

Essential of investments

Finance



Essentials of Investments Chapter 10 Q22) The flat price was calculated by using the PRICE function in excel with the settlement date being 22-Feb-2012, maturity date being 15-Mar-2020, coupon rate being 5.50%, YTM being 5.34%, redemption value being \$100 and 2 coupon payments per year. Hence, the flat or the list price of this bond on the settlement date came out to be \$101.03

The days since last coupon and days in coupon period was calculated by using two functions on excel, COUPDAYBS and COUPDAY, by using the settlement date, maturity date and the coupon payments per year. These two were then used to calculate accrued interest $[(\text{days since last coupon} / \text{Days in coupon period}) * \text{coupon rate} * (100/2)]$. The accrued interest on the bond turned out to be \$2.42.

The invoice price was calculated by adding the flat/list price and the accrued interest which was $\$101.03 + \$2.42 = \$103.45$.

Q27)

The YTM's were calculated using the YIELD function on excel, with settlement date and maturity date taken at a difference of 10 years, coupon rate being 14% and then reduced to half at 7%, the bond price being \$900, redemption value being \$1000, and 1 coupon annually. The YTM based on what the firm promised is 2.55%. However, based on what the investors expect after the lenders and the firm agreed to lower the payments the YTM became 1.80%. The expected YTM is lower than the YTM investors were actually promised.

Q44)

a. The initial price is calculated as $P = \$705.46$, with $[n = 20, I/Y = 8, PMT = 50, FV = 1000]$. The price in the next period would be $P = \$793.29$, with $[n = 19, I/Y = 7, PMT = 50, FV = 1000]$. Therefore the HPR is 19.53% calculated as, <https://assignbuster.com/essential-of-investments/>

$$[\{50+(793.29-705.46)\}/705.46]$$

b. Initial price is $P=\$705.46$

The price in year 1 with 7% yield is \$793.29 and price in year 1 with 8% yield is \$711.89, with $[n=19, I/Y=8, PMT=50, FV=1000]$ with an implicit interest of \$6.43.

Tax on total interest is $\$22.57 = 40\%(\$50+\$6.43)$

Tax on Capital Gain is $\$24.42 = 30\%(\$793.29-711.89)$

Total Tax is $\$46.99 = 24.42+22.57$

c. The after-tax HPR is $12.9\% = [50+(793.29-705.46)-46.99]/705.46$

d. Price of bond in 2 years with 7% yield is \$798.82, with $[n=18, I/Y=7, PMT=50, FV=1000]$

Income from coupons with reinvestment $(50*1.03)+50=\$101.50$

Total worth of investment $\$900.32 = 798.82+101.50$

Therefore total realized yield is 12.97% by solving for r. $[900.32/705.46=(1+r)^2]$

$$46=(1+r)^2]$$

e. Tax on total interest in year 1 is $\$22.57 = 40\%(\$50+\$6.43)$

Net cash flow is $\$27.43 = 50 - 22.57$

Reinvest \$27.43, it will grow to $\$27.92 = 27.43*[3\%*(1-0.4)]$

Price of bond in 2 years with 8% yield is \$718.84, with $[n=18, I/Y=8, PMT=50, FV=1000]$ with implicit tax of \$6.95.

Tax on total interest in year 2 is $\$22.78 = 40\%(\$50+\$6.45)$

Net cash flow is $\$27.22 = 50 - 22.78$

Tax on Capital Gain is $\$23.99 = 30\%(\$798.82-718.84)$

Total Tax is $\$46.77 = 23.99+22.78$

Total Cash flow from all transactions is $\$829.97 = 798.82+27.92+50-46.$

77

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Therefore total realized yield is 8.47% by solving for r . [829.97/705.

$$46 = (1+r)^2$$

Chapter 11

Q14)

a. I will pick the Aaa rated bond as it has a lower YTM which implies a longer duration.

b. I will pick the bond with the 4% coupon rate as it will have a longer duration and moreover better call protection

c. I will pick the 6% coupon rate T-bond as it would have a longer duration.

Q15)

a. The PV of the tuition expenses is \$17832.65, with $[n=2, I/Y=8, PMT=10000, FV=0]$

The duration is 1.480769231 years..

