Slides 3 - How Securities Are Traded

1. a. Where do all primary market transactions for stocks take place?

○ Electronic communication networks (ECNs)

○ NASDAQ

◉ The IPO and SEO markets

○ The New York Stock Exchange

Primary market transactions are transactions in which securities are newly issued, or created by the company. These transactions include initial public offerings (IPOs) and seasoned equity offerings (SEOs).

2. a. Companies issue new shares to the public with the help of _____.

○ investment companies

○ mutual funds

◉ underwriters

○ private equity funds

Underwriting a new stock issue involves determining the initial offering price, often buying them from the issuer, and selling them to investors. Nearly all underwriters are investment banks.

3. a. A procedure in which the underwriter (investment bank) enters into a written agreement with the issuer of the securities to purchase the securities and then to resell them to the public is called _____ underwriting.

◉ firm commitment

○ prospectus

○ best efforts

○ dutch auction

○ seasoned equity offering

A procedure in which the underwriter (investment bank) enters into a written agreement with the issuer of the securities to purchase the securities from the issuer and then to resell them to the public is called firm commitment.

4. a. Which of the following statements are true about private placements?
Check all that apply:

☑ In private placements, the company sells its share directly to a small group of institutional investors.

☐ Private placements are usually more expensive initially than public offerings.

☑ Private placements usually have a lower liquidity compared to publicly traded securities, since they do not trade in public markets.

☑ Private placements are a type of primary market transaction.

Private placements represent a type of primary market transaction. The company sells its share directly to a small group of institutional investors. Private placements are usually less expensive than public offerings because the regulatory requirements are less burdensome.

5. a. Market orders get executed _____ at _____.

○ whenever the stock price goes above the limit; the current price in the market

○ whenever the stock price goes below the limit; the limit price

◉ immediately; the current price in the market

○ immediately; the limit price

Market orders get executed immediately at the current price in the market, which is unknown when the order is placed.

6. a. A limit order has _____.

○ price uncertainty and execution uncertainty

○ price uncertainty, but not execution uncertainty

◉ execution uncertainty, but not price uncertainty

○ neither price uncertainty nor execution uncertainty

With a limit order, you cannot be certain if and when the order will be executed. On the other hand, if the order does get executed, you know which price you'll get at least (though you might get an even better one).

7. a. Which are costs of trading a security?

Check all that apply:

☑ Broker's commission

☑ Dealer's bid-ask spread

☐ Flotation costs

☑ The price concession an investor may be forced to make for trading in quantities greater than those associated with the bid-ask quote

Flotation costs are incurred by a company when it issues new securities; they are not trading costs.

8. a. Which of the following statements are true about buying on margin?

Check all that apply:

☐ The margin is the portion of the purchase which is borrowed from the broker.

☐ Limitations on the maintenance margin are set by the SEC.

☑ Buying on margin means buying securities using your own funds and funds borrowed from your broker.

☑ Limitations on the initial margin are set by the Federal Reserve System.

Buying on margin means buying securities using your own funds and funds borrowed from your broker. At the time of the purchase, the margin in the account represents the portion of the purchase which is contributed by the investor.

Limitations on the initial margin are set by the Board of Governors of the Federal Reserve System. Limitations on the maintenance margin are set by FINRA, but each brokerage firm can impose more stringent maintenance margin requirements.

9. You buy 270 shares on margin at a price of $12.21 each. Your broker requires you to add $1,978.02 of your own money.

a. What is the initial margin requirement?

`"Initial margin" = "Equity" / "Value of stocks" = 1,978.02 / (270*12.21)=` **0.6**

10. You buy 180 shares of stock at a price of $41.25. The initial margin requirement is 50% and the maintenance margin is 30%.

    a. How much do you borrow?

Loan amount:

`L = "Value of stocks" *(1-"Initial margin")`

= `180*41.25* (1-0.5)`

= **3,713**

    b. At what price will you first receive a margin call?

The price P that makes your margin equal to the maintenance margin is given by:

`"Equity" / "Value of stocks" = "Maintenance margin"`

⇔ `(N*P - L) / (N*P) = MM`

⇔ `P = L/(N-N*MM)= 3,713 / (180-180*0.3)=` **29.46**

11. The stock price of Apple is $106. You have $10,000 to invest. The monthly interest rate is 0.2%.

    a. You think the stock price will go up soon, and want to trade 130 shares. What should you do? Enter 130 for buying 130 shares (on margin if necessary), or -130 for selling or short-selling 130 shares.

You should buy **130** shares to benefit from an increase in the stock price.

    b. What is your initial percentage margin (entered as a decimal number)?

