

How Securities Are Traded

Overview

- Types of Brokers
- Types of Orders
- Trading on Margin
- Short Sales
- Costs of Trading

Broker: an individual who is paid a commission for executing customer orders. Either a **floor broker** who executes orders on the floor of the exchange, or an **upstairs broker** who handles retail customers and their orders. Also, person who acts as an intermediary between a buyer and seller, usually charging a commission. A "broker" who specializes in stocks, bonds, commodities, or options acts as an agent and must be registered with the exchange where the securities are traded. (Antithesis of dealer).

Full-service broker: A broker who provides clients an all-inclusive selection of services such as advice on security selection and financial planning.

Types of Brokers

- Contrast the difference between
 - *Full service
 - *Discount
- In this context what is a discretionary account?

The distinction between discount and full-service brokerage is blurry these days. Use to be that discount brokers would execute your trades and manage your account, that's all. Full service broker would give you advise on how to invest, what to invest in, tips on stocks, do research, proprietary research for clients only.

Discretionary Account: you have given the broker the discretion to make trades on your behave. Can be good or bad. Maybe not good to trust them.

Types of Orders

- ☐ Market Order, Trading at the current market price.
 - *Buy at the **asked** and sell at the **bid**
 - *What complication or improvement can occur?
- ☐ Limit orders, order is in place to be executed when a certain condition is met. Can also put in limit orders to lock in profits or cut losses.
 - *For instance, buy if the **ask** falls below a set level, or
 - *Sell if the **bid** rises above a certain level
- ☐ Stop-loss or stop-buy orders
 - *Symmetrical idea to limit orders
 - *execute trades on the exchange.

Limit Order Book for Apple on ArcaEx Exchange

Bid				Ask			
ID	Price	Size	Time	ID	Price	Size	Time
ARCA	133.93	200	08:22:14	ARCA	134.11	100	08:22:54
ARCA	133.92	300	08:22:07	ARCA	134.28	100	08:23:06
ARCA	133.88	600	08:23:06	ARCA	134.29	200	08:22:54
ARCA	133.86	100	08:22:54	ARCA	134.30	1500	08:21:22
ARCA	133.85	300	08:23:07	ARCA	134.31	200	08:22:07
ARCA	133.80	500	08:22:24	ARCA	134.37	100	08:21:38
ARCA	133.55	500	08:21:27	ARCA	134.40	100	08:22:53
ARCA	133.51	100	08:21:03	ARCA	134.45	100	08:17:23
ARCA	133.43	1000	08:06:53	ARCA	134.50	100	08:20:59
ARCA	133.41	100	07:52:49	ARCA	134.56	200	08:13:09
ARCA	133.02	100	07:53:04	ARCA	134.95	2000	08:21:53
ARCA	133.00	300	07:15:00	ARCA	134.97	500	08:05:28
ARCA	132.95	2000	08:21:37	ARCA	135.24	200	07:54:38
ARCA	132.81	500	08:21:27	ARCA	135.26	2000	08:17:48

This is showing us various trades (orders) which were put in place to be executed if a certain price level was hit. Shows us underlying activity and interest in a particular stock. The price column shows the prices people want their orders executed at. Notice there are **Bid** and **Ask** sides.

Limit Order Book shows underlying interest in a particular stock at certain prices. This is a fairly new revelation from the NYSE, they have only shared this with the public for the last year or so.

Price-Contingent Orders

		Condition	
		Price below the Limit	Price above the Limit
Action	Buy	Limit-Buy Order	Stop-Buy Order
	Sell	Stop-Loss Order	Limit-Sell Order

Different from a market order where we buy or sell at the prevailing price of a given day.

Top row is the BUY action, bottom row is the SELL action. If the price goes below the limit I have set, the action will be taken (such as buy or sell).

This is useful if I believe a stock is trading in one region but I believe its real value is in another region. I can "program" buy or sell instructions to take advantage. Executes when the trigger point is reached.

Limit Below Sell allows you to truncate a loss at a particular price.

