Contact information:
Thijs van den Berg
Managing Director - SITMO

web: www.sitmo.com
email: thijs@sitmo.com
phone: +31 6 24110061

Click here to check for updates of this document **http://sitmo.com/eq/205.pdf**

Double Barrier option

created by **Thijs van den Berg**

$$
\begin{aligned}
\text{In Call} &= \max(S_T - K, 0) && \text{if } \min_{0\le t\le T}(S_t) \le L \\
& && \text{or } \max_{0\le t\le T}(S_t) \ge U \\
\text{In Put} &= \max(K - S_T, 0) && \text{if } \min_{0\le t\le T}(S_t) \le L \\
& && \text{or } \max_{0\le t\le T}(S_t) \ge U \\
\text{Out Call} &= \max(S_T - K, 0) && \text{if } \min_{0\le t\le T}(S_t) > L \\
& && \text{and } \max_{0\le t\le T}(S_t) < U \\
\text{Out Put} &= \max(K - S_T, 0) && \text{if } \min_{0\le t\le T}(S_t) > L \\
& && \text{and } \max_{0\le t\le T}(S_t) < U
\end{aligned}
$$

Double barrier options are vanilla call and put options that are either activated or canceled based on the underlying reaching either a lower or upper barrier.

===types of double barrier options===
There are two features that specify the type of barrier option:
* "In / Out". The option can either be activated (in) or canceled (out) as a consequence of hitting one of the barriers.
* "Call / Put". The two type of vanilla options

These two features result in a total of 4 different types of double barrier options. E.g. a in-call is a call which is activated when the underlying moves down or up and hits a barrier.

Symbol list:

InCall	Value of the double barrier in call option at expiration
InPut	Value of the double barrier in put option at expiration
OutCall	Value of the double barrier out call option at expiration
OutPut	Value of the double barrier out put option at expiration
S_T	Value of the underlying asset at expiration
K	Strike (excersise) price
L	Lower barrier
U	Upper barrier