# 2. Futures and Forward Markets

## 2.1. Institutions

# What is a Futures?

A futures contract is an agreement

- to buy or sell an asset
- *at a certain time in the future*
- for a certain price (i.e., the delivery price)

As opposed to a spot contract, which is an agreement

- to buy or sell an asset
- *immediately*
- for a certain price (i.e., the spot price)

## The Long and Short of It

The party that has agreed to *buy* has a *long* position.

The party that has agreed to *sell* has a *short* position.

# Examples of Futures Contracts

An agreement

- to buy Ł62,500
- in September
- for \$89,137.50 (= Ł62,500 × \$1.4262 per Ł)

An agreement

- to sell 25,000 pounds of copper
- in August
- for \$20,187.50 (=25,000 pounds × 80.75 cents per pound)

# Newspaper Quotes

- Asset, Exchange, Contract Size, Price Unit, Delivery Date

- Prices: Open, High, Low, Settle, Change, Lifetime High, Lifetime Low

- Open Interest, Volume

# Definitions

*Settlement price:* average of prices at which the contract traded immediately before the close

*Open interest:* total number of contracts outstanding (= number of long positions = number of short positions)

*Trading volume:* number of trades

# Differences between Futures and Forwards

A futures contract is:

- Exchange traded (not customized)
- Settled daily (no credit risk)
- Deliverable within a range of dates
- Typically closed out prior to delivery

As opposed to a forward contract, that is:

- Traded OTC (customized)
- Settled at delivery (credit risk)
- Deliverable on a specific day
- Typically delivered

# Futures Price versus Forward Price

The futures price for a contract is typically very close to the forward price for the same contract.

The pricing difference may be due to the marking to market of the futures contract. Further reading: Cox, Ingersoll, and Ross *Journal of Financial Economics* 1989.

# Marking to Market

- *Margin requirement:* initial funds deposited with the broker to trade futures contracts
- *Maintenance margin:* minimum account balance tolerated
- *Margin call:* call, when margin balance $<$ maintenance margin, to put up the variation margin or liquidate
- *Variation margin:* funds, equal to margin requirement $-$ account balance, added to the margin account upon receiving a margin call

# Clearinghouse

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| You | → | your broker | → | your floor broker | → | Exchange | ← | my floor broker | ← | my broker | ← | Me |
| | | ↓ | | | | | | | | ↓ | | |
| | | your clearing member | → | | | Clearinghouse | | | ← | my clearing member | | |

# Regulation

The *Commodity Futures Trading Commission* (CFTC) and the *National Futures Association* (NFA) want to protect the public from:

- Bucketing
- Cherry picking
- Chumming
- Churning
- Elbow trading
- Front running
- and other illegal activities

# Taxes

Recognize profits (losses) of a hedge at the same time as the asset being hedged.

Recognize profits (losses) of a speculative position on a mark to market basis.

## Homework

1. (Hull 2.3) Suppose that you enter into a short futures contract to sell July silver for $5.20 per ounce on the New York Commodity Exchange. The size of the contract is 5,000 ounces. The initial margin is $4,000 and the maintenance margin is $3,000. What change in the futures price will lead to a margin call? What happens if you do not meet the margin call?

2. (Hull 2.11) An investor enters into two long futures contracts on frozen orange juice. Each contract is for the delivery of 15,000 pounds. The current futures price is 160 cents per pound, the initial margin is $6,000 per contract, and the maintenance margin is $4,500 per contract. What price change would lead to a margin call? Under what circumstances could $2,000 be withdrawn from the margin account?

3. (Hull 2.15) At the end of one day a clearinghouse member is long 100 contracts, and the settlement price is $50,000 per contract. The original margin is $2,000 per contract. On the following day the member becomes responsible for clearing an additional 20 long contracts, entered into at a price of $51,000 per contract. The settlement price at the end of this day is $50,200. How much does the member have to add to its margin account with the exchange clearinghouse?

4. (Baby Hull 2.24, Papa Hull 2.26) A company enters into a short futures contract to sell 5,000 bushels of wheat for 250 cents per bushel. The initial margin is $3,000 and the maintenance margin is $2,000. What price change would lead to a margin call? Under what circumstances could $1,500 be withdrawn from the margin account?