Price above order, Stop-Buy: I will buy if the price goes above a certain level. I may believe that there is momentum in a certain stock.

Limit Sell: if the price hits a certain trigger point I want to sell and make the profits while I can. If I don't

believe the stock can get much above a particular price I will want to lock in a particular price.

Limit Buy Orders are most common, useful. Say you believe that if the stock falls to a certain level it will turn around and go up, you can use this to capture that action.

Could use this as a mechanism to short stocks.

Margin Trading

- Using only a portion of the proceeds for an investment
- Borrow remaining component
- Margin arrangements differ for stocks and futures

Here you set up a brokerage account and borrow money from the broker to fund part of your investment. This is called trading on margin. You place money in your account, invest that money in stocks, but you also borrow money from the broker to invest in that stock as well. At least part of the money you are investing is borrowed.

There are margin requirements set by the SEC. Sets the limit on how much you are allowed to borrow. Using margin can greatly increase the risk and return from different investment strategies (as we shall see in a moment).

Stock Margin Trading

- Maximum margin
 - *Currently 50%
 - *Set by the Fed
- Maintenance margin
 - *Minimum level the equity margin can be
- Margin call
 - *Call for more equity funds

Once you have purchased stock with your margin account there is a good chance that the price of the stock will fall. You could fall below the 50% level. The Maintenance Margin is a trigger point where the broker is going to require you to put more assets into the account so as not to fall too far into the red.

So you set the initial margin based on your borrowing and then there is a maintenance margin where if you fall below a certain level of borrowing (percent wise?) then you have to put additional assets into the account or liquidate your position.

A Margin Call is a requirement to place more equity in the account. Do so by putting more money or other assets into the account, or actually selling and unwinding the position to reduce your borrowing.

EXAMPLE

Margin Trading - Initial Conditions: I want a position in XCorp.

X Corp	\$70,000
50%	Initial Margin
40%	Maintenance Margin
1000	Shares Purchased @ \$70 each

Initial Position

Stock	\$70,000	Borrowed	\$35,000
		Equity (my money)	\$35,000

At this point I am 50% invested, margin is 50%. Now suppose the stock price falls to \$60 per share. Now my stock is worth \$60,000, but I still owe the same amount. I still owe the broker \$35,000. But since the stock is only worth \$65K my equity is:

$$\text{My Equity} = \text{Stock Worth} - \text{Borrowed} = \$60,000 - \$35,000 = \$25,000.$$

What is my equity compared to my assets:

$$\text{My Equity} = \frac{\$25,000}{\$60,000} = 41.66\%, \text{ which is NOT below the maintenance margin of}$$

40%. So at this point I am not required to do anything (although I have lost \$10,000). But I do not yet have to put any more money in the account.
(continued next page)

How far can the stock price fall before there is a margin call? Before I am required to sell some of the stock or place more assets in the account.

Call P the unknown price. I have purchased 1000 shares. My borrowing is \$35,000.

Stock price falls to \$60 per share

New Position

Stock	\$60,000	Borrowed	\$35,000	My Equity = $\frac{\$25,000}{\$60,000} = 41.66\%$
		Equity	\$25,000	

My Equity = Stock Worth – Borrowed = \$60,000 - \$35,000 = \$25,000.

How far can the stock price fall before a margin call? We know 40% is the call point:

1000 Shares * P = value of the stock at some price P

$$\text{Margin Call Percentage} = \frac{\text{Equity}}{\text{Stock Value}} = \frac{\text{Stock Value} - \text{Borrowing}}{\text{Stock Value}} = \frac{1000 \times P - \$35,000}{1000 \times P} = 40\%$$

$$1000 \times P - \$35,000 = .4 \times 1000 \times P$$

$$\$35,000 = (1000 - .4 \times 1000)P$$

Solve for $P = \frac{\$35,000}{(1 - .40) \times 1000} = \frac{\$35,000}{600} = \$58.33 \text{ per share}$

At P = \$58.33 there will be a margin call. I will have to sell or put money into the account.

