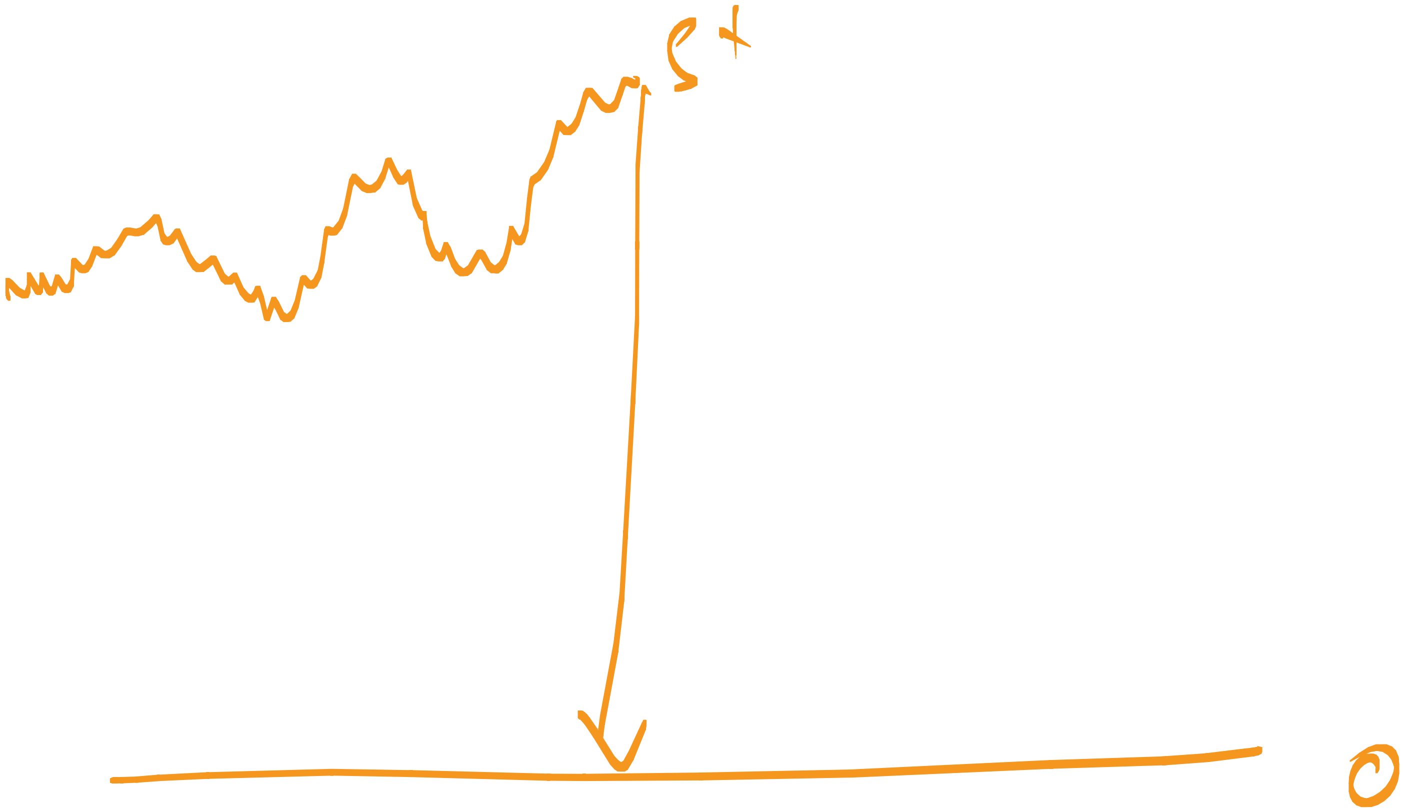
S_t
0

Poisson Process of intensity λ

λdt - is the probability that the company will default on an infinitesimal interval of time, conditional to the fact that it has not defaulted before

- Risk-Free Rates
- Stock (volatility)
- Credit of the company issuing the CB
- FX

Deterministic

Stochastic

When default occurs

1) S goes to 0, we will call S^* the value of S before default

2) The CB goes to recovery

V_{rec}

NEXT GENERATION MODELS FOR CONVERTIBLE BONDS WITH CREDIT RISK

BY E. AYACHE, P.A. FORSYTH, K.R. VETZAL

WILMOTT MAGAZINE

$$\Pi = V + \Delta S \qquad \Delta = -\frac{\partial V}{\partial S}$$

Case 1) with probability $1 - \lambda dt$

$$\delta \Pi = r \Pi dt$$

Case 2) with probability λdt

$$\delta \Pi = (V_{rec} - V^{+}) + \Delta (0 - S^{+})$$

$$E(\delta) = r \Pi dt + \lambda dt \left[V_{rec} - V^{+} - \Delta S \right]$$

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$$\frac{\partial V}{\partial t} + \frac{1}{2}\sigma^2 S^2 \frac{\partial^2 V}{\partial S^2} + (r+\lambda) S \frac{\partial V}{\partial S} =$$

$$= rV + \lambda\left(V - V_{rec}\right)$$