

## Earnings Per Share

A *simple capital structure* contains only common stock and non-convertible senior securities and *no* potentially dilutive securities.

A *complex capital structure* contains *potentially dilutive securities* such as options, warrants, or convertible securities.

The basic earnings per share calculation *does not* consider the effects of any dilutive securities in the computation of EPS:

$$\text{Basic EPS} = \frac{\text{Net Income} - \text{Preferred Dividends}}{\text{WASO}}$$

## Weighted Average Number of Shares Outstanding (WASO)

The WASO is the number of common shares outstanding during the year weighted by the portion of the year they were outstanding.

**Rules to follow to calculate WASO:** ( /12)

- 1. Stock Splits** – given a full year weighting.... (12/12)
- 2. Stock Dividends** – given a full year weighting.... (12/12)
- 3. Share Repurchase/Issue** – excluded/included from the date of the transaction  
Issue + ( /12)      Repurchase – ( /12)

## WASO Example:

- On December 31, 2013, the Lakehead Corp. had 300,000 shares of common stock issued and outstanding. Lakehead paid a 10 percent stock dividend on ~~August 1, 2014~~. On **September 30, 2014**, Lakehead **purchased 24,000** shares of its own commons stock for its treasury. The number of shares Lakehead should use in computing earnings per share for the year ended **December 31, 2014** is:

- A. 324,000
- B. 306,000
- C. 309,000

## Solution:

1.A	Initial shares:	300,000 (12/12) =	300,000
	Stock dividend:	10% x 300,000 = 30,000 (12/12) =	30,000
	Repurchase:	(24,000) (3/12) =	<u>(6,000)</u>
	Weighted average shares outstanding (WASO) =		324,000

**For the CFA exam you will need to be able to handle the effects of convertible preferred shares, convertible bonds and warrants and options on the EPS**

First you must determine if the convertible security should be included as a common stock equivalent for your analysis....the rule is:

$$\text{EPS} = \frac{\text{NI} - \text{PD}}{\text{WASO}}$$

$$\text{Diluted EPS} = \frac{\text{NI} - \text{PD}}{\text{WASO}}.$$

Include convertible securities that are **“Dilutive”** do not include securities that are **“Antidilutive”**.

We define **“Dilutive Securities”** as securities that **lower in the EPS** when included in the calculation.

We define **“Antidilutive Securities** as securities that **increase the EPS** when included in the calculation.

**Adjustment for Convertible Preferred Shares:**

To make the adjustment for convertible preferred shares, add back the preferred share dividends to the numerator and add the new common shares to the denominator:

$$\text{EPS} = \frac{\text{NI} - \text{PD} + \text{PD}}{\text{WASO} + \text{New Shares}}$$

**Adjustment for Convertible Bonds:**

To make the adjustment for convertible bonds, add back the pre-tax interest to the numerator and add the new common shares to the denominator:

$$\text{EPS} = \frac{\text{NI} - \text{PD} + \text{Interest Expense} (1 - \text{tax rate})}{\text{WASO} + \text{New Shares}}$$

**Convertible Preferred Share Example:**

Kinkaise Corp. has 10 million common shares outstanding and 1 million convertible preferred shares outstanding that pay a \$2 dividend. If Kinkaise Corp. reported net income of \$6.5 million, determine if the preferred shares should be considered common stock equivalents in each of the following scenarios:

$$\text{EPS} = \frac{6.5 - 2}{10} = 0.45$$

a) each preferred share is convertible into 1 common share

$$\text{EPS} = \frac{6.5 - 2}{10 + 1} + 2 = 0.59 \quad \text{EPS increases, so in this case, Pref sh are antidilutive....not incl}$$

b) each preferred share is convertible into 5 common shares

$$\text{EPS} = \frac{6.5 - 2}{10 + 5} + 2 = 0.43 \quad \text{EPS decreases, so in this case the Pref sh are dilutive...would incl.}$$

**Solution:**

First, calculate basic EPS:

$$\text{EPS} = \frac{\text{NI} - \text{PD}}{\text{WASO}} = \frac{\$6.5 - \$2}{10} = \$0.45$$

Second, test for dilution by applying the following rule for both a) and b):

