Example on the Financial Leverage, EPS,ROE/539:

Given information:

- Trans Am corporation is ALL equity firm (has NO debt in its capital structure.

- CFO is considering a restructuring involves issuing debt of $4,000,000 with 10% interest. AND use the proceeds to buy back some equity.

- Firm market value = $8 million

- # of shares outstanding = 400,000 shares.

=> since its all equity shares then the price of stock per share = $20 (8,000,000/400,000)

1. Complete the following table.

|  |  |  |
| --- | --- | --- |
|  | Current (No debt) |  Proposed (with debt) |
| Assets | $8,000,000 | $8,000,000 |
| debt | 0 | $4,000,000 |
| Equity | $8,000,000 | $4,000,000 |
| Debt equity ratio | 0 | \* 1  |
| Share price | $20 | $20 |
| Shares outstanding | 400,000 | \*\*200,000 |
| Interest rate | 10% | 10% |

\* Debt equity ratio: because in the proposed situation the company has 50% debt (4000,000/8,000,000) and 50% equity (4,000,000/8,000,000) so the debt equity ratio will be 0.5/0.5 = 1.

\*\* Shares outstanding:

after the firm has bought some shares with the $4,000,000 it borrowed, which means it bought : ($4,000,000/$20) = 200,000 shares.

we want to know how many shares are left :

=Total number of shares – (total amount borrowed/price of share) = # of shares left

 400,000 – (4,000,000/20) = 200,000

1. If the firm is expecting an EBIT of $1,000,000, and 500,000 in case of recession and 1,500,000 in case of expansion, what is going to be ROE and EPS in each scenario? Compare the current situation with the proposed situation.

Current situation (no debt) Proposed situation (with debt $4 m)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Recession | Expected | Expansion |  | Recession | Expected | Expansion |
|  EBIT | $500,000 | 1,000,000 | 1,500,000 | EBIT | $500,000 | 1,000,000 | 1,500,000 |
|  - Interest | 0 | 0 | 0 | - Interest | $400,000 | $400,000 | $400,000 |
| = Net income  | $500,000 | $1,000,000 | $1,500,000 | = Net income | $100,000 | $600,000 | $1,100,000 |
| ROE Net income/total equity | **6.25%** | 12.5% | 18.75% | ROE(Net income/total equity) | 2.5% | **15%** | **27.5%** |
| EPSNet income/#of shares | **1.25** | 2.5 | 3.75 | EPS(Net income/#of shares) | 0.5 | **3** | **5.5** |

We notice that from the tables we made, the ROE,EPS are better in case of recession with no debt situation. However, it is higher in the expected and expansion scenarios when the company takes some debt.

1. What is the break even EBIT?

To find the break even EBIT , we equal EPS before we take debt with EPS after debt.

 = $\frac{EBIT}{number of shares}$ = $\frac{(EBIT-Interest)}{number of shares}$

 = $\frac{EBIT}{400,000}$ = $\frac{EBIT-400,000}{200,000}$

 = 200,000 EBIT = 400,000 EBIT- (400,000)(400,000)

-200,000 EBIT = - 160,000,000,000

EBIT = 800,000

EX.1/569

* Maynard, Inc., has no debt outstanding and a total market value of 250,000$. EBIT are projected to be 28,000$ if economic conditions are normal. If there is strong expansion in the economy, then EBIT will be 30 percent higher. If there is a recession, then EBIT will be 50 percent lower. Maynard is considering a 90,000$ debt issue with a 7 percent interest rate. The proceeds will be used to repurchase a share of stock. There are currently 5,000 shares outstanding. Ignore taxes for this problem

 - EBIT : Expected= $28,000

 Expansion= $36,400 (30% higher than 28,000)

 Recession = $14,000 (50% less than 28,000)

* considering $90,000 debt with 7% interest , and repurchasing some of the stock with proceeds.
* # of shares = 5,000 shares. Market value = $250,000 so stock price will be 250,000/5000= $50
1. Calculate EPS under each of the three economic scenarios before any debt is issued. Also calculate the percentage changes in EPS when the economy expands or enters a recession.
2. Repeat part (a) assuming that the economy goes with recapitalization. What do you observe?

