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| 民國 93 年<br>2004 | CFA<br>Level 1 | <b><i>Securities Markets &amp;<br/>Equity Investments</i></b><br>(證券市場及股權投資) |
|-----------------|----------------|--|

## **Organization and Functioning of Securities Markets**

### A. Characteristics of a Well-functioning Market

- Timely and accurate information on price and volume are provided.
- Good liquidity: marketability, price continuity and depth.
- Internal efficiency, i.e., lowest possible transaction cost.
- External efficiency, i.e., prices rapidly adjust to new information.

### B. Primary and Secondary Markets

#### 1. Primary Markets: from the issuer to investors

- a. Roles of the underwriter include origination, risk bearing and distribution.
- b. New equity issues involve either seasoned issues or initial public offerings (IPO).
- c. Government bond issues are sold at public auction by Federal Reserves.
- d. Municipal bond issues are sold through two types of underwriting, or private placement
  - (1) Competitive bidding means that the underwriter originates the issue, bears the price risk, and sells the securities for a competitively determined fee.
  - (2) Negotiated underwriting means that the underwriter originate the issue, bears the price risk, and sell the securities for a negotiated fee.
  - (3) Private placement is a way of selling the issue direct to the investors without going through an underwriter.
- e. Corporate stock or bond issues are sold through competitive bids, negotiation or best efforts. Best efforts underwriting means that the underwriter originates the issue and sell the issue for the best available price with no price guarantees to the issuing firm.

#### 2. Secondary Markets: from one investor to another

- Secondary markets are important because they give investors liquidity.
  - a. Equity
    - (1) Trading systems can be categorized into call and continuous markets.
    - (2) In terms of pricing systems, there are order-driven and price-driven markets.

(3) Membership categories at US exchanges include specialists, commission brokers, floor brokers and registered traders.

(4) There are four types of orders:

1. market orders
2. limit orders
  - i. limit buy order is placed below current price
  - ii. limit sell order is placed above current price
3. short sale orders
4. stop loss orders
  - i. stop loss buy is placed above current price
  - ii. stop loss sell is placed below current price

**練習題**

A stock is selling at NT\$30. An investor's valuation model indicates the stock should be selling at NT\$20. If the investor believes the model, he should place a:

- A. market order.
- B. limit order.
- C. buy order.
- D. short sale order.

解答: 股價偏高, 先借股票賣出, 待股價下跌再回補 → Ans = D

**練習題**

The current price of TSNC Inc is NT\$60. An order to sell at NT\$70 would be a:

- A. market order.
- B. short sale order.
- C. limit sell order.
- D. stop loss sell

解答: 限價單(limit order)將在到達指定價格時賣出 → Ans = C

**練習題**

The current price of TFC Ltd is NT\$20. To prevent losses, an investor wants her broker to sell her TFC shares if the price drops to NT\$15. She should place a:

- A. market order.
- B. short sale order.
- C. limit sell order.
- D. stop loss sell

解答: 價格跌至停損點, 停損單(stop order)即以市價賣出 → Ans = D

b. Market makers

- i. Acting as brokers handling the limit order book
- ii. Acting as dealers by buying and selling stocks for *their own accounts* to maintain an orderly market and provide liquidity.
- iii. Market makers are called 'specialists' in the US.

c. National/Regional/OTC Stock Exchanges

- i. National stock exchanges: NYSE TSE, LSE, Paris, Frankfurt, Toronto etc. The global 24-hour market refers to the passing of trading from New York to Tokyo to London and back to New York as the earth rotates.
- ii. Regional markets
- iii. OTC markets are where securities not listed on one of the registered exchanges trade.
  1. OTC market is a negotiated market while registered exchanges are continuous auction market.
  2. NASDAQ listing requirements are less stringent than those of the registered exchanges.
- iv. Third market is a segment of the OTC market where registered securities can be traded without going through the exchange.
- v. Fourth market describes the *direct exchanges* of securities between investors *without going through brokers*.

d. Short Sales

- Short-sale procedures:

- i. The seller must borrow the securities from a broker before selling them.
- ii. The seller must inform their broker that the order is a short sale before the order is placed.
- iii. The seller must return the securities at the request of the lender or when the short sale is closed out.

- The following rules apply to short selling:

- The uptick rule states that stocks can only be shorted in an up market. Thus a short sale can only trade at a price higher than the previous trade.
- The short seller must pay all dividends due to the lender of the security.

- The short seller must also deposit margin money to guarantee the eventual repurchase of the security.

**Example**

| Scenario A            | Scenario B              |
|-----------------------|-------------------------|
| Acceptable short sale | Unacceptable short sale |
| \$59.75, \$60, \$60   | \$60, \$59.75, \$59.75  |

A short sale can also be made without any change in price (i.e. *zero uptick*) as long as the *prior* trade was an *uptick* (Scenario A).

e. Margin Transactions

- Margin transactions involve buying securities with borrowed money. The margin-lending rate is about 1.5% above the bank call rate. The initial margin requirement is currently 50%.
- The *leverage factor* can be calculated as  $1/\text{initial margin requirement}$ .
- A *maintenance margin* (MM) is the required fraction of an investor's equity compared to the total value of the stock. It is set at 25% currently by the Fed Reserves.