Time

Payment

Payment Discount

Weight

Duration

1

\$10,000.00

\$9,259.26

0.5192307692

0.5192307692

2

\$10,000.00

\$8,573.39

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0. 4807692308

0. 9615384615

\$17, 832. 65

1

1. 480769231

b. To immunize the obligation, investment must be made in a zero-coupon bond maturing in 1. 480769231 years. Therefore,

c. After interest rates increase to 9% the value of zero-coupon bond falls to \$17590. 93

PV of obligation falls to \$17591. 11, with $[n= 2, I/Y= 9, PMT= 10000, FV= 0]$, and the net position changes by $\$0. 18 = \$17591. 11 - \$17590. 93$

After interest rates increase to 7% the value of zero-coupon bond rises to \$18079. 99

PV of obligation rises to \$18080. 18, with $[n= 2, I/Y= 7, PMT= 10000, FV= 0]$, and the net position changes by $\$0. 19 = \$18080. 18 - \$18079. 99$

Q29)

a. Price of zero-coupon bond using financial calculator

8% YTM is \$374. 84, with $[n= 12. 75, I/Y= 8, PMT= 0, FV= 1000]$

9% YTM is \$333. 28, with $[n= 12. 75, I/Y= 9, PMT= 0, FV= 1000]$

Predicted % loss (with duration-convexity) is

Price of 6% coupon bond using financial calculator

8% YTM is \$774. 84, with $[n= 30, I/Y= 8, PMT= 60, FV= 1000]$

9% YTM is \$691. 79, with $[n= 30, I/Y= 9, PMT= 60, FV= 1000]$

Actual % loss is $10. 72\% = (691. 79 - 774. 84) / 774. 84$

Predicted % loss (with duration-convexity) is

b. Price of zero-coupon bond using financial calculator

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7% YTM is \$422.04, with [n= 12.75, I/Y= 7, PMT= 0, FV= 1000]

Actual % gain is 12.59% = $(422.04 - 374.84) / 374.84$

Predicted % gain (with duration-convexity) is

Price of 6% coupon bond using financial calculator

7% YTM is \$875.91, with [n= 30, I/Y= 7, PMT= 60, FV= 1000]

Predicted % gain (with duration-convexity) is

c. The 6% coupon bond performed better than the zero coupon bond in either case, when the interest rose or when they fell. This is probably due to the fact that the 6% coupon bond has a higher convexity. This shows that whenever we compare the change in yields of bonds by equal amounts as is in this question, the bond with higher convexity will always outperform the one with lower convexity. The duration was approximately equal but the convexity of both the bonds were different in this example which is always positive implies that the convexity effect always favors the higher convexity bond.

d. Such a scenario where the bonds would be priced at the same yield to maturity if the rates changed in equal amounts cannot exist. No investor would buy a bond with a lower convexity as it always underperform the higher convexity bond. The price of the lower convexity bond will be low with a high YTM, which means that the higher yield is to compensate the investor for investing in a lower convexity bond.

Chapter 12

Q1)

The top-down method of security valuation is approach used by investors where they look at the macroeconomic factors such as inflation rate, GDP, interest rates etc. Investors then use these economic factors to try and

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forecast and pinpoint their attention towards an industry which they believe will perform well. The investors then chose specific companies in the industry they had chosen.

Conversely, the bottom-up investor focuses on the fundamental analysis of individual stocks. The investor searches for companies with good prospects such as looking at P/E ratio, usually the firms that are undervalued, regardless of what industry they belong to or what economic factors may have an impact on these.

An advantage of the top-down method could be that it provides a better and holistic picture as it incorporates all economic as well as financial data for the selection of a stock. Investors generally expect that a firm would be highly dependent on the industry or the industry depends on the general economy (business cycle).

Q3) Stalwarts. They are usually noncyclical and are not really affected by recessions.

Q4) Such a shock is called a supply shock.

Q5) Financial leverage allows a firm to increase its sensitivity of profits as it is a fixed cost. A firm with high fixed costs is considered to be those with high operating leverage. Any small changes in macroeconomic factors will have large impacts to the business' profits.

Q17)

a. The robotic industry will have a higher fixed cost and relatively low variable costs which means it will perform very well in case of booms and worse in a recession.

b. Since the profits of such a business is sensitive to the business cycle, robotics firm will tend to have a higher Beta.