Current situation (no debt) Proposed situation (with debt $4 m)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Recession | Expected | Expansion |  | Recession | Expected | Expansion |
|  EBIT | $14,000 | $28,000 | $36,000 | EBIT | $14,000 | $28,000 | $36,000 |
|  - Interest | 0 | 0 | 0 | - Interest | $6,300 | $6,300 | $6,300 |
| = Net income  | $14,000 | $28,000 | $36,000 | = Net income | $7,700 | $21,700 | $29,700 |
| EPSNet income/#of shares | **2.8** | 5.6 | 7.2 | EPS(Net income/#of shares) | 2.4 | **6.8** | **9.3** |

1. what is the break even EBIT?

 **\* Interest amount= 90,000**\* 0.07 = 6,300

 \*\* shares left after repurchasing the stocks

= 5000 – (90,000/50) = 3200

$\frac{EBIT}{5,000} $= $\frac{EBIT-\*6300)}{\*\*\$3,200}$

 EBIT = 17,500.

**Homemade leverage:**

Is the use of personal borrowing to change the overall amount of financial leverage to which the individual is exposed.

Back to the first restructuring example page 539.

If Nouf has $2,000 worth of stock in the company, which means I have $100 shares (2000/20), what is going to be Nouf’s earning? Assuming that the Trans AM Co. adapts the proposed capital structure.

Proposal capital structure

|  |  |  |  |
| --- | --- | --- | --- |
|  | Recession | Expected | Expansion |
| EPS  | $0.5 | $3 | $5.5 |
| Earning for 100 shares | $50 | $300 | $550 |

Net cost=100 shares \* $20 = 2,000

NOW assuming that Trans AM Co. does not adapt the proposed capital structure

And Nouf thinks that its better if the company adapted the proposed situation, then she can fix it by **homemade leverage.**

**HOW:**

1. The debt equity ratio on the proposed amount was 1. So Nouf has to maintain this ratio. Since Nouf already has $2,000 shares of stock, she has to borrow the same amount ($2,000) with 10% interest to have a debt equity ratio of 1.

2. Nouf uses this borrowed amount to buy an additional $2000 shares and buy stocks with it (additional 100 stock), to have a total of 200 stocks.

Original capital structure and homemade leverage

|  |  |  |  |
| --- | --- | --- | --- |
|  | Recession | Expected | Expansion |
| EPS | $1.25 | $2.5 | $3.75 |
| Earning of 200 shares  | $ 250 | $500 | $750 |
| Less interest  | 200 | 200 | 200 |
| Net earning  | 50 | 300 | 550 |

EX.16.2 /543

In Trans example, suppose management adopts the proposed capital structure. Further suppose that an investor who owned 100 shares preferred the original capital structure (NO DEBT).

How can this investor create by his/her own the original structure?

In homemade leverage rule:

To create leverage like the previous example, investor borrows money.

To undo leverage, investor must lend money.

The original structure had debt equity ratio of 0 (all equity). And the proposed structure the firm has debt equity ratio of 1.

The investor must LEND money in the same proportion the firm has.

Lend 50 shared if his 100 shares (worth $1000) and lends the ($1000) at 10%

|  |  |  |  |
| --- | --- | --- | --- |
|  | Recession | Expected | Expansion |
| EPS | $0.50 | $3 | $5.5 |
| Earning of 50 shares  | 25 | 150 | 275 |
| Plus interest  | 100 | 100 | 100 |
| Total payoff | 125 | 250 | 375 |