The convertible security should be included as a common stock equivalent if it lowers the EPS figure (ie. it is dilutive), the convertible security should not be included as a common stock equivalent if it increases the EPS figure (ie. it is antidilutive)

To make the adjustment for the preferred shares, add back the preferred share dividends to the numerator and add the new common shares to the denominator:

$$\text{a) EPS} = \frac{\text{NI} - \text{PD}}{\text{WASO}} = \frac{\$6.5 - \$2 + \$2}{10 + 1} = \$0.59 \quad \leftarrow \text{increased EPS, this is "antidilutive"}$$

$$\text{b) EPS} = \frac{\text{NI} - \text{PD}}{\text{WASO}} = \frac{\$6.5 - \$2 + \$2}{10 + 5} = \$0.43 \quad \leftarrow \text{decreased EPS, this is "dilutive"}$$

**Conclusion:**

In scenario a) the preferred shares are antidilutive and thus would not be included as common stock equivalents and not used in the diluted EPS calculation.

In scenario b) the preferred shares are dilutive and thus would be included as common stock equivalents and used in the diluted EPS calculation.

**Convertible Bond Example:**

In 2014, Nova Corp. issued, at **par 50, \$1,000, 6.5% bonds**. Each bond was convertible into **125** common shares. Nova also had 100 Preferred Shares outstanding, each paying a \$2 dividend. Nova had **revenues of \$20,000** and **expenses other than interest and taxes of \$9,000** for 2015 (assume tax rate is **35%**). Throughout 2015, 3,500 common shares were outstanding; none of the bonds were converted or redeemed.

- a) **Calculate** the reported interest expense for 2015:

$$\text{int exp} = 50 \times \$1000 \times 6.5\% = \$3,250$$

- b) **Construct** the income statement for 2015:

Sales	20,000
Exp	<u>9,000</u>
EBIT	11,000
Int exp	<u>3,250</u>
EBT	7,750
Tax (35%)	<u>2,712.50</u>
NI	5,037.50

- c) **Calculate** the income available for common shareholders for 2015:

$$\text{EACS} = \text{NI} - \text{PD} = 5,037.50 - 200 = 4,837.50$$

- d) **Calculate** the basic EPS for 2015:

$$\frac{5,037.50 - 200}{3,500} = 1.38$$

- e) **Calculate** the fully diluted EPS for 2015:

$$\frac{5,037.50 - 200 + 3.250(1 - 0.35)}{3,500 + (50 \times 125)} = 0.71$$

**Solution:**

a) Interest expense =  $50 \times \$1,000 \times 6.5\% = \$3,250$

b)	Revenue	20,000
	Expenses	<u>9,000</u>
	EBIT	11,000
	Interest Expense	<u>3,250</u>
	EBT	7,750
	Taxes (35%)	<u>2,712.50</u>
	NI	5,037.50

c) EACS = NI – Preferred Dividends  
=  $5,037.50 - 200$   
= 4,837.50

d) Basic EPS = (NI – Preferred Dividends) / WASO  
=  $(5,037.50 - 200) / 3,500$   
= 1.38

e) To calculate fully diluted EPS we need to start from the beginning.

First we assume that **ALL** the bonds are converted on January 1 and then work from there:

Revenue	20,000
Expenses	9,000
Interest Expense ( <b>no interest expense!</b> )	<u>0</u>
EBT	11,000
Taxes (35%)	<u>3,850</u>
NI	7,150

$$\text{Fully Diluted EPS} = \frac{7,150 - 200}{3,500 + (50 \times 125)} = \frac{6,950}{9,750} = 0.71$$

**Note: the Preferred shares are not convertible!**

## EPS and Dilutive Securities

**Stock options** that are issued to employees are considered to be potentially dilutive securities, so an analyst should include them to see the effects on EPS.

**Warrants** are issued as an “added bonus” to help attract potential investors to purchase the company’s bonds or preferred shares. Warrants are considered to be potentially dilutive securities, so an analyst should include them to see the effects on EPS.

To account for the effects of **Options** and **warrants** we use the Treasury Stock method:

### Steps in the TS Method:

#### 1. Test for Dilution

Exercise price must be less than the average market price of the common shares, otherwise do not include warrants/options in EPS calculation.

