Futures Markets and the Use of Futures for Hedging

- **LONG FUTURE POSITION**
- **SHORT FUTURE POSITION**
- **CLOSING OUT A POSITION**
- **TYPE OF TRADER (locals)**

Specification of Futures Contracts

- Definition of the ASSET
- Definition of the contract SIZE
- Definition of the DELIVERY arrangements
- Definition of the DELIVERY MONTH

ASSET

The Exchange stipulates the grade of the commodity that is acceptable

ORANGE JUICE CONTRACT DEFINITION

US Grade A, with Brix value of no less than 57 degrees, having a Brix value to acid ratio of no less than 13 to 1 nor more than19 to 1, with factors of color and flavor each scoring 37 points or higher and 19 for defects, with a minimum score of 94

SIZE

The contract size specifies the amount of the asset that has to be delivered under one contract

DELIVERY ARRANGEMENTS

Vast majority of the futures contracts that are initiated do not lead to delivery of the underlying asset

- If a contract is not closed out before maturity, it usually settled by delivering the assets underlying the contract. When there are alternatives about what is delivered, where it is delivered, and when it is delivered, the party with the short position chooses.
- A few contracts (for example, those on stock indices and Eurodollars) are settled in cash

DELIVERY MONTH

A futures contract is refered to by its delivery month

DECEMBER GOLD
JUNE YEN
MARCH BONDS

Delivery month vary from contract to contract

Margins and Maintenance

- An initial margin is cash or marketable securities deposited by an investor with his or her broker
- The balance in the margin account is adjusted to reflect daily settlement
- Margins minimize the possibility of a loss through a default on a contract

Example of a Futures Trade

- An investor takes a long position in 2 December gold futures contracts on June 3
  - contract **size** is 100 oz.
  - futures price is US$400
  - margin requirement is US$**2,000/contract** (US$4,000 in total)
  - maintenance margin is US$**1,500/contract** (US$3,000 in total)

A Possible Outcome (Marking to market)

Day	Futures Price (US$)	Daily Gain (Loss) (US$)	Cumulative (3) Gain (Loss) (US$)	Margin Account Balance (US$)	Margin Call (US$)		
	400.00			4,000			
3-Jun	397.00	(600)	(600)	3,400	0		
:	:	:	:	:	:		
11-Jun	393.00	(420)	(1,400)	2,600	+ 1,400	=	4,000
:	:	:	:	:	:	<	3,000
17-Jun	387.00	(1,140)	(2,600)	2,800	+ 1,200	=	4,000
:	:	:	:	:	:		
24-Jun	392.00	260	(1,600)	5,000	0		

Suppose you enter in 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 5000 ounces. The initial margin is $4000 and the maintenance margin is $3000.

What change in the future contract leads to a margin call ?

$$\frac{\textbf{Initial Margin - Maintenance margin}}{\textbf{contract size}}$$

Other Key Points About Futures

- They are settled daily
- Closing out a futures position involves entering into an offsetting trade
- Most contracts are closed out before maturity