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Q19)

Deep Recession, Health care as it is non-cyclical

Superheated Economy, Steel Production (cyclical)

Healthy Expansion, Housing construction (cyclical)

Stagflation, Gold mining(counter-cyclical)

Q21)

- a. oil well equipment, decline
- b. computer hardware, consolidation stage
- c. computer software, consolidation stage
- d. genetic engineering, start-up
- e. railroads, decline

Q25) After an expiration of the patent General Weedkiller would soon confront heavy competition. The profit would be expected to fall. There might also be an increase in total industry sales as there would be a price decline due to greater competition. The industry would step into the consolidation stage as without the patent the firms would be competing more through price wars.

Chapter 13

Q3)

The intrinsic value of a share of stock is the value which the investor himself values to be the true value of the stock. The market capitalization rate is what the market altogether demand from the stock, ie the required rate of return. When intrinsic value equals to the actual price than the expected rate of return is equal to required rate of return. If the investor thinks that the stock is underpriced which means the intrinsic value is less than the market price the investor's expected reutrn is greater than the required rate of

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return.

Q5) The required rate of return is 8.8%, calculated by solving for 'r'. [32.

$$03 = 1.22 / (r - 5\%)$$

Q8)

Q10)

Chapter 14

Q1)

Inventory Turnover 2012

5.88

Debt/Equity 2012

0.70

Cash Flow from Operations 2012

\$820,000.00

Average Collection period

44.80

Asset turnover ratio

1.28

Interest coverage ratio

6.69

Operating profit margin

0.16

Return on equity

0.43

P/E ratio

10.49

Compound leverage ratio

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0.78

Net cash provided by operating activities

\$660,000.00

CFA 5)

A. Quickbrush showed higher sales, earnings growth, and had better margins than Smilewhite. However, these fundamentals solely do not represent the success of this firm. Smilewhite has a better ROE whereas for Quickbrush it had declined

A DuPont analysis reveals a closer look at both the firms

QuickBrush

SmileWhite

Tax burden (1 - t)

67.40%

66.00%

Net profits/pretax profits

Interest burden

1

0.955

Pretax profits/EBIT

Profit margin

8.50%

6.50%

EBIT/Sales

Asset turnover

1.42

3.55

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Sales/Assets

Leverage

1. 47

1. 48

Assets/Equity

ROE

12. 00%

21. 40%

Net profits/Equity

Some ratios such as tax burden, interest burden and leverage are similar for both firms. The asset turnover and profit margin differ. The asset turnover outweighs the negative impact on ROE and hence give Smilewhite a very high ROE relative to Quickbrush.

ROE

Plowback ratio

Sustainable

growth rate

Ludlow's estimate of growth rate

QuickBrush

12. 00%

1

12. 00%

30%

SmileWhite

21. 40%

0. 34

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7. 30%

10%

Ludlow has clearly overestimated the growth rates for both the firms.

Quickbrush has no ability to increase its growth rate as its plowback ratio is

1. Smilewhite on the other hand has potential to do so

B.

A firm is able to increase its EPS even ROE is falling as Quickbrush increased its book value per share by a 100% in the last two years. This can be done by either retaining earnings or by issuing at market price greater than book value. Studying the financial statement reveals that all earnings were retained, however increase in the number of outstanding stocks show that a lot of shares have been issued.

CFA 7)

a.

2010

2013

1) Operating Margin

0.06

0.07

$(\text{operating income} - \text{depreciation}) / \text{sales}$

2) Asset Turnover

2.21

3.36

$\text{sales} / \text{assets}$

3) Interest Burden

0.91

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1. 00

$(\text{operating income} - \text{depreciation} - \text{interest}) / (\text{operating income} - \text{depreciation})$

4) Financial Leverage

1. 54

1. 32

asset/equity

5) Income tax rate

0. 41

0. 55

tax/pretax income

ROE

0. 12

0. 14

$[100\% - (5)] * (1) * (2) * (3) * (4)$

b. Asset turnover shows for every \$1 of asset how much sales it does to support it. Which for this firm increased over the three years. Increasing the ROE

Financial leverage measures the amount of how the firm is financed other than common equity and debt. This ratio declined over the three years causing ROE to fall

However, the magnitude of asset turnover was greater than that of financial leverage the net effect was that ROE increased.