Tailed Spread Profit Function

From the 'general intra-commodity profit function' (**short N, Long T**):

$$\pi(1) = Q_N\,[F(0,N) - F(1,N)] + Q_T\,[F(1,T) - F(0,T)]$$

Dollar Equivalence (not Quantity equivalent as with the 1-1 spread) requires:

$$Q_N\,F(0,N) = Q_T\,F(0,T) \qquad \rightarrow \qquad Q_N = Q_T\,\frac{F(0,T)}{F(0,N)}$$

Letting $Q_T = 1$ and observing from the cash-and-carry arbitrage condition that

$$F(0,T) = (1 + ic(0,T-N))\,F(0,N) \equiv (1 + ic(0))\,F(0,N)$$

Substituting this result into the 'general intra-commodity profit function' (**short N, Long T**):

$$\pi(1) = (1 + ic(0))(F(0,N) - F(1,N)) + (F(1,N)(1 + ic(1)) - F(0,N)(1 + ic(0)))$$

Canceling gives:

$$\pi(1) = F(1,N)(1 + ic(1)) - F(1,N)(1 + ic(0)) = F(1,N)\,\Delta\,ic$$

Examine CME futures prices for gold, copper, oil, etc. to understand correct interpretation for *ic*.