

- ✧ 計算題務必寫出過程、使用千分位符號(,)以及小數點標示清楚。
- ✧ 若題目沒有特別說明，請計算至小數點以下第 2 位，第 3 位四捨五入。表示方式如 1,234.56。
78.09%。
- ✧ 滿分 120 分

1. (10分) 理性與非理性的經理人

- (1). (3 分) 經濟學對於人是『理性』的定義為何？ **追求預期效用極大**
- (2). (2 分) 理性的經濟人具有那些特性？ **① 消費愈多效用愈大 ② 風險趨避者 ③ (能及時反應新資訊)**
- (3). (5 分) 請說明風險溢酬 (risk premium) 的定義以及為什麼存在。 **Because people are risk averse**
① additional return that investors expect to earn to compensate them for the risk
(預期報酬率 - 無風險利率) = 預期特別額外報酬。所承擔之風險。因理性經濟人是風險趨避者，因此才有風險溢酬的存在。

2. (15分) Suppose you started a Web site hosting business and then decided to return to school. Now that you are back in school, you are considering selling the business within the next year. An investor has offered to buy the business for \$200,000 whenever you are ready.

- A. Sell the business now.
- B. Scale back the business and continue running it while you are in school for one more year, and then sell the business (requiring you to spend \$30,000 on expenses now, but generating \$50,000 in profit at the end of the year).
- C. Hire someone to manage the business while you are in school for one more year, and then sell the business (requiring you to spend \$50,000 on expenses now, but generating \$100,000 in profit at the end of the year).

- (1). (7 分) If the interest rate is 10%, which of the following three alternatives is the best choices? Why?

	Today	1 Year	
A	200,000		
B	-30,000	$(200,000 + 50,000) \div 1.1 = 197,272.72$	C NPV > 0 且最大
C	-50,000	$(200,000 + 100,000) \div 1.1 = 227,272.72$	

- (2). (8 分) If you need \$60,000 in cash now to pay for school and other expenses, would selling the business be a better choice in that case? Why?

	Sell	Invest	Now	1 Year
	200,000	140,000	60,000	
		$140,000 \times 1.1 = 154,000$		
				$179,000 > 154,000$

3. (10分) 財務槓桿

- (1). (4 分) 請問公司的財務槓桿 (leverage) 的意義為何？ **公司融資來源依賴負債程度。**

- (2). (6 分) 一般會使用負債權益比率定義財務槓桿。為什麼負債權益比率的分子不應該包括應付帳款卻包含一年內到期之長期負債和長期負債？請問向銀行短期借款這個項目要不要納入負債權益比率的分子的計算？為什麼？

AP 是公司營運就會產生的 Liability
計算時排除
自發性負債 ex: AP
因其非公司融資來源

→ 因融資活動所產生的 Liability
金融負債要付利息

4. (8分) For fiscal year end 2015, Walmart Stores, Inc. (WMT) had revenue of \$485.65 billion, gross profit of \$120.57 billion, and net income of \$16.36 billion. Costco Wholesale Corporation (COST) had revenue of \$116.20 billion, gross profit of \$15.13 billion, and net income of \$2.38 billion.

	(Sale) Rev.	(S-costs) gross profit	NI
W	485.65	120.57	16.36
C	116.20	15.13	2.38

$$\frac{NI}{TE} = \frac{NI}{Sales} \times \frac{Sales}{TA} \times \frac{TA}{TE}$$

- 24.82% 13.02% (1). (3 分) Compare the gross margins for Walmart and Costco. $\text{Gross Margins} = \frac{\text{Gross Profit}}{\text{Sales}}$ W = 24.82% C = 13.02%
- 3.37% 2.04% (2). (3 分) Compare the net profit margins for Walmart and Costco. $\text{Net Profit Margins} = \frac{NI}{Sales}$ W = 3.37% C = 2.04%
- W (3). (2 分) Which firm was more profitable in 2015? W

5. (10分) In July 2012, Citigroup (C) had a market-to-book ratio of 0.43, a reflection of investor's assessment that many of Citigroup's assets (such as mortgage securities) were worth far less than their book value. At the same time, the average market-to-book ratio for major U.S. banks and financial firms was 1.2, and for all large U.S. firms it was 2.3. In contrast, Pepsico (PEP) had a market-to-book ratio of 4.8, and IBM had a market-to-book ratio of 10.7.

- (1). (2 分) 請說明 market-to-book ratio 的定義。市場價值對帳面價值比 $\rightarrow \frac{\text{Market Value}}{\text{Book Value}} = \frac{\text{每股市價}}{\text{每股帳面價值}}$
- (2). (4 分) 公司之間 market-to-book ratio 的差異主要因為哪兩個原因? ① 管理當局增加價值能力 ② 基本特性
- (3). (4 分) 如果你是證券分析師，根據上述資訊，你會如何評價 Citigroup 股票? ① C group 市帳比 0.43 < 1 \rightarrow 投資人對公司評價 < 帳面價值 \rightarrow Value stocks 價值股 (PB ratio low) 投資人傾向以帳面價值購買，認為該股價值被低估 ② C group 表現遠低於同規模同業平均 \rightarrow 市帳比低非因基本特性而是管理績效不佳
6. (9分) The table here shows the no-arbitrage prices of securities A and B that we calculated.