Margin Questions

- What can an investor do if faced with a margin call?
 - Place assets in the account or sell stock to reduce the amount borrowed.
- Why do investors trade on margin?
 - Leverage, increase your potential payoffs. Increase your risk though.
- What are the risks?
 - Can lose a lot of money because you have borrowed funds.

Margin Trading: Impact on Returns

□ Impact on returns

*The **RETURN ON STOCKS PURCHASED ON MARGIN** is:

$$R = \frac{SP - INV - LOAN + D}{INV}$$

EXAMPLE

Billy purchases a stock on margin, **borrowing 50% of the funds** necessary to complete the purchase

- *The stock is **currently priced at \$50 per share**, and the stock pays an **annual dividend of \$.50 per share**
- *The brokerage firm charges an **annualized interest rate of 8%**
- *After **ONE YEAR**, the **stock is sold at a price of \$55 per share**
- *What is the return on the **MARGIN TRANSACTION?**

$$R = \frac{SP - INV - LOAN(1 + rate)^{years} + D \times years}{INV} = \frac{\$55 - \$25 - \$25 \times (1 + .08)^1 + \$.50 \times 1}{\$25} = 14\%$$

SP: current market Sale Price, \$55 (what you sell the stock for)

INV: My Investment without borrowing, \$25

LOAN: Margin Loan =

Amount Barrowed * (1 + Annualized Interest Rate)^{YEARS OWNED}

D: Annual Dividend

The initial investment in the stock is \$50, of this 50% or \$25 is barrowed on margin and \$25 is paid with Billy's funds. The stock is sold at the end of 1 year for \$55. Do not forget to **charge interest for each year owned!**

$$\text{No Margin Return} = \frac{SP - INV + D}{INV} = \frac{\$55 - \$50 + \$.50}{\$50} = 11\%$$

So the return without margin barrowing is only 11%, much less!

WHAT IF THE STOCK PRICE DECLINED ??? (next page...)

Computing the Return on A Margin Purchase

□ Reconsider the previous example, but **ASSUME THAT THE STOCK DECLINED FROM \$50 TO \$47 PER SHARE OVER THE ONE YEAR PERIOD**

*What would the return on the margin transaction have been in this case?

$$R = \frac{SP - INV - LOAN^{years} + D \times years}{INV} = \frac{\$47 - \$25 - \$25 \times (1 + .08)^1 + \$50}{\$25} = -18\%$$

The stock price has gone down \$3.00 since we purchased it. Now our return using margin in the purchase is -18% !

And the return without margin would be ...

$$R = \frac{SP - INV + D \times years}{INV} = \frac{\$47 - \$50 + \$50}{\$50} = -5\%$$

We lose 5% without margin.

So the gains are larger with margin but so are the losses!

MARGIN:
When you make money you make more, when you lose money you lose more.

Summary of Buying Stock on Margin

On Margin

Gain: 14%

Loss: -18%

Straight Up

Gain: 11%

Loss: -5%

Margin gives you more cash to work with, more purchasing power, more than you have on hand.

Example of Margin Barrowing Interest Rates

This shows us the interest rate brokerage houses charge at certain loan levels for margin purchases. **It is a very costly endeavor.**

Margin Interest Rates	
Debit Balance	Rate*
\$1,000,000 and above	Base rate + 0.75% =6.50%
\$ 250,000 - \$999,999	Base rate + 1.25% =7.00%
\$ 50,000 - \$249,999	Base rate + 1.75% =7.50%
\$ 25,000 - \$49,999	Base rate + 2.25% =8.00%
\$ 10,000 - \$24,999	Base rate + 2.75% =8.50%
\$ 1 - \$9,999	Base rate + 3.25% =9.00%