The dollar margin equals the equity in the account:

Assets = Number of shares * Stock price
A = 130 * 106 = 13,780

Liabilities = Loan = Cost of shares - Own funds
L = 13,780 - 10,000 = 3,780

`"Percentage margin" = "Equity" / "Value of shares" = (A-L)/(N*P)`

= `(13,780 - 3,780)/(130*106`

= **0.7257**

    c. Two months later, the stock price is $126. What is your percentage margin (entered as a decimal number)?

The dollar margin equals the equity in the account:

Assets = Number of shares * Stock price
A = 130 * 126
= 16,380

Liabilities = Loan + Interest
L = 3,780 * 1.002^2
= 3,795

`"Percentage margin" = "Equity" / "Value of shares" = (A-L)/(N*P)`

= `(16,380 - 3,795)/(130*126`

= **0.7683**

12. The price of Walmart stock is currently $36.32 and you decide to buy 100 shares on margin. The inital margin is 60% and the broker's maintenance margin is 50%. The broker charges an effective interest rate of 6% on the margin loan.

a. How much money do you borrow if you borrow as much as possible?

Assets		Liabilities & Equity	
Value of shares (N*P)	3,632	Loan	1,452.8
		Equity	2,179
Total	3,632	Total	3,632

Loan amount:

`L = "Value of shares" * (1-"Initial margin")`

= `3,632 * (1-0.6)`

= **1,452.8**

b. After the 2 months, the stock price has changed to $33.26 and the stock has paid dividends of $1.57 per share. What is the new percentage margin in the account?

Loan plus interest:

= `L * (1+i)^(T/12) = 1,452.8 * (1+0.06)^(2/12) = 1,466.98`

Assets		Liabilities & Equity	
Value of shares (N*(P+D))	3,483	Loan + Interest	1,466.98
		Equity	2,016.02
Total	3,483	Total	3,483

`"Percentage margin" = "Equity" / "Value of stock" = 2,016.02 / 3,483= ` **0.5788**

c. What is your effective annual return?

Return over 2 months:

`r =E_1/E_0-1 = 2,016.02/2,179-1= -0.07488`

Effective annual return:

`EAR = (1+r)^N -1 = (1+ -0.07488)^(12/2)-1=` **-0.3731**

13. a. Which of the following statements are true about short selling?

Check all that apply:

☑ The investor involved in short selling anticipates that the share price will fall.

☑ Short selling is the sale of a security that is not owned by the seller.

☐ Short selling means that an investor purchases securities using funds borrowed from her broker.

☑ Short sellers borrow securities and sell them immediately.

☐ The investor involved in short selling anticipates that the share price will increase.

Short selling is the sale of a security that is not owned by the seller. Short sellers borrow securities and sell them immediately. The short seller anticipates that the share price will fall, so she can buy back the share later at a lower price, and realize a profit.

14. You decide to short sell 310 shares at a price of $54.49 each. The initial margin requirement is 50%.

a. How much money do you have to contribute to the account?

Assets	Liabilities & Equity

Assets		Liabilities & Equity	
Sale proceeds ($N*P_0$)	16,892	Value of borrowed shares ($N*P_0$)	16,892
Cash (50% of above)	8,446	Equity	8,446
Total	25,338	Total	25,338

You have to contribute $**8,446**.

b. If the price rises to $66.78 after 6 months, what is the new percentage margin?

Assets		Liabilities & Equity	
Sale proceeds ($N*P_0$)	16,892	Value of borrowed shares ($N*P_1$)	20,702
Cash	8,446	Equity	4,636
Total	25,338	Total	25,338

New value of borrowed shares (liabilities):

$L\_1 = N * P\_1 = 310 * 66.78 = 20{,}702$

New value of equity:

$E\_1 = A\_1 - L\_1 = 25{,}338 - 20{,}702 = 4{,}636$

New percentage margin:

$\text{"Percentage margin"} = \text{"Equity"} / \text{"Value of borrowed shares"} = 4{,}636 / 20{,}702=$ **0.2239**

15. The price of Apple stock is currently $96.75 and you decide to sell short 590 shares. The inital margin is 60%.

a. How much money do you have to contribute at least to the account?

Assets		Liabilities & Equity	
Sale proceeds ($N*P_0$)	57,083	Value of shares borrowed ($N*P$)	57,083
Cash	34,250	Equity	34,250
Total	91,332	Total	91,332

We borrow 590 shares and sell them immediately. The value of the shares shows up as both an asset (since we got cash from selling the shares) and a liability (since we owe these shares):
Sale proceeds = Value of shares borrowed = $N * P_0 = 590 * 96.75 = 57{,}083$

Since the initial margin is 60%, we have to contribute at least 60% of this amount to the account in the form of additional cash. Assuming that we contribute as little as possible, we contribute the minimum:

Contribution = 0.6 * 57,083 = **34,250**
This is also the initial dollar margin (or equity) in the account.

b. If the price rises to $108.94, what is the new percentage margin?