Security	Market Price Today	Cash Flow in One Year	
		Weak Economy	Strong Economy
Security A	3 x 231	0	600
Security B	1 x 346	600	0

- (1). (3 分) What are the payoffs of a portfolio of one share of security A and one share of security B? $600 + 600 = 1200$ # A+B pay 600 in both states of economy i.e. it's risk free
- (2). (6 分) What is the market price of this portfolio? What expected return will you earn from holding this portfolio? What is the risk-free interest? $\frac{600 - 577}{577} \div 4\%$ #
7. (15分) Suppose security C has a payoff of \$600 when the economy is weak and \$1800 when the economy is strong. The risk-free interest rate is 4%.
- (1). (3 分) Security C has the same payoffs as which portfolio of the securities A and B in problem 6? 3A+B
- (2). (3 分) What is the no-arbitrage price of security C? $3 \times 231 + 346 = 1039$
- (3). (4 分) What is the expected return of security C if both states are equally likely? What is its (risk premium)? $ER: \frac{600 + 1800}{2} - 1039 = 15.5\%$ RP: $15.5\% - 4\% = 11.5\%$ #
- (4). (2 分) What is the difference between the return of security C when the economy is strong and when it is weak? $\frac{1800 - 1039}{1039} - \frac{600 - 1039}{1039} = 73\% - (-42\%) = 115\%$
- (5). (3 分) If security C had a risk premium of 10%, what arbitrage opportunity would be available? $\frac{1200}{1+14\%} = 1052.6 = 1053$ # \downarrow $\$1053 - \$1039 = \$14$ #

$$4\% + 10\% - RP$$

$$1200 - X = 14\%$$

$$1200 = 14\% \cdot X + X \quad (1.14) \cdot X = 1200 \quad X = \frac{1200}{1.14}$$

8. (20分) 代理問題與資訊不對稱。

(1). (2 分) 誰是公司的所有權人? 股東

(2). (2 分) 為什麼公司(股份有限公司)會有代理問題? 所有權與經營權分離

(3). (3 分) 當敵意接管發生後，目標公司的可能抵抗策略有哪些（至少寫出三個策略，並簡述這些策略的意義）？毒藥丸(將時負債同時到期)、賣皇冠鑽石(sell valuable Assets)、黃金降落傘(安全退休 with cash)

(4). (4 分) 請舉出兩個資訊不對稱的類型。①逆向選擇 ②道德風險

(5). (3 分) 如何解決資訊不對稱問題? ①保證制度 ②資訊缺乏方盡力收集資訊 ③信號放射

(6). (6 分) 根據學術研究顯示，如果某公司預計將從事新投資計畫，若公司的融資來源為舉債，一般而言，市場投資人將會有顯著正向反應，也就該公司股價會上升。請

用財務理論解釋此現象。信號放射——舉債⇒有能力還利息，營運良好，對投資計畫極有信心，前景看好
因為公司付不出利息→公司倒閉→經理人丟工作，代理問題??

9. (8分) Consider the following potential events that might have taken place at Global

Conglomerate on December 30, 2015. For each one, indicate which line items in Global's balance sheet would be affected and by how much. Also indicate the change to Global's book value of equity. (In all cases, ignore any tax consequences for simplicity.)

(1). (2 分) Global used \$20 million of its available cash to repay \$20 million of its long-term debt. $A \downarrow \$20m$ $L \downarrow \$20m$ E no effect

(2). (2 分) Global used \$5 million in cash and \$5 million in new long-term debt to purchase a \$10 million building. $A \uparrow \$5m$ $L \uparrow \$5m$ E no effect

(3). (2 分) A large customer owing \$3 million for products it already received declared bankruptcy, leaving no possibility that Global would ever receive payment. $A \downarrow \$3m$, $E \downarrow \$3m$

(4). (2 分) A key competitor announces a radical new pricing policy that will drastically undercut Global's prices. ~~Maybe ↓~~ ~~NI ↓~~ E no effect

10. (15分) See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.

(1). (5 分) What is Mydeco's market capitalization at the end of each year? Share outstanding × Market Price

(2). (5 分) What is Mydeco's market-to-book ratio at the end of each year? $\frac{M}{B}$

(3). (5 分) What is Mydeco's enterprise value at the end of each year? $M + Debt - Cash$

$(11) + D - Cash$
 $= \text{Market value of Equity} + Debt - Cash$
 $(\text{market capitalization})$

12	13	14	15	16
398.74	201.64	332.85	473.14	657.18 (m)
1.56	0.79	1.29	1.75	2.35
874.64	637.64	843.85	1025.64	1210.18 (m)
848.24	632.34	813.35	990.24	1,171.08

398.74 + 498.9 - 49.4

TABLE 2.5

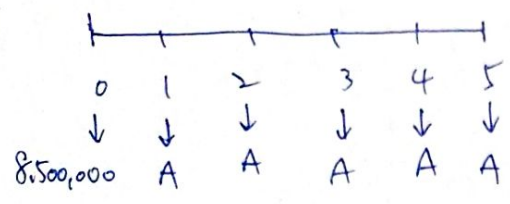
2012-2016 Financial Statement Data and Stock Price Data
for Mydeco Corp.

