

Chap. 18 Futures Markets

- Basics of Futures Trading
- Interest Rate Parity
- Stock Index Futures

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The Basics of Futures Trading

- 1. The futures market is, in theory, there for the purpose of *hedging*
- Someone who has a *naturally long position* in some commodity (a farmer growing corn or a mining company digging up gold) *may wish to sell future production at some pre-agreed on price*. “locks in” a selling price.
- This early selling is called hedging (of future output) and involves *shorting* gold, corn etc.
- Here, selling a future is called a *short hedge*.

The Basics of Futures Trading

- These folks may arrange an early sale privately, but the Futures Markets in Chicago allow hedging to be done quickly and cheaply.
- Someone who has a *naturally short position* in some commodity (a food processor using corn or a jewelry company making gold jewelry) *may wish to buy future input needs at some pre-agreed on price*.
- This early buying is called a *long hedge*.

The Basics of Futures Trading

- While the Futures Markets in Chicago allows one to actually use the futures contracts to sell (deliver) or buy (take delivery of) the commodities hedged, most of the time the futures contract is simply “reversed” sold back to the market at the prevailing price - at either a gain or loss. This called an *offsetting trade* - or just an *offset* or a *cover*. (You didn’t really want all those pork bellies anyway). Very much like reversing a short sale in the stock market.

The Basics of Futures Trading

- Take the Gold Miner: Like **short selling**, you will make money on the contract if the gold falls in value from where you sold it.
- This futures-contract profit should make up for the lower prices you will receive when you actually sell your output on the world markets.
- **What if gold goes up?**
- Guess you shouldn’t have hedged. The higher price you get for your gold production will be “neutralized” by your short-sale losses.

The Basics of Futures Trading

- *What happens if I refuse to honor my futures agreement?*
- 1) *Contracts are legally enforceable*
- 2) *you must leave a cash deposit with your broker (called margin)*

The Basics of Futures Trading

- **Okay- I won't renege, but what about the other guy.**
- **There is no other guy:** the original person you contracted with is not important. The organization that takes the opposite position from you is the **Clearinghouse**. If the "other guy" reneges it's the exchange's problem, not yours
- (Actually it's the other guy's problem!)

The Basics of Futures Trading

- **How does margin work?**
- **Like margin in the stock market: but there is one big difference:**
- Margin in the stock market is a **down payment** on a stock purchase. **You borrow the rest and pay interest on the debit.**
- Margin in the futures market is a **guarantee** or a **performance bond** - that **you won't renege**. You have agreed to buy (or sell) in the future - but until then you haven't actually bought or sold.

The Basics of Futures Trading

- **Gains and losses are paid or deducted daily.** This is a ritual called **marking to market** and is one reason why the closing (last trade) price is also called the **settlement price**.
- What about margin calls?
- Like margin in the stock market, **if the equity in your account gets too low**, (from your being marked to market the wrong way too many times), **you have add more cash or get out.**

The Basics of Futures Trading

- **What if I want to sell my future corn crop, but no other hedger is buying that day?**
- Long hedgers selling directly to short hedgers is fairly rare, the hedger usually sells to a **speculator**. **A speculator has no natural long or short position** but feels bullish on corn.
- A bullish speculator will make money if the corn futures goes up, and lose if corn goes down.

The Basis and Interest Rate Parity

- **Why does the futures price move up or down?**
- The futures prices is usually **closely linked** to the current price (or **spot price**). The linkage is the Interest Rate Parity relationship covered in **Multinational Finance**.
- Simply put, **the difference between the cost of buying a commodity (like gold) now and contracting to buy it in the future is the carrying costs of the tied-up funds (or opportunity costs).**

Basis and Interest Rate Parity

- **The difference in price is called the basis.**
- $F_1 = S_0 (1 + r_{rfr}) / (1 + r_{future})$
- Since **commodities** don't pay interest, the formula can be reduced to **$F_1 = S_0 (1 + r_{us})$** .
- Ex: Spot gold sells at \$300/oz. You can also contract to buy it one year from now and leave your money in T-bills (at 6%). What is most you would be willing to pay for a one year contract.?
- \$300/oz plus 6% of \$300 = \$318
- for a 3-month contact \$300/oz plus 1.5% of \$300.

