The price of an option with log normal underlying is given by

call = S exp((b - r) T) N(d\_1) – K exp(-r T) N(d\_2), put = K exp(r T) N(-d\_2) – S exp((b - r) T) N(-d\_1)

S = underlying price, K = strike, r = risk free, b = cost of carry, T = maturity, N(.) is the normal density function,

d\_1 = (ln(S/K) + (b + 0.5 v^2)T) / (v (T)^ 0.5), d\_2 = d\_1 - v (T)^0.5, ln(.) natural log and v^2 = variance

b = r gives Black-Scholes stock option model

b = r - q gives Merton stock option model with continuous dividend yield q

b = 0 gives Black(76) future option model

b =r =0 gives Asay(82) margined future option model

b = r - r\_f gives Garman-Kohlhagen FX option model, with foreign risk-free rate r\_f .

Hopefully this make it clearer what the differences are at least in the long normal case.