Mydeco Corp. 2012-2016		(All data as of fiscal year end; in \$ million)				
	2012	2013	2014	2015	2016	
Income Statement						
Revenue	401.9	361.6	429.6	513.6	602.6	
Cost of Goods Sold	(192.1)	(175.4)	(207.1)	(248.3)	(295.8)	
Gross Profit	209.8	186.2	222.5	265.3	306.8	
Sales and Marketing	(65.0)	(64.4)	(84.3)	(104.9)	(121.1)	
Administration	(61.8)	(57.1)	(59.0)	(66.9)	(79.8)	
Depreciation & Amortization	(27.5)	(26.3)	(32.5)	(38.3)	(40.1)	
EBIT	55.5	38.4	46.7	55.2	65.8	
Interest Income (Expense)	(32.4)	(31.8)	(32.0)	(37.0)	(40.9)	
Pretax Income	23.1	6.6	14.7	18.2	24.9	
Income Tax	(8.1)	(2.3)	(5.1)	(6.4)	(8.7)	
Net Income	15.0	4.3	9.6	11.8	16.2	
✓ Shares outstanding (millions)	56.8	56.8	56.8	56.8	56.8	
Earnings per share	\$0.26	\$0.08	\$0.17	\$0.21	\$0.29	
Balance Sheet						
	2012	2013	2014	2015	2016	
Assets						
Δ Cash	49.4	68.0	91.7	80.4	83.6	
Accounts Receivable	87.6	70.6	69.3	77.4	84.2	
Inventory	33.5	32.2	27.3	30.2	35.8	
Total Current Assets	170.5	170.8	188.3	188.0	203.6	
Net Property, Plant & Equip.	244.3	243.3	306.1	349.6	347.9	
Goodwill & Intangibles	365.5	365.5	365.5	365.5	365.5	
Total Assets	780.3	779.6	859.9	903.1	917.0	
Liabilities & Stockholders' Equity						
Accounts Payable	18.8	18.8	22.4	27.1	30.3	
Accrued Compensation	7.6	6.3	7.5	7.7	9.4	
Total Current Liabilities	26.4	25.1	29.9	34.8	39.7	
* Long-term Debt	498.9	498.9	572.2	597.5	597.5	
Δ Total Liabilities	525.3	524	602.1	632.3	637.2	
✓ Stockholders' Equity	255.0	255.6	257.8	270.8	279.8	
Total Liabilities & Stockholders' Equity	780.3	779.6	859.9	903.1	917.0	
Statement of Cash Flows						
	2012	2013	2014	2015	2016	
Net Income	15.0	4.3	9.6	11.8	16.2	
Depreciation & Amortization	27.5	26.3	32.5	38.3	40.1	
Chg. in Accounts Receivable	3.9	17.0	1.3	(8.1)	(6.8)	
Chg. in Inventory	(2.9)	1.3	4.9	(2.9)	(5.6)	
Chg. in Payables & Accrued Comp.	1.7	(1.3)	4.8	4.9	4.9	
Cash from Operations	45.2	47.6	53.1	44.0	48.8	
Capital Expenditures	(26.6)	(23.8)	(97.5)	(75.4)	(40.0)	
Cash from Investing Activities	(26.6)	(23.8)	(97.5)	(75.4)	(40.0)	
Dividends Paid	(5.2)	(5.2)	(5.2)	(5.2)	(5.6)	
Sale (or purchase) of stock	—	—	—	—	—	
Debt Issuance (Pay Down)	—	—	73.3	25.3	—	
Cash from Financing Activities	(5.2)	(5.2)	68.1	20.1	(5.6)	
Change in Cash	13.4	18.6	23.7	(11.3)	3.2	
Mydeco Stock Price	\$7.02	\$3.55	\$5.86	\$8.33	\$11.57	

Apple 公司租在羅格市 前 倫...

5年

$10,000,000 \times 15\% = 1,500,000$ 自備款



$PVA = A \times PVIFA$

$8,500,000 = A \times PVIFA_{10\%, 5}$

$A = 2,242,271$

Year	期初 Bal.	每期 Pay	Interest	本金部分	期末餘額
1	8,500,000	2,242,271	= 850,000	+ 1,392,271	7,107,729
2	7,107,729	2,242,271	710,773	1,531,498	5,576,231
3	5,576,231	2,242,271	557,623	1,684,648	3,891,583
4	3,891,583	2,242,271	389,158	1,853,113	2,038,470
5	<u>2,038,470</u> A	2,242,271 2,242,317	<u>203,847</u> B 203,847	2,038,424	0

調整後

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2,038,470