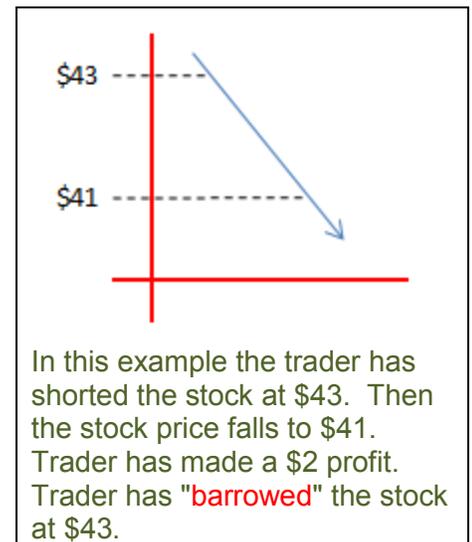
Short sales

- ❑ Purpose: **to profit from a decline in the price of a stock or security**
- ❑ Mechanics
 - *Borrow stock through a dealer
 - *Sell it and deposit proceeds and margin in an account
 - *Closing out the position: buy back the stock and return it to the party from which it was borrowed
- ❑ **Subject to margin requirements**

If you believe an asset is going to go up in price you take a long position, if you believe an asset is going to go down in price you take a short position. You short sell something when you believe the value of that asset is going to decline. Does not have to be a stock, this can be done on many types of assets.

We are selling something we do not physically own. We come to an arrangement with a broker to borrow the stock then sell it.

A short position is that you are borrowing someones stock to sell, selling something you do not own. You believe the stock will decline in value (see graphic to right). If it does decline I profit by the amount it has declined.



This is subject to margin requirements, you are required to have assets in the margin account to cover potential losses. Remember, if the stock price goes up I have a loss. I make money if the stock price goes down from the point I sold it at. We know of no limit on how long you can borrow the stock, but if the broker or customer the broker borrowed the stock from wants it paid off you have to pay up, repatrate the stock.

You can combine short saling with limit orders. There are still commissions paid to the broker. BECAUSE YOU HAVE BARROWED THE STOCK FROM SOMEBODY ELSE, YOU ARE RESPONSIBLE FOR PAYING THE DIVIDENDS THAT THE STOCK NORMALLY PAYS.

Cryolife

Share Statistics	
Average Volume (3 month) ³ :	223,894
Average Volume (10 day) ³ :	401,911
Shares Outstanding ⁵ :	27.54M
Float:	24.95M
% Held by Insiders ¹ :	8.62%
% Held by Institutions ¹ :	52.50%
Shares Short (as of 26-Dec-07) ³ :	1.68M
Short Ratio (as of 26-Dec-07) ³ :	13.4
Short % of Float (as of 26-Dec-07) ³ :	6.70%
Shares Short (prior month) ³ :	1.77M

6.7% of its float is shorted. (high)

This is a report from Yahoo on the stock Cryolife.

Short % of Float: 6.7% shorted is high, gives you a good impression of what people think is going to happen to this stock.

Short Ratio: measures stock that has been shorted compared to the average daily volume. This example is saying that it would take 13.4 average trading days for investors to buy enough stock to cover their shorts (pretty high). If a stock is not traded much the short ratio may be a better indication of the selling pressure.

Prior Month: prior month had 1.77M shares short, current month has 1.68M. So the number of shares short is going down (price is going up?).

Shares Outstanding vs. Float

Shares Outstanding: from the financial statements, total stock outstanding.

Float: what is actively trading in the marketplace.

Difference between the two (in terms of number of shares) are the insiders who own stock, plus any institutional 5% holders. Anyone who is restricted in selling their stock over the short term.



Northern Rock

- End of June 2007
 - * Rising interest rates triggered a profits warning from Northern Rock
 - * 7% of Northern Rock's shares had been shorted
- End of July 2007
 - * Short-position had grown to some 15% of the bank's shares
- Middle of September 2007
 - * Short-position had grown to some 20% of the bank's shares
- Compares to an **average of short-position of about 3.5% across the banking sector** as a whole
- Data Explorers puts the overall profits for those short-sellers of Northern Rock shares back in June at somewhere just north of £100m
- Others in the hedge fund community reckon the overall profit from shorting Northern Rock is much higher, and could be as much as £1bn

Bank in England suffering from sub-prime investment problems. Investors believed it was going under. Account holders had a run on bank. Profit was going from June 2007 (?). At that point 7% of Northern Rock shares had been shorted. That was pretty high to begin with. Then came the earnings announcement. End of July the shares short had grown to 15%, extraordinarily high. People were betting big time that this stock was going down in price. Middle September 2007 the short position was up to 20% of the float, this is an excessive level. Hedge funds were heavily shorted in this stock, they were betting that the price of the stock would plunge to \$0. They would have cleaned up.