Interest Rate Parity

- Commodities such as gold or platinum that can be stored cheaply and indefinitely & will sell at a premium to spot. The premium will gradually move higher for longer term futures.
- This relationship is a fairly clean example of the cost-of-carry relationship that underlies IRP.

Interest Rate Parity

- If you wish to hold one of these metals you can either and assume the risk-free rate for the term of the commodities contract is 5%
- 1) Borrow money at 5% and buy gold now or
- 2) Enter into a contract to buy gold in the future and avoid paying the 5% interest.
- The second choice is more attractive, as you avoid the cost of carrying gold as inventory. T
- The market sets the future price 5% higher so that the two choices are equally attractive.

Interest Rate Parity

- Commodities such as live cattle and eggs gold or platinum cannot be stored cheaply nor indefinitely. Thus the IRP formula will tell only part of the story. Other factors - like estimates of future supply and demand will affect these futures prices.
- Financial Futures such as Stock Indexes, currencies, and T-Bond futures strictly follow the IRP relationship and use the full formula
- $F_1 = S_0 (1 + r_{us}) / (1 + r_{finfut})$

Interest Rate Parity

- $F_1 = S_0 (1 + r_{us}) / (1 + r_{finfut})$
- The Peso has a higher interest rate than the US T-Bill: the peso future will sell at a discount.
- The Stock Market has a lower dividend rate than the T-Bill interest rate: the Index future will sell at a premium.
- When the T-Bond has a higher interest rate than the US T-Bill: the T-bond future will sell at a discount.

Interest Rate Parity

- Exceptions: Long-term futures on short-term instruments such as Fed Funds and T-bills do not follow IRP. There is no way to arbitrage a T-bill that hasn't been issued yet.
- You can't buy next year's T-bill today and hold it in inventory.
- So these futures prices represent pure expectations about the future direction of short-term rates. Analysts often look at these prices as an indicator of market expectations.

Hedging Currency Risk

- Some managers of international funds assume that their clients are more interested in investing in, say, the German stock market, than they are in investing in the Deutsche Mark.
- Others fund managers believe that for many "hard currency" countries like Germany, Switzerland and Japan, the currency is a major part of the appeal of investing overseas.
- Only the first group will "hedge" all or some of the currency exposure.

Hedging Currency Risk

- **Hedging can be fairly simple:** suppose your portfolio contains 2 million DM worth of stock and you worry about the German currency falling. You can sell up the same amount of DM on the futures market (up to 16 contracts) at the prevailing **“forward rate”**. **This is similar to short selling** in that you don't actually have DM, just stocks that trade in D-Marks.
- You have **“locked in”** the dollar value of **your currency** and now **all that will be uncertain is the stock-market risk**.

Hedging Currency Risk

- Like **short selling**, you will make money if the **DM falls in value** from where you sold it.
- This futures profit should offset currency losses in the stock portfolio.
- **What if the currency goes up?**
- Guess you shouldn't have hedged. The currency gains in your portfolio will be “neutralized” by your short-sale losses.

Stock Index Futures

- $F_1 = S_0 (1 + r_{us}) / (1 + d_{S\&P500})$
- Suppose the T-bill rate is 5%, dividend yield is 2% and the S&P 500 is at 1200. What should the one year futures price be?
- What is the **face value** of one contract (\$500 per point)?
- You put up **10% margin** (as % of face value). How much is that?
- The S&P falls 12 points - what happens to your account that night?

Stock Index Futures

- With financial futures you can never take delivery or deliver the underlying securities. If you hold to maturity you simply buy or sell at the spot price (cash delivery)
- The process of linking a spot price and a futures price together is called **arbitrage**.
- **An arbitrageur will consider the spot and futures markets to be perfect substitutes for one another and if IRP is violated, the “arb” will buy in the cheap market and sell short in the expensive market.**

Stock Index Futures

- Applying this arbitrage to the index futures is often called **program trading**: a computer is often employed to simultaneously trade the stocks in the S&P and the futures contract.
- From the earlier example, suppose the S&P is at 1200 and the futures contract is at 1260? What does the trading program do?

Stock Index Futures

- Since the futures market can use much higher leverage than the underlying spot market, **the connection between to the two is deliberately severed during volatile trading days**.
- These curbs in trading are sometimes called **circuit breakers** and were put in place after the 1987 market crash.