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## SIZE ADJUSTMENT OF MULTIPLES

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*This thought leadership paper provides insights on size adjustment of multiples*

### INTRODUCTION

The guideline public company method, under the market approach of valuation, uses multiples developed from similar publicly traded companies in estimating the fair value of an entity. Private companies are often smaller in size than publicly traded companies. This raises the question of whether unadjusted multiples derived from multibillion-dollar companies are relevant to valuing a small company, even if the business descriptions are similar.

### WHY IS ADJUSTMENT FOR SIZE REQUIRED?

Comparable guideline companies are often significantly larger in size than the subject company being valued. Historical returns on marketable securities indicate that small companies are riskier than larger companies. The multiple used in the guideline public company method (“GPCM”) is an inverse of a capitalization rate and vice versa. A higher capitalization rate represents higher risk and consequently a lower multiple. Using multiples of guideline public companies leads to overstatement of the subject company’s value as the excess risk component for the smaller company is not considered in the capitalization rate. Adjustments can be made in the multiples for size differences to reflect the information in the original multiples as if they have been derived from firms of the same size as the subject company.

The two categories of guideline company multiples include:

- Equity multiples: Examples of equity multiples include PE ratios, price/cash flows etc. The value of equity in these multiples is found by dividing the expected net cash flow to equity by the equity capitalization rate.
- Invested capital multiples: Examples of such multiples include MVIC/Revenue, MVIC/EBITDA etc. The market value of invested capital is found by dividing the expected net cash flow to invested capital by the invested capital capitalization rate.

## SIZE ADJUSTMENT OF MULTIPLES

### HOW TO ADJUST A MULTIPLE FOR SIZE?

Before understanding size adjustment, the following aspects should be kept in mind:

- Multiple is an inverse of a capitalization rate and vice versa.
- The companies listed on the stock exchange are classified into deciles considering market capitalization as a measure of size. A size risk premium is computed for each of the deciles which is equal to the difference between the historical excess return and the excess return predicted by CAPM on the stock. Historical excess return is the historical return on the stock over the risk-free return while excess CAPM return is the equity risk premium effected for beta. Thus, a company in the 10th decile will be smaller than a company in the 8th decile and consequently will have a larger size risk premium.
- The size adjustment required depends on the category of multiple used i.e. whether it is an equity or invested capital multiple.

The following are the constituents that need to be adjusted when multiples are adjusted for size:

- When the subject company and the guideline public company are in different deciles, the difference between their size risk premiums (referred to as " $\Theta$ ") is added to the capitalization rate i.e. inverse of the multiple of the guideline public company.
- The size risk premium is computed based on the market capitalization of the companies i.e. the equity value. Thus, while dealing with invested capital multiples,  $\Theta$  is adjusted for the ratio of equity value to invested capital (referred to as " $\epsilon$ ") of the guideline public company.
- $\Theta$  represents a factor to be added to a capitalization rate for capitalizing earnings. When a revenue multiple is to be adjusted for size, the capitalization rate that is to be adjusted represents a rate that will capitalize the revenues and not earnings. Therefore, an additional adjustment is required to adjust the  $\Theta$  by the ratio of revenue to earnings ("referred to as " $\alpha$ "). The factor that will be added to the capitalization rate is  $\alpha$  times  $\Theta$ .

### ILLUSTRATION

Suppose a larger guideline company, from the eighth decile of the NYSE, had the following multiples, before considering any adjustments:

Price/ Earnings	11.11
MVIC/After-tax EBIT	12.50
Price/ Revenue	1.39
Revenue/Earnings	8.00
Revenue/ After-tax EBIT	3.20
Equity/ MVIC	40.00%

## SIZE ADJUSTMENT OF MULTIPLES

### ADJUSTING PE RATIO FOR SIZE

Assuming the subject company is in the 10th decile and the guideline public company is in the 8th decile:

$\Theta = (5.60\% - 2.04\%) = 3.56\%$   
Guideline PE ratio = 11.11  
Equity capitalization rate =  $(1/11.11) = 9\%$   
Adding  $\Theta$ ,  
Adjusted capitalization rate =  $9\% + 3.56\% = 12.56\%$   
Size adjusted PE ratio =  $1/12.56\% = 7.96$

PE ratio being an equity multiple, an  $\epsilon$  adjustment is not required.

### ADJUSTING MVIC MULTIPLE FOR SIZE

Guideline public company MVIC/After tax EBIT = 12.50  
MVIC capitalization rate =  $(1/12.50) = 8\%$   
Equity/MVIC ( $\epsilon$ ) = 40% (Given)  
Adding  $\Theta$  adjusted for  $\epsilon$ ,  
Adjusted capitalization rate =  $8\% + (3.56\% * 40\%) = 9.42\%$   
Size adjusted MVIC/After tax EBIT =  $1/9.42\% = 10.62$

### ADJUSTING PRICE/REVENUE MULTIPLE

Revenue/Earnings ( $\alpha$ ) = 8 (Given)  
Guideline public company Price/Revenue multiple = 1.39  
Equity capitalization rate =  $(1/1.39) = 71.94\%$   
Adding  $\Theta$  adjusted for  $\alpha$ ,  
Adjusted capitalization rate =  $71.94\% + (3.56\% * 8) = 100.42\%$   
Size adjusted Price/Revenue multiple =  $1/100.42\% = 1.00$

Price/Revenue multiple being an equity multiple, an  $\epsilon$  adjustment is not required.

The general form of the above equation is as follows:

$$\text{Adjusted multiple: } \frac{1}{\left(\frac{1}{\text{Multiple}}\right) + (\alpha \epsilon \Theta)}$$

The notations in the formula have the same meaning as described above.

# SIZE ADJUSTMENT OF MULTIPLES

## CRITICISMS

Size adjustment of multiples is a recommended practice in the valuation world. However, it is not widely implemented due to the following reasons:

- The existence of size effect is still under debate
- One of the major adjustments of the size risk premium, its computation is criticized on a number of grounds some of them being ambiguity, overlapping of deciles
- Courts have rejected the application of a size risk premium in some cases.

In spite of its limitations, the size adjustment is an effective way to overcome the disparities in the valuation of the subject company due to the differences in the size of the subject and guideline public company.



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