# Lecture 4

- Second Round of Speculative Trades
- Review of Covered Interest Arbitrage Discussion from Lecture 3
- Bid/Offer for Eurodollars; Explanation for WSJ Money Market Quotes

Jump to first page

# Theoretical Background for Second Round of Speculative Trades

- ***One-to-One Futures Spreads***

Key Readings:

RSD, p.177-181

Poitras, "Turtles, Tails and Stereos" (copy for download on class webpage)

# *One-to-One Futures Spreads*

- The Basic Profit Function

$B/Q \quad = \{F(0,N) - F(1,N)\} + \{F(1,T) - F(0,T)\}$

- $\quad = \{F(1,T) - F(1,N)\} - \{F(0,T) - F(0,N)\}$

*Key Point: This result is for*

*SHORT the NEARBY, LONG the DEFERRED*

# The Futures Basis

- Defining the Implied Carry *ic(t,N,T)* -- net cost of carry the commodity from N to T

$$F(t,T) \,/\, F(t,N)\ \{1 + ic(t,N,T)\}$$

- The *ic* is defined by the futures basis.
- The *ic* differs from commodity to commodity and is analyzed using the cash and carry arbitrage for the commodity

Jump to first page

# Examples of the *ic*

- Gold, Silver -- the *ic* is interest charges
- Tbonds -- *ic* is interest carrying charges minus bond coupon income
- Currencies -- the *ic* is $(r - r^*) / (1 + r^*)$
- Reading: for a discussion of the general factors that can impact the *ic* see RSD, p.220-3.

# Relevant Midterm Questions

- **2. a) Derive the profit profile for a spread trade with equal position sizes.**

To derive the profit profile, substitute the futures basis into the Basic Profit Function and solve to get:

$$B/Q = ic(0)\ )\ F(N) + F(1,N)\ )\ ic$$

where *)* X = X(t) - X(t-1)

# More On the Midterm Question

- **What factors determine the profitability of this trade?**

- Observe that the profit function now depends on two variables -- the change in the level of futures prices *) F(N)* and the change the implied carry *) ic*

Jump to first page

# Why does ) *F* appear?

- Dollar Equivalence vs. Quantity Equivalence
- One-to-one spread has quantity equivalence
- When prices for different delivery dates are not approximately equal then the trade will have *unequal dollar value* on the two legs of the spread
- Important extension to hedging strategies, e.g., Metallgesellschaft (RSD, p.58-60)

# Second Round Trades for Game

- 50  one-to-one currency spreads (BP)

Source of profit depends on change in difference between *r* and *r**

- See RSD, p.284 for derivation of profit function

# Second Round Trades for Game

- 50  one-to-one interest rate spreads (Euro$)

Source of profit depends on change in yield curve shape

See RSD, p.279-81 for discussion of cash and carry arbitrages for money market securities

Jump to first page

# Important Feature of Eurodollars

- Discussion in RSD, p.280
- Consider the cash and carry arbitrage for Eurodollars: the deliverable security is a 3 month Eurodollar and the financing rate is also a Eurodollar rate --
- The implication is that the Eurodollar futures rate equals the implied forward rate in the cash market