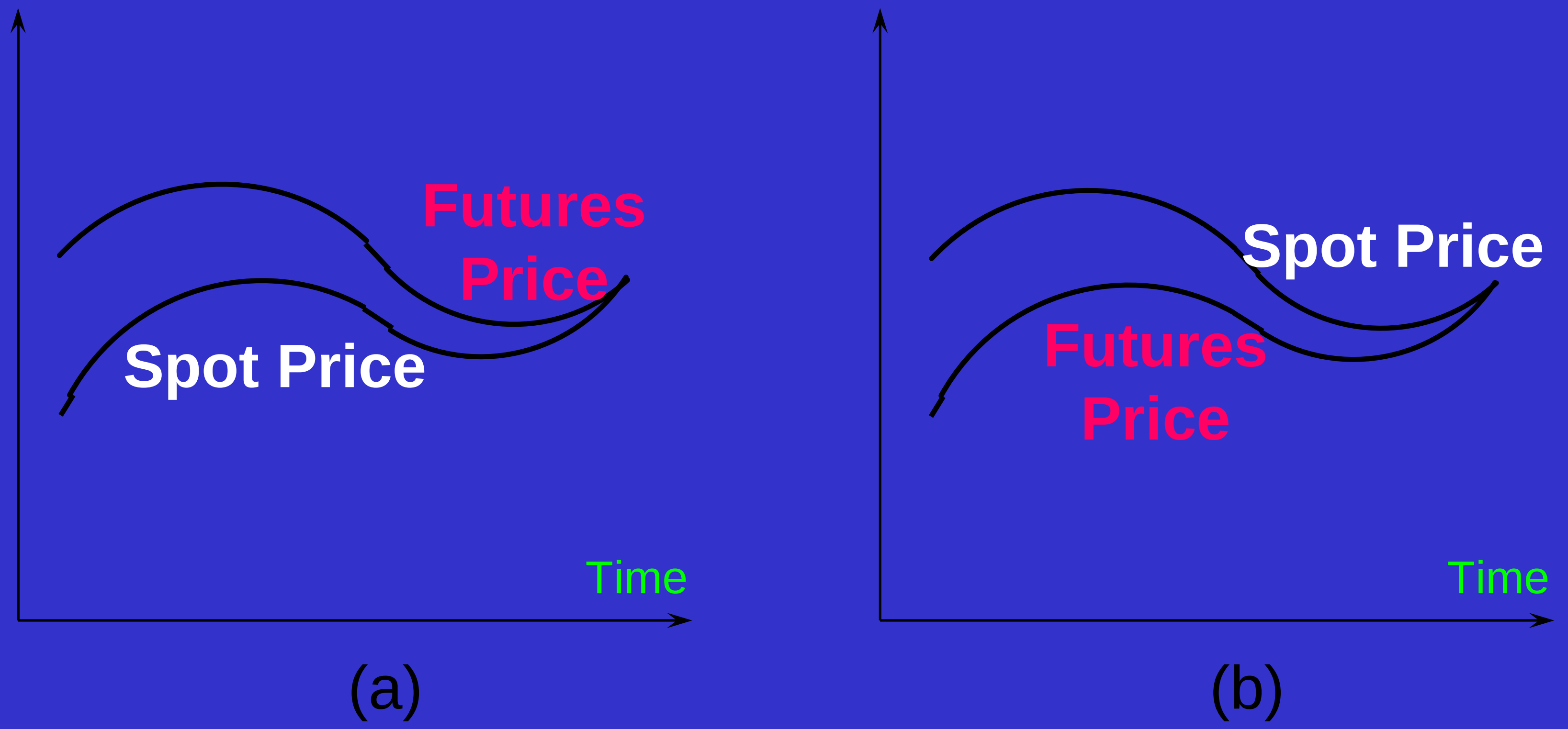
Some Terminology

- **Open interest**: the total number of contracts outstanding
  - equal to number of long positions or number of short positions
- **Settlement price**: the price just before the final bell each day
  - used for the daily settlement process
- **Volume of trading**: the number of trades in 1 day

Questions

- When a new trade is **completed** what are the possible effects on the open interest? **NONE**
- Can the volume of trading in a day be greater than the open interest? **SURE**

Convergence of Futures to Spot



ARBITRAGE POSSIBILITY NEAR DELIVERY TIME

IF FUTURES PRICE < SPOT PRICE

- **BUY FUTURES CONTRACT**

IF FUTURES PRICE> SPOT PRICE

- **SELL FUTURES CONTRACT**

Regulation of Futures

- Regulation is designed to protect the public interest
- Regulators try to prevent questionable trading practices by either individuals on the floor of the exchange or outside groups (cornering the mkt.)

Long & Short Hedges

- A long futures hedge is appropriate when you know you will purchase an asset in the future & want to lock in the price
- A short futures hedge is appropriate when you know you will sell an asset in the future & want to lock in the price

Basis Risk

- Basis is the difference between spot & futures

BASIS = SPOT - FUTURES

S1 - F1

- Basis risk arises because of the uncertainty about the basis when the hedge is closed out

QUESTION

IF THE BASIS INCREASE, WHO BENEFITS MORE ,

THE SELLER OR THE BUYER OF THE FUTURES ?

The seller of course

(Remember : BASIS = SPOT - FUTURES)

FUTURES = SPOT - BASIS

Long Hedge

- Suppose that

  F_1 : Futures Price at time T1

  F_2 : Futures Price at time T2

  S_2 : Spot Asset Price at time T2
- You hedge the future purchase of an asset by entering into a long futures contract
- Cost of Asset= F_1 + Basis

Short Hedge

- Suppose that

  F_1 : Futures Price at time T1

  F_2 : Futures Price at time T2

  S_2 : Spot Asset Price at time T2
- You hedge the future sale of an asset by entering into a short futures contract
- Price Realized= F_1 + Basis

Choice of Contract

- Choose a delivery month that is as close as possible to, but later than, the end of the life of the hedge
- When there is no futures contract on the asset being hedged, choose the contract whose futures price is most highly correlated with the asset price.

Rolling The Hedge Forward

- We can use a series of futures contracts to increase the life of a hedge
- Each time we switch from 1 futures contract to another we incur a type of basis risk

Forward Contracts vs Futures Contracts

FORWARDS	FUTURES
Private contract between 2 parties	Exchange traded
Non-standard contract	Standard contract
Usually 1 specified delivery date	Range of delivery dates
Settled at maturity	Settled daily
Delivery or final cash settlement usually occurs	Contract usually closed out prior to maturity

OK FOR TODAY !!!!