1. What this means is if you are buying the stock you pay the ask price $(+\epsilon)$ (the higher price) and if you are selling the stock you receive the bid price $(-\epsilon)$ (the lower price).

   Define r is the risk-free rate. Therefore $\xi > r$ and $r > \theta$, money is being borrowed a higher rate, then, $\xi > \theta$

   Let F_0 = Actual futures price and F* = Theoretical futures price. We will show that the upper and lower bound for this contract is:

$$\left(S_0 - \frac{\epsilon}{2}\right) e^{\theta T} \leq F \leq \left(S_0 + \frac{\epsilon}{2}\right) e^{\xi, T} \tag{1}$$

case 1: $F_0 > F^*$

	Cashflow $(t = 0)$	Cashflow $(t = T)$
Sell Futures Contract	0	$F_0 - \widetilde{S_T}$
Borrow spot at lending rate	$S_0 = F_0 e^{-\xi T}$	F_0
Buy underlying asset at spot	$-\left(S_0 + \frac{\epsilon}{2}\right)$	$\widetilde{S_T}$
Net Cash Flow	$F_0 e^{-\xi T} - \left(S_0 + \frac{\epsilon}{2}\right)$	0

Arbitrage exists when $F_0 > \left(S_0 + \frac{\epsilon}{2}\right) e^{\xi T}$. The net cash flow is always positive, so can buy the asset and short the futures and always be making money. $F_0 - \left(S_0 + \frac{\epsilon}{2}\right) e^{\xi T} > 0$.

case 2: $F_0 < F^*$

	Cashflow $(t = 0)$	Cashflow $(t = T)$
Buy Futures Contract	0	$\widetilde{S_T} - F_0$
Lend spot at lending rate	$-F_0 e^{-\theta T}$	F_0
Sell underlying asset at spot	$S_0 - \frac{\epsilon}{2}$	$\widetilde{S_T}$
Net Cash Flow	$\left(S_0 - \frac{\epsilon}{2}\right) - F_0 e^{-\theta T}$	0

Arbitrage exists when $F_0 < \left(S_0 - \frac{\epsilon}{2}\right) e^{\theta T}$. The net cash flow is always positive. $\left(S_0 - \frac{\epsilon}{2}\right) e^{\theta T} - F_0 > 0$, so shorting the asset and long position the futures.