips (2003) show that consistent estimation of the drift requires a long time span and a high sampling frequency. Although we use daily spreads, which are sufficiently high in terms of sampling frequency, our sample period of around 8 (5) years for the CDXIG (CDXHY) is not sufficiently long to estimate the drift with any high degree of precision.

The upper-right panels of both figures show the total conditional variance estimates or the second moment given by equation (4). Interestingly, the conditional variance estimates of the CDXIG spreads increase as the credit spreads increase, but the reverse trend is true for the CDXHY spreads.

The lower-left panels of both figures reveal the jump intensity estimates. The jump intensity estimates for CDXIG are below 15% p.a. or equivalently, CDXIG spreads tend to jump once every seven business days during tranquil periods. However, during the subprime credit crisis when the CDXIG spreads fluctuate between 80 bps and 300 bps, the jump intensity estimates vary between 15% p.a. and 25% p.a. In sharp contrast, CDXHY spreads tend to jump more frequently during tranquil periods with   estimated between 17% p.a. and 21% p.a., but they exhibit less jumps with $\hat{\lambda}(S_t) \in [10\%, 17\%]$ during the subprime crisis period when the CDXHY spreads increases from 400 bps to 1600 bps.

The lower-right panels of both figures 2 and 3 show the diffusion coefficient estimates $\sigma^2(S_t)$ (black solid line) and also the total conditional variance estimates $\sigma^2(S_t) + \lambda(S_t) \, \delta^2_z$ (red solid line).[9] The ratio $- \sigma^2(S_t)/[\sigma^2(S_t) + \lambda(S_t) \, \delta^2_z]$ – gives the proportion of variance generated by the diffusion component $\sigma^2(S_t)$. For the CDXIG, the ratio implies that $\sigma^2(S_t)$ explains about half the volatility at low spreads and only 10%-20% at high spreads. In sharp contrast, the ratio implies that $\sigma^2(S_t)$ explains between 25% and 35% at low CDXHY spreads, and between 35% and 65% at high CDXHY spreads. Hence, jump components dominate the conditional volatility of CDXIG (CDXHY) spreads during the subprime crisis periods (tranquil periods).

Overall the results in figures 2 and 3 suggest that CDXIG and CDXHY spreads exhibit different behaviour during periods of tranquil markets and markets in crisis. In more extreme bad times,

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[9] Interestingly, the point estimates for δ^2_z (jump size variance) for CDXIG and CDXHY spreads are 0.0063 and 0.0042, respectively.