**Example**

An investor wants to purchase 1,000 shares of a \$20 stock for \$20,000. Rather than paying the \$20,000 outright, the investor chooses to put \$12,000 down and borrow the difference from his broker.

**Debit Balance** = net amount owed to the broker = **\$8,000**

**Equity** = Market Value of Account Assets – Debit Balance  
 = \$20,000 – \$8,000 = **\$12,000**

**Margin** = Equity / Market Value of Margined Securities

$$= \frac{\text{[Market Value of Securities Owned – Debit Balance]}}{\text{Market Value of Margined Securities}}$$

$$= (\$20,000 - \$8,000) / \$20,000 = \$12,000 / \$20,000 = \mathbf{60\%}$$

The value of the margin changes as the price of the stock changes. Suppose the price of the stock falls to \$15.

$$\text{Margin} = \frac{[\text{Market Value of Account Assets} - \text{Debit Balance}]}{\text{Market Value of Margined Securities}}$$

$$= [(\$15)(1,000) - \$8,000] / [(\$15)(1,000)] = \$7,000 / \$15,000 = \underline{\underline{46.6\%}}$$

With a maintenance margin requirement (MM) of 25%, a margin call would occur if the price of the stock falls to  $P_1$ :

$$\text{Market Value of Account Assets} = (\text{Shares Owned})(\text{Price of Shares}) = 1,000 P_1$$

$$\text{Margin} = \frac{[\text{Market Value of Account Assets} - \text{Debit Balance}]}{\text{Market Value of Margined Securities}}$$

$$\rightarrow 25\% = (1,000 P_1 - 8,000) / 1,000 P_1 \rightarrow P_1 = \underline{\underline{\$10.67}}$$

To generalize, assuming 1 share is traded and  $MM = M_1$

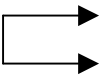
$$M_1 = [P_1 - P_0(1 - M_0)] / P_1 \rightarrow P_1 M_1 = P_1 - P_0(1 - M_0) \rightarrow \boxed{P_1(1 - M_1) = P_0(1 - M_0)}$$

$$\rightarrow \text{Margin Call Trigger Price (long)} = [(\text{original price})(1 - \text{initial margin\%})] / [1 - \text{MM\%}]$$

### **Example**

A stock is bought at the price of \$40. Assuming that the initial margin requirement is 50% and the maintenance margin requirement is 25%, at *what price will a margin call be triggered?*

$$\text{Margin Call Trigger Price} = [\$40 \times (1 - 50\%)] / (1 - 25\%) = \underline{\underline{\$26.67}}$$

\$26.67  \$20 = money borrowed from brokers  
 \$6.7 = money from investor's own pocket



## 附錄 [應用題]

**[Example]** Jenny Wu, CFA, is an equity analyst specializing in the media and entertainment sector. She is working on a secondary offering of MGM shares and needs to determine if the firm stock is fairly valued at the current price level.

Since many firms in media and entertainment industry demonstrate volatile, low or negative profit margins, Jenny decides to use price to sales ratio to perform relative valuation against MGM closest competitors. She gathers the following data for her analysis:

|        | Price     | Sales per share (\$) |       |       | P/S ratio |       |       | Underlying fundamentals |      |       |        |
|--------|-----------|----------------------|-------|-------|-----------|-------|-------|-------------------------|------|-------|--------|
|        | 2003/11/8 | 2002                 | 2003E | 2004E | 2002      | 2003E | 2004E | g                       | Beta | PM    | payout |
| Viacom | \$47      | 14.26                | 14.96 | 15.91 | 3.3       | 3.14  | 2.95  | 16.17                   | 1.44 | 4.4%  | 18.6%  |
| MGM    | 14.25     | 5.56                 | 6.28  | 6.62  | 2.56      | 2.27  | 2.15  | 12                      | 0.99 | -4.3% | -      |
| Warner | 16.37     | 9.24                 | 9.64  | 10.33 | 1.77      | 1.7   | 1.59  | 15.69                   | 1.37 | 12.8% | -      |
| Disney | 19.82     | 12.59                | 12.22 | 13.33 | 1.57      | 1.62  | 1.49  | 12.64                   | 1.03 | 4.4%  | 23%    |
| Fox    | 26.66     | 36.04                | 40.42 | 43.47 | 0.74      | 0.66  | 0.61  | 14.86                   | 0.99 | 0.1%  | -      |
| Mean   |           |                      |       |       | 1.99      | 1.88  | 1.76  | 14.27                   | 1.16 | 3.5   |        |
| Median |           |                      |       |       | 1.77      | 1.70  | 1.59  | 14.86                   | 1.03 | 4.4   |        |

Per the table above, both trailing and leading P/S multiples indicate that MGM is overvalued relative to the industry. Warner, Disney and Fox have lower multiples (all below 2.0), which makes them relatively undervalued compared to MGM, as else equal.