**Ex. 8/570**

**Question information:**

**All equity firm, 8000 shares outstanding, price per share= $55 ,**

**EBIT = 32,000 per year forever.**

**Proposed capital structure: 35% debt, interest =8%**

1. **Allison , a shareholder of the firm, owns 100 shares of stock. What is her cash flow under the current capital structure, assuming the firm has a dividend payout rare of 100%?**

Allsion’s total cash flow = number of shares $×$ EPS

Since the company is all equity:

EPS = EBIT/# of shares outstanding

 = 32,000/8000 **=** $4/share

Her cash flow = 100 $×$ 4 = **$400**

1. **What will Allison’s cash flow be under the proposed capital structure of the firm? Assume she keeps all 100 of her shares?**

Allsion’s **total cash flow = number of shares** $×$ **EPS**

Since the proposed capital structure has 35% debt then:

**EPS= (EBIT – Interest ) / # of shares outstanding**

 Find the interest:

Total Assets = 8000 $×$ $55 = $440,000

Debt = 440,000 $×$ 0.35 = 154,0000

Interest = 154,000 $×$ 0.08 = 12,320

Find the numbers of shares outstanding in the proposed capital structure:

Find the repurchased mount of shares = 154,000/ 55 = 2800

Find what is left of the total shares = 8000 – 2800 = 5200 shares

EPS = (32,000 – 12,320)/5200 =$3.78 /share

Her total cash flow = 100 $×$ 3.78 = **378.46**

1. **Suppose the company does convert, but Allison prefers the current all equity capital structure. Show how she could unlever her shares of stock to recreate the original capital structure.**

**Illustration:**

Allison wants the previous capital structure (all equity), so to offset the borrowing that the firm made she has to lend money. In order to find the money to lend, she has to sell some of her current stocks (35% of her stocks), and use the proceeds in lending.

35% of 100 = 35 shares to be sold.

The proceeds of selling 35 shares = 35 $× \$55$ = 1920.

When lending 1920, she will generate interest , so interest generated :

Interest = 1925 $× 0.08 $= 154

Shares left = 100- 35 = 65 shares

Total cash flow to Allison after homemade leverage =

(# of shares $× Eps)$+ interest

(65 shares $× $3.78 )+ 154 = **400**

**Ex. 4. Company comparing two different capital structures:**

**an all equity plan (plan I): 160,000 shares of stock outstanding**

**and a levered plan (plan II): 80,000 shares, $2.8 million on debt**

1. **if EBIT is $350,000 which plan will result in the higher EPS?**

Plan I :

EPS= 350,000/160,000 = $2.19

Plan II

EPS= 350,000 – (2,800,000 \* 0.08) / 80,000 = $1.58

Plan I is higher.

1. if EBIT is 500,000, which plan will result in a higher EPS? (HW)
2. What is the break even EBIT? (HW)

 Review Ex. 16.1 From the book

Under Plan I, the unlevered company, net income is the same as EBIT with no corporate tax. The EPS under this capitalization will be:

 EPS = $350,000/160,000 shares

 EPS = $2.19

 a. Under Plan II, the levered company, EBIT will be reduced by the interest payment. The interest payment is the amount of debt times the interest rate, so:

 NI = $500,000 – .08($2,800,000)

 NI = $126,000

 And the EPS will be:

 EPS = $126,000/80,000 shares

 EPS = $1.58

 Plan I has the higher EPS when EBIT is $350,000.

 *b.* Under Plan I, the net income is $500,000 and the EPS is:

 EPS = $500,000/160,000 shares

 EPS = $3.13

 Under Plan II, the net income is:

 NI = $500,000 – .08($2,800,000)

 NI = $276,000

 And the EPS is:

 EPS = $276,000/80,000 shares

 EPS = $3.45

 Plan II has the higher EPS when EBIT is $500,000.

 *c.* To find the breakeven EBIT for two different capital structures, we simply set the equations for EPS equal to each other and solve for EBIT. The breakeven EBIT is:

 EBIT/160,000 = [EBIT – .08($2,800,000)]/80,000

 EBIT = $448,000