Some believe the hedge funds made up to 1 billion pounds, one fund in particular made a big killing, up to 20% of that billion through shorting.

Temporary Public Ownership: What It Means For You

The Government has announced its intention to take Northern Rock into temporary public ownership.

Short sale - Initial Conditions	
Z Corp	100 Shares
50%	Initial Margin
30%	Maintenance Margin
\$100	Initial Price
Sale Proceeds	\$10,000
Margin & Equity	5,000
Stock Owed	\$10,000

Initial Margin, set by FED (?), is 50%.
Maintenance Margin, 30%

Calculations are **not** the same as margin trade.

Initial price \$100, I sell 100 shares at \$100 each for a profit

of \$10,000. Those shares are physically gone, sold!

When I set up this position I owed \$10,000 worth of stock. If the price of the stock goes up I still have the \$10,000 I sold it for, that amount does not change. Buy...

IF THE STOCK PRICE GOES UP THE AMOUNT THAT I OWE INCREASES

Because I owe stock, if the price of the stock goes up my liability goes up. When I borrow stock the liability varies depending on the stock price. I am required to put in an initial margin. I must have sufficient margin in the account when I set this deal up to represent 50% of what I owe in terms of the stock. So when I do this deal I have to deposit \$5000 worth of cash in my account as well as receiving the \$10,000 proceeds from the sale. So I have to have \$15,000 in my account, \$10,000 that I owe, \$5,000 equity. The account does not have to be cash, can be other assets. But equity (assets compared to liability) must be 50%, this is the initial margin.

Short sale - Maintenance Margin	
Stock Price Rises to \$110	
Sale Proceeds	\$10,000
Initial Margin	5,000
Stock Owed	11,000
Net Equity	4,000
Margin % (4000/11000)	36%

Lets suppose the stock price goes up to \$110, bad for me, I am betting it will go down. It has gone up so I am losing money. How do I calculate weather I am required to deposit more assets into the account? Simple, sale proceeds

are still \$10,000, Initial margin still \$5,000, but now

the stock that I owe (liability) is \$11,000=\$110*100.

So at this point I have \$15,000 in assets and I owe \$11,000 so

my net equity is: Equity = \$15,000 - \$11,000 = \$4000.

This is my net worth, equity in this account. Now I compare the net worth to the liability: if this falls below the maintenance margin I am required to increase the equity (or margin) in the account.

So to calculate my margin balance I compare the net worth to the liability.

If this ratio falls below the maintenance margin I am required to increase the equity (or the margin) in my account. In above example Margine is at 36% and maintenance margin is 30% so safe, do not have to deposit funds.

Short sale - Margin Call

How much can the stock price rise before a margin call?

$$(\$15,000 - 100P) / (100P) = 30\%$$

$$P = \$115.38$$

Note: \$15,000 = Initial Margin + Sale Proceeds = \$5,000 + \$10,000

My liability is 100 shares times the current price = 100P

30% is the maintenance margin

To calculate we compare the difference between funds in the account and my current liability based on the current stock price to the current liability.

$$\text{Margin Call Amount} = \frac{\text{Current Assets in Account} - \text{Current Liability}}{\text{Current Liability}} = \frac{\$15,000 - 100 \times P}{100 \times P} = 30\% = \text{Margin Call Percentage}$$

solve for ...

$$P = \frac{15,000}{.3 \times 100 + 100} = \$115.38$$

So P = \$115.38 is the 30% level, if the price goes any higher I must put funds into the account to cover the potential loss.