Since the share price has risen, the value of the borrowed shares increases:
Value of borrowed shares = $N * P = 590 * 108.94 = 64{,}275$

Since the assets in the account are still the same, equity has to adjust:
Equity = Assets - Liabilities = 91,332 - 64,275 = 27,057

Assets		Liabilities & Equity	
Sale proceeds ($N*P_0$)	57,083	Value of shares borrowed ($N*P$)	64,275
Cash	34,250	Equity	27,057
Total	91,332	Total	91,332

`"Percentage margin" = "Equity" / "Value of shares owed" = 27,057 / 64,275=` **0.421**

c. If the broker's maintenance margin is 30%, what is the maximum value the stock price can take before you are issued a margin call?

The price P that makes your margin reach the maintenance level is given by:

`"Margin" = ("Assets" - "Liabilities") / "Value of shares owed" =(A -N * P) / (N*P) = MM`

⇔ `P = A/(MM*N + N)= 91,332 / (0.3*590+590) =`**119.08**

16. The stock price of Google is $557. You have $10,000 saved in a savings account. The monthly interest rate is 0.7%.

   a. You think the stock price will go down soon, and want to trade 20 shares. What should you do? Enter 20 for buying 20 shares (on margin if necessary), or -20 for selling or short-selling 20 shares.

   You should short-sell 20 shares to benefit from a decrease in the stock price: **-20**.

   b. If the initial margin is 50%, what is the minimum additional dollar amount that you have to deposit in your brokerage account?

   Short-selling 20 shares gives us some cash, which must be kept in the brokerage account:

   Proceeds from short-selling = Number of shares * Stock price
   = 20 * 557
   = 11,140

   With an initial margin requirement of 50%, we have to add 50% of the proceeds from short-selling in the form of additional cash to the account:

   Extra cash = 50% * 11,140 = **5,570**

   c. What is your initial percentage margin (entered as a decimal number) once you've completed the deposit calculated in part 2?

   Since we just calculated the amount of money that we had to put into the account to make the margin equal to the initial margin requirement of 50%, our initial margin is **0.5**.

   d. Two months later, the stock price is $577. Google paid a dividend of $6 per share just before the two months were over. What is your percentage margin (entered as a decimal number)?

   Assets = Proceeds from short-selling + Extra cash deposited in account
   A = N * P + E = 20 * 557 + 5,570 = 16,710

   Liabilities = Value of borrowed shares + Dividends owed
   L = N * P_1 + N * D = 20*577 + 20*6 = 11,660

   `"Percentage margin" = ("Assets" - "Liabilities") /"Value of shares owed"= (A-L) / (N * P)`

   = `(16,710-11,660)/(20 * 577)`

   = **0.4376**

17. You short sell 300 shares at a price of $26.28 each. The inital margin requirement is 50% and you use as little of your own money as possible.

   a. If the price changes to $23.46 after 8 months and the stock paid dividends of $1.87 per share, what is the new percentage margin?

Assets	Liabilities & Equity

Assets		Liabilities & Equity	
Sale proceeds ($N*P_0$)	7,884	Value of shares borrowed ($N*(P+D)$)	7,599
Cash (50% of above)	3,942	Equity	4,227
Total	11,826	Total	11,826

`"Percentage margin" = ("Assets" - "Liabilities")/"Value of shares owed"= "Equity"/(N*P_1)`

= `4,227 /(300*23.46)`

= **0.6006**

b. What is your effective annual return?

The initial margin equals the initial equity in the account:

`E_0 = "Initial margin" * "Price" * "Number of shares"`

= `0.5*26.28*300`

= `3,942`

Return over 8 months:

`r =E_1/E_0-1 = 4,227/3,942-1= 0.0723`

Effective annual return:

`EAR = (1+r)^N -1 = (1+ 0.0723)^(12/8)-1=` **0.11038**

c. If the broker's maintenance margin is 40%, what is the maximum value the stock price can take before you are issued a margin call (assuming the dividends have been paid already)?

The price P that makes your margin reach the maintenance level is given by:

`"Margin" = ("Assets" - "Liabilities") / "Value of shares owed" =(A -N * (P+D)) / (N*P) = MM`

⇔ `P  = (A-N*D)/(MM*N + N)= (11,826-300*1.87) / (0.4*300+300) =`**26.82**