Jenny decides to explore the reasons for the relatively high pricing of MGM by looking at the firm underlying fundamentals. She notices, that although MGM growth is lagging behind the industry, the firm has a relatively low value of systematic risk (beta), especially comparing to its closest peers (in terms of P/S ratio) – Viacom and Warner. The low risk is associated with low required rate of return, which may partly explain the relatively high P/S ratio. MGM profitability is a matter of concern, which confirms the hypothesis that the firm is overvalued.

This analysis allows Jenny to make her case that today may be the perfect timing for a secondary offering of MGM shares if the company manages to secure sufficient demand for the issue.

## 綜合練習題

證券市場及股權投資約佔 CFA Level 1 課程的 10~13.33%，出題比重不輕，而且內容並不困難，好好地掌握證券市場及股權投資將可提高過關機會。接下來我們以綜合練習題的方式復習先前所學的觀念。

學員在上課及閱讀外，動手多做題目非常關鍵，除各科目講義的題目外，學員應以三至六個模擬考(一個模擬考為六小時各科目的綜合性題目)為目標，做題目時，應將各題型整理成重點筆記，供考前最後一週記憶用。

### **Revision Questions:** Securities Markets & Equity Investments

Q1. Which of the following statements about security markets is FALSE?

- a. The fourth market refers to the direct trading between two parties without a broker intermediary
- b. The secondary market refers to the trading of outstanding securities
- c. The third market refers to the OTC trading in exchange listed securities
- d. Primary market refers to the trading of securities on a major market such as the NYSE in the US

Notes: 初級市場係指股票首次掛牌上市 → Ans = d

Q2. Which of the following statements about trading shares of stock or market efficiency is FALSE?

- a. Maintenance margin is the required percentage of an investor's equity compared to the total value of the stock after the investor trades on margin
- b. Block houses, where institutional traders buy and sell large blocks of shares, are also called upstairs traders
- c. External efficiency means prices adjust rapidly to new information
- d. The uptick rule requires that the last trade in the security be at a price higher than the previous trade

Notes: uptick rule 規定證券價格上漲方可放空 → Ans = d

Q27. Which one of the following would be a bearish signal to a smart-money technical analyst?

- a. The T-bill Eurodollar spread widens
- b. The ratio of short sales by specialists to total short sales becomes abnormally low
- c. The debit balances in brokerage accounts increase
- d. The differential between high-quality and low quality bonds decreases

Notes: 國際危機時，資金流向較安全的避難所，將拉大 T-bill 及 Eurodollar 間收益率差異 → Ans = a

Q28. A stock is expected to pay a dividend in one year of \$3.00. Dividends are expected to grow at a rate of 15% in years two and three, and then slow down to 4% per year in perpetuity thereafter. The required return is 18%. An analyst mistakenly used the constant growth dividend discount model and assumes the perpetual growth rate will be 15% forever. By how much does he overestimate or underestimate the stock's actual value?

- a. Underestimates by \$3.24
- b. Underestimates by \$75.33
- c. Overestimates by \$3.24
- d. Overestimates by \$75.33

Notes: 運用 constant growth DDM:  $P_0 = D_1 / (r - g) = 3 / (18\% - 15\%) = \$100$   
運用兩階段 DDM:  
 $P_0 = 3/1.18 + 3(1.15)/1.18^2 + 3(1.15)^2/1.18^3 + (1/1.18^3)[3(1.15)^2(1.04)/(18\% - 4\%)]$   
 $= 2.54 + 2.48 + 2.41 + 17.94 = \$25.4$   
Over-estimation =  $100 - 25.4 = 74.6$  → Ans = d

Q29. By what factor will earnings per share have to change for a 5% change in earnings multiplier to induce a change of 9% in the price of the stock?

- a. +3.81%
- b. +14.45%
- c. -12.62%
- d. -3.67%

Notes:  $P/E = \text{price} / \text{EPS}$  →  $P/E = \text{price} / \text{EPS}$   
→  $\text{EPS} = \text{price} / P/E = (1.09 / 1.05) - 1 = 3.81\%$  → Ans = a

Q30. Which of the following is/are true about the confidence index?

- I. It measures the spread between high-grade bonds and a broad cross-section of bonds
  - II. It indicates investor confidence and their appetite for risk
  - III. A high value of the confidence index is interpreted by technicians as a bullish indicator
- a. I, II and III
  - b. I and II
  - c. II and III
  - d. I and III

Notes: 信心指數高，不同債信債券間收益率差異會變小，投資者看好後市  
→ Ans = a

Q31. Given the following information on a stock market series:

- Expected ROE = 15 percent
- Expected dividend payout ratio = 40%
- Required rate of return = 11%

The expected price-to-earnings ratio (P/E) of the stock market series is:

- a. 2.66x
- b. 3.64x
- c. 10.00x
- d. 20.00x

Notes:  $g = (1 - k)(ROE) = (1 - 40\%)(15\%) = 9\%$   
→  $P_0 / E_1 = (D_1 / E_1) / (r - g) = 0.4 / (0.11 - 0.09) = 20x$  → Ans = d