**If  $X < P_{ave}$  => dilutive...**

**If  $X > P_{ave}$  => antidilutive....not be incl**

#### 2. Proceeds

Equal to the number of warrants or options times the exercise price

#### 3. Assumed Buy Back

Number of shares repurchased is equal to the proceeds divided by the average market price of the common shares

#### 4. Net New Shares Issued

Equals the number of new shares issued as a result of the warrants or options less the number of shares assumed to be repurchased.

### Bottom line:

This process is something that you as the analyst are doing in the privacy of your own office...this is not what the accountant or corporation management is doing...this is just a paper based exercise to see the effects of the potentially dilutive securities and to see what the EPS would be on a “worst case” basis.

**Treasury Stock Method Example:**

An analyst gathers the following information about Thompson Corporation:

500,000 common shares outstanding

\$50 per share average market price for the year

**50,000 warrants** outstanding exercisable at \$30 per share...**Assume 1:1**

- a) Are the warrants **dilutive** or anti-dilutive? How do you know?

$$X = 30 \quad P_{ave} = 50 \quad X < P_{ave}$$

- b) **Calculate** the proceeds from the warrants:

$$50,000 \times \$30 = \$1,500,000$$

- c) **Calculate** the number of shares that would be repurchased:

$$\$1,500,000 / \$50 = 30,000$$

- d) **Calculate** the number of net new shares issued:

$$50,000 - 30,000 = 20,000$$

- e) **Calculate** the number of shares of common stock that should be used in computing diluted earnings per share, in order to correctly account for the effect of the warrants:

$$500,000 + 20,000 = 520,000$$

**Solution for TS Example:**

**a) First step, test for dilution:**

Exercise Price < Average Share Price

Yes the warrants are dilutive, so we go to step 2, otherwise if the Exercise price > Average Share Price, then the warrants would be anti-dilutive and we would not consider them to be a common stock equivalent.

**b) Second step calculate proceeds:**

$$50,000 \times \$30 = \$1,500,000$$

**c) Third step assumed share buyback:**

$$\$1,500,000 / \$50 = 30,000$$

**d) Net new shares issued:**

$$50,000 - 30,000 = 20,000$$

Note that it is assumed each warrant is convertible into 1 common share, this is the default assumption! Watch for other conversion terms on the exam!

**e) Just add the net new shares issued to the WASO:**

$$20,000 + 500,000 = 520,000$$

## Summary - Diluted EPS Adjustments

**Convertible Preferred Shares** – add back the Preferred Dividends to the numerator and add in the new common shares that would be created to the denominator

**Convertible Bonds** – add back the Pre-tax Interest Expense to the numerator and add in the new common shares that would be created to the denominator

**Warrants/Options** – use the treasury stock method

$$\text{Diluted EPS} = \frac{\text{Net Income} - \text{Preferred Dividends} + \text{Preferred Dividends} + \text{Int}(1-\text{tax})}{\text{WASO} + \# \text{ New Shares} + \# \text{ New Share} + \text{NNS}}$$

### **Professor's tip:**

Be careful...if the question has more than one convertible security, **you must test each convertible security individually** for dilution and then calculate diluted EPS. NEVER include antidilutive securities in your diluted EPS calculation!

**Common Size Income Statement:**

Each item on the income statement is expressed as a percentage of revenue.

$$\text{Gross Profit Margin} = (\text{Sales} - \text{COGS}) / \text{Sales}$$

$$\text{Operating Profit Margin} = \text{EBIT} / \text{Sales}$$

$$\text{Pre-tax Profit Margin} = \text{EBT} / \text{Sales}$$

$$\text{Net Profit Margin} = \text{NI} / \text{Sales}$$

**Comprehensive Income and “Other Comprehensive Income”:**

$$\text{Comprehensive income} = \text{NI} \pm \text{FX adjustments} \pm \text{Pension adjustments} \pm \text{Unreal G/L}$$

**Be aware! These items are referred to as “other comprehensive income!”**

**I/S reading !!! MUST Read..... MUST notes...MUST practice ....**

**Knowledge Items....**