





and where  $W_t$  is the standard Brownian motion. The constants





where  $\mu$  is the diagonal matrix from subsection 2.1 and the Bernstein functions  $\mu_{\pm}$  are given by

$$\mu_{\pm}(x) = \mu^2$$

elements  $L^V(\cdot, \cdot)$ , for all  $\cdot, \cdot \in V$  so that the continuous-time diffusion





Armed with this intuition about the risk neutral dynamics of the underlying we can proceed to the calibration. The following table specifies the values of the model parameters that have been found to work best for EUR-USD.

The prevailing FX rate for USD-JPY, when the market data was taken, was equal to 110.415. Each of the five regimes is centred around a level  $F$ . Since the jumps are required to sustain the skew for short maturities, we only need non-zero values for jump-intensities  $\lambda^-$  and  $\lambda^+$  for the regimes with centres  $F$  close to above exchange rate.

#### 4.3. GBP-USD.

### References

- Bakshi, G., C. Cao & Z. Chen (1997), 'Empirical performance of alternative option pricing models', *Journal of finance* **52**, 2003–2049.
- Bates, D. (1996



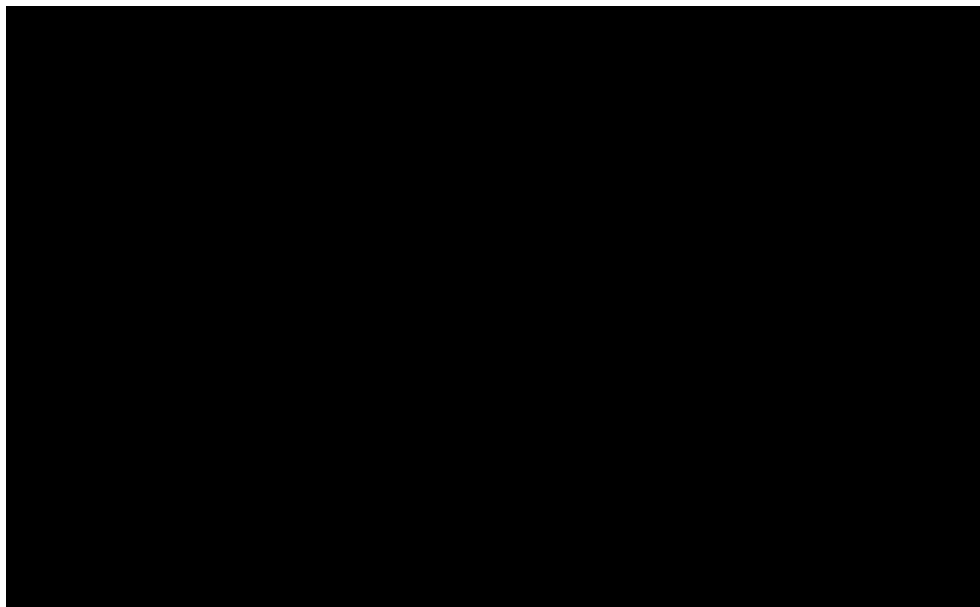


Figure 4. EUR-USD probability distribution function under the forward measure.

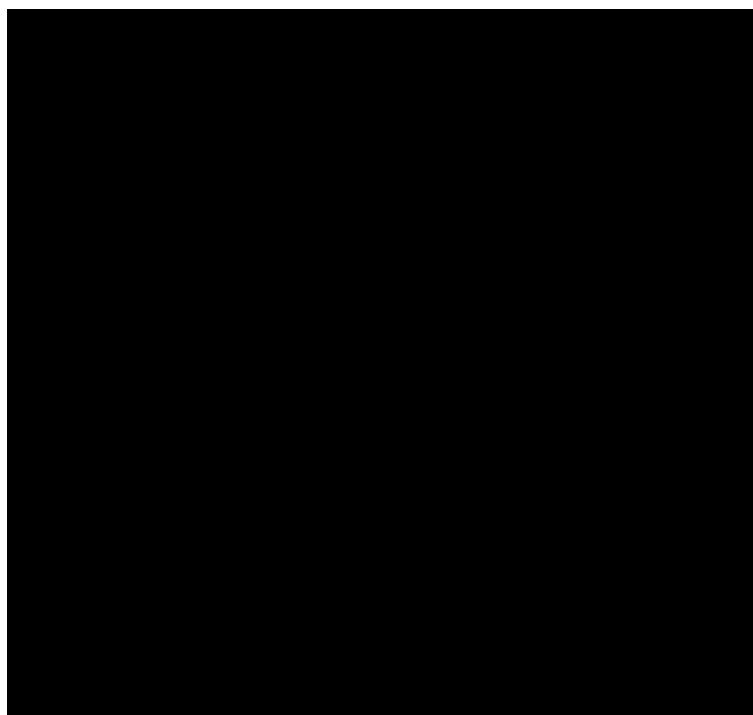


Figure 5. Deterministic time change  $f(t)$