Short sales

- Where are stocks borrowed from? Can be from same brokerage house, special dealers who supply only stocks for shorting.
- What is the time period? **No Limit**
- What effect do dividends have? If I sell a stock short and it pays a dividend I am responsible for paying the dividend to the original owner of the stock.
- Selling Short Against the Box selling stock short which you already have a position in.

Most of the time, you can hold a short for as long as you want. However, you can be forced to cover if the lender wants back the stock you borrowed. Brokerages can't sell what they don't have, and so yours will either have to come up with new shares to borrow, or you'll have to cover. This is known as being **CALLED AWAY**. It doesn't happen often, but is possible if many investors are selling a particular security short. *Investopedia*

SELLING SHORT AGAINST THE BOX

A short sale against the box of a stock is where the seller actually owns the stock, but does not want to close out the position. What you are doing is borrowing more of the same stock you already own. If you believe that the stock is going to go down for a while and then go back up you can use the short as an artificial way of selling the stock. Why would someone want to come up with an artificial way of selling the stock? (continued)

People use to do this because there was a tax advantage, but this tax break has since been removed. People use to be able to avoid paying capital gains on the original stock.

If a stock is borrowed from individuals for purposes of shorting, and then the price of the stock goes down, the individuals themselves are going to want to sell their shares! So they may recall their stocks which have been lent.

Example, I own 1000 shares of IBM but I borrow 1000 shares from someone else then sell them.

Short Squeeze

□ If a stock starts to rise rapidly, the trend may continue to escalate because the short sellers will likely want out

- * For example, say a stock rises 15% in one day, those with short positions may be forced to liquidate and cover their position by purchasing the stock
- * If enough short sellers buy back the stock, the price is pushed even higher!

The effect is even greater if the stock is heavily shorted. Remember, the short sellers are worried about margin calls. So they are forced to go into the market and buy a stock which is increasing in price (?). So we see additional gains in a stock because sellers are forced to unwind their positions. This is a short squeeze. This is characterized by a jump, greater than what you would ordinarily expect, in stock price as a result of some news where the stock was heavily shorted. (not the same can happen in currency markets).

Costs of Trading

□ Commission: fee paid to broker for making the transaction

□ Spread: cost of trading with a dealer, market maker, or specialist.

* Bid: price dealer will buy from you

* Ask: price dealer will sell to you

* **Spread = Ask – Bid**

□ Combination: on most trades both commission and spread are paid

Due to the Bid/Ask spread you will always lose money if you buy a stock and immediately sell it (even though the stock price did not actually move).

The Spread

- Is the difference between the ask and bid prices and is **commonly measured as a percentage of the ask price**
- Is **separate from the commission** charged by the broker
- **Has declined substantially over time** due to increased efficiency of executing orders and increased competition from ECNs

Sometimes in academic work the Spread will be quoted as the average of the ask and bid price. Much more common to see spread as a % of ask.

Institutional buyers will negotiate a price, usually some small percentage of what street buyers would pay. Based on volume.

Keep in mind the spread increases after hours so the charge will be greater. Plus, "sharks" are prowling at that time.

In less liquid markets the spread will go wider after hours because the dealer want to protect themselves. For example, IBM will have a tighter spread than a new technology company. One reason is that it is more liquid.

MARKET MAKER COST OF OPERATIONS

□ ORDER PROCESSING COSTS

* FIXED and VARIABLE components, as in any business.

□ RISK BEARING COSTS: market maker, dealer, specialist will take an inventory position in a stock. Therefore he is taking an investment in that stock. For this reason he has taken on more risk. His cost of operations are going to include the risk of that investment.

□ ADVERSE INFORMATION COSTS: people who have inside information will be at an advantage when they approach a market maker. Therefore the market maker will have to charge sufficiently when dealing with people with superior information! This is a cost of his doing business. He is forced to buy and sell stocks from people with superior knowledge as well as those with inferior knowledge. He hopes to make enough money dealing with the people who have inferior knowledge to make up for the losses suffered in dealing with people who have superior knowledge.

