Leverage

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Leverage

- Buying stock on Margin
- Buying or Selling Futures
- Buying or Writing Options

Buying stock on Margin

- An Investor has 10000$ to invest
- May buy stock
- May Borrow 10000 and invest 20000

Comparison

- Consider a simple example where the stock price is 100.
- Assume the investment is short term and the interest paid on the borrowing is negligible.

Results

Stock Price	Regular	with Margin
101	100$ gain	200$ gain
99	100$ loss	200$ loss
105	500$ gain	1000$ gain
95	500$ loss	1000$ loss

Other concerns with futures and options

- Some may not be liquid
- Tend to be short term investment.

Are futures riskier than stock?

Futures and leverage

- When you buy a futures you normally use margin.
- Margin is less than the full value of the contract.
- Sort of like a security deposit
- May be required to put up additional margin if the market moves against you.
- This results in leverage

Example of a contract

- Crude oil Futures
- 1000 barrels of Oil
- Price of the November contract on Sept 30 91.76
- Initial Margin 4,510
- Value of the contract 91,760 dollars

Results

Price drops to	loss	loss % of margin
91.26	500$	11.086%
90.76	1000$	22.173%

Which is Riskier?

- Oil Futures
- Buying stock in a large oil company

Result leverage

- Oil Futures without the leverage of a futures contract are slightly riskier.
- This result depends upon the firm selected and the time horizon.
- With the leverage the oil futures are a lot riskier.

Call options

- Option to buy a share at the striking price
- Not required to purchase the share it is an option
- It involves substantial leverage.

Example

- Stock price is 50
- Exercise price is 50
- Interest rate is 2%
- Time to maturity is .18 years
- No dividends on this stock
- Volatility .40

Results from the Black Scholes model

Stock price	Option premium
50	3.466
51	4.031
52	4.641
53	5.294
54	5.987
55	6.717

Percentage changes

Stock price	Option value
2 %	16.313%
4%	33.922
6%	52.762
8%	72.759
10%	93.830

Results based on the Black Scholes Merton model

Stock price	gain in option value
51	.565
52	1.176
53	1.829
54	2.522
55	3.252