ORDER PROCESSING COSTS consist of fixed and variable components, such as the cost of space, cost of communications equipment, some labor costs.
Risk bearing costs include the cost of carrying inventory. For example, the dealer with excess (minimal) inventories can lower such risks by reducing (increasing) the bid quote (the trader's selling price) and the ask quote (the trader's buying price).

ADVERSE INFORMATION COSTS arise from the dealer's disadvantage in dealing with the trader with superior information.

Theoretical Bases for Bid-Ask Spread

- Minimize the costs of carrying inventories
 - * Faces two uncertainties: ORDER FLOW & STOCK PRICE
- Differential information between informed traders and the market maker
- THREE GROUPS OF TRADERS
 1. SPECIAL INFORMATION: someone with special insight into a stock, almost certainly an insider or someone with illegal information.
 2. LIQUIDITY-SEEKING : people who buy and sell stocks for specific savings and now they are cashing in to realize gains.
 3. THE UNIFORMED: day-traders, people who think they know better but really do not and may or may-not make any profits.

It is an axiom that people who trade the most suffer the most losses. One industry study was able to show that women make more money in the stock market because they trade less. Keep in mind the loss is almost exactly the cost of trading, the commissions. So comparing someone who actively trades to someone who only trades a few times a year you will find that it is possible they generate the same income but the active trader gives it all back in commission and other costs.

The market maker faces **two uncertainties**: uncertainty of returns from holding inventories and the uncertainty relating to traders' demand for future trades. The first group consists of traders possessing **special information**. The second group includes **liquidity-seeking traders** who have no special information but merely want to buy, i.e., convert cash into securities, or sell, i.e., convert securities into cash. The third group, **uninformed day-traders**, believe that security prices have not as yet impounded some residual piece of information, but which, in reality, has already been reflected in prices.

Spread: why is one dealers spread different from that of another dealer? Each will have their own view on what the market price for the stock will be. They believe the stock is going to move in a certain direction. Or they may want to rebalance their inventory position.

Just because there are many market makers does not mean they will be quoting the same thing. Their price will be dependent on their own internal issues.

Computing the Spread

- Your broker quotes a **bid price of \$28.50** and an **ask price of \$29.05** for Palmetto stock

*What is the bid-ask spread?

$$\text{Spread} = \frac{ASK - BID}{ASK} = \frac{\$29.05 - \$28.50}{\$29.05} = 1.89\%$$

The Spread (+) means increase, (-) means decrease

- Effect of the spread on transactions costs

The SPREAD IS INFLUENCED by the following factors:

ORDER COSTS (+) represent the cost of processing orders, including clearing costs and recording transactions, all of the costs the dealer incurs in running a business. Includes processing orders, clearing costs for recording transactions. The higher the cost of doing these things the greater the spread will be. As technology makes transactions and business more efficient you would expect to see order costs come down.

INVENTORY COSTS (+) represent the cost of maintaining an inventory of a particular stock, inventory is an investment of capital. So we can see that this cost is driven by **INTEREST RATES**. If market interest rates are high the cost of a market maker holding inventory will be high. So when we see high interest rates we should expect to see spreads increase.

If interest rates are high, the **OPPORTUNITY COST** of holding inventory is high

COMPETITION (-) reduces the spread, many market makers in a particular stock should decrease the spread.

VOLUME (-) increases liquidity and reduces the risk of a sudden decline in the stock's price is reduced in some sense. Will be less jagged movements in the stocks price if there is high liquidity. High liquidity should lead to lower spreads.

Someone who specializes in generating illegal knowledge, or an inside trader, will want to find this information on stocks which have high volume, lots of liquidity. This trading volume will help them hide their transactions.

RISK (+) increases volatility and the risk for the specialist or market-maker. If the markets, and investors, become more risk adverse, if there is higher volatility in the markets, then we would expect the bid/ask spread to also increase.