

## Concepts and Methods for investments analysis

### Concepts and methods which are used in the preparation of financial analyses

Target prices usually refer to a twelve-month time horizon and are derived by the use of various commonly used valuation models like Discounted Cash Flow – DCF, Dividend Discount Gordon Growth – DDGG, relative valuation tools like the use of peer group multiples, the use of target multiples, sum-of-the-parts-valuation or return-based valuation models. Other fundamental factors (M&A activities, capital markets transactions, share buybacks, sector sentiment etc.) are taken into account as well.

All valuation methods applied are based on an integrated planning model for every company under coverage. This model comprises a detailed forecast period of at least 3 years based on the analyst's assumptions regarding the key earnings drivers (e.g. organic sales growth, M&A activity, margin development, CAPEX plan, working capital assumptions etc.). Using a standardized modeling tool for linking Income Statement, Balance Sheet and Cash Flow assumptions as well as ratio calculation based on a database solution and carried out with Excel secures the same quality standard in terms of model functionality throughout the group.

### Frequently used valuation methods

#### *Discounted Cash Flow (DCF)*

Discounted cash flow (DCF) valuation uses future free cash flow projections and discounts them with the appropriate cost of capital to arrive at a present value, which is used to evaluate the potential for investment. As a standard model we use a Free Cash Flow to Firm model where the Free Cash Flows are based on our standardized planning model (Free Cash Flow = NOPLAT + Depreciation & Amortisation - gross investment in PPE & Intangibles +/- change in Working Capital +/- change in long-term provisions). Net operating profit less adjusted taxes (NOPLAT) refers to total operating profits for a firm with adjustments made for taxes. It represents the profits generated from a company's core operations after subtracting income taxes related to core operations. As a discount factor the Weighted Average Cost of Capital (WACC) is used. To calculate WACC we multiply the cost of each capital component by its proportional weight and take the sum of the results.

To determine the cost of debt we frequently use the market rate that a company is currently paying on its long-term debt and model long-term costs of debt based on this data and our underlying yield curve assumptions.

To determine the cost of equity we apply the commonly used CAPM concept and add to our long-term (10y) risk-free rate assumptions for the respective market an equity market premium multiplied by the levered company beta.

In most cases we derive the company beta by adjusting a broad-based industry beta with a company-specific adjustment factor to account for the company's specific risk profile relative to the industry average. These adjustments are at the discretion of the individual analyst. To account for a regional profile of the company we frequently use CDS-adjusted risk-free rates.

On some rare occasions (e.g. more frequently in the valuation of real estate companies) the Free Cash Flow to Equity method is used. This DCF model mandates discounting all cash flows available to equity holders (including cash flows for debt financing) at the cost of equity.

### *Dividend Discount Model / Dividend Discount Gordon Growth Model*

The dividend discount model is a procedure for valuing the price of a stock by using expected dividends and discounting them back to the present value by using the assumed cost of equity for the individual company. The Gordon Growth Model is frequently used in connection with the dividend discount model to derive a terminal value after our specific dividend assumptions. The following formula is frequently applied: Terminal value (TV) = Forecast Book Value \* (sustainable ROE – sustainable earnings growth)/(cost of equity – sustainable earnings growth).

### *Relative valuation tools*

Relative valuation uses current valuation ratios of sufficiently comparable companies to derive a fair value estimate of the equity value of the company under review. Usually relative valuation ratios are derived from trading multiples of peer group companies. Peer group companies are listed companies which the analysts see as a sufficiently comparable proxy of the covered company. Usually companies from the same industry are seen as peers. Additional criteria commonly used are size, growth perspectives, market capitalization, similar end-customer markets or other company specifics like, e.g., balance sheet characteristics. As peer group multiples we usually take average or median ratios or a range derived from a predefined set of specified peer group companies.

Among the relative valuation tools we mostly refer to price multiples and Enterprise Value multiples.

### *Price multiples*

The most commonly used price multiple is the price-to-earnings ratio – PER. The PER is a valuation ratio calculated by dividing the share price by the estimated earnings per share giving an indication of how much investors are willing to pay for a company's earnings. The fair value per share is calculated by multiplying the estimated earnings per share by the peer group PER. Another price multiple is the price-to-book ratio – PBV, which is calculated by dividing the share price by the estimated book value per share. It indicates the relative premium that investors are willing to pay over the book value of the balance sheet's shareholders' equity of a company. The fair value per share is calculated by multiplying the estimated book value per share by the peer group PBV multiple.

### *Enterprise Value (EV) multiples*

Enterprise Value multiples account for the impact of leverage of the company and refer to the total value of the company (debt and equity value). Most frequently we use EV/Sales, EV/EBITDA or EV/EBIT multiples. The ratios are calculated by dividing the Enterprise Value of a company by the estimated sales, EBITDA or EBIT figures. An Enterprise Value multiple indicates how many times sales, EBITDA or EBIT an acquirer is potentially willing to pay for a company. The fair value per share is calculated by multiplying the estimated Sales, EBITDA or EBIT by the respective peer group EV multiple (deducting the market value of net debt, minority interests and other adjustments) divided by the total number of shares outstanding.

### *Target multiples*

Target valuation multiples are not derived from trading multiples of peer group companies but are taken, e.g., from the historical valuation of a company (average or median multiples over a specific time span) or simply set as an assumed fair valuation multiple by the analyst.

### *Sum-of-the-parts valuation*

A Sum-of-the-parts valuation (SOTP) looks at a company's segments, divisions and lines of business separately in order to highlight key value drivers and/or appraise potentially diverging operations, in particular for holding companies. Each segment may be valued by a different method, and non-core assets are usually presented separately. The sum of these asset valuations denotes an Enterprise Value which may be used to derive an equity value by deducting relevant liabilities, provisions and minorities.

### *Return-based valuation*

There is a general agreement that companies create value if their returns (Return on Invested Capital - ROIC, Return on Capital Employed - ROCE, Return on Equity - ROE, economic profit) exceed the cost of capital (COE, WACC), which may also be used for valuing a company's equity. We use appropriate rates of return or representative post-tax operating profits, relate them to capital invested and receive an Enterprise Value. The equity value is the result of deducting debt, minorities and provisions as well as other necessary liabilities.

### **Frequently used Abbreviations**

**Beta** - A measure of volatility or systematic risk. A beta of 1 indicates that the security moves with the market. A beta of less than 1 means that the security is less volatile than the market, and a beta of more than 1 indicates a higher volatility than the market.

bop - beginning of period

**BVPS** – Book Value per Share - BVPS is calculated by dividing total shareholders' equity by the number of shares outstanding to derive the equity per share of a company.

**CAGR** – The Compound Annual Growth Rate (CAGR) is the mean annual growth rate over a specified period of time longer than one year and is calculated by dividing the value of an investment at the end of the period by its value at the beginning of that period, raising the result to the power of one divided by the period length and subtracting 1 from the resulting value.

**Capex** – Capital expenditures - Funds used for investments in fixed assets (e.g. buildings, equipment).

**CDS** – Credit Default Swap

**CEO** – Chief Executive Officer

**CFO** – Chief Financial Officer

COE – Cost of Equity - The return on an equity investment which investors require from a company to compensate for the risk they undertake by investing their capital.

COO – Chief Operating Officer

COTE – Cost of Tangible Equity - The return on tangible equity which equity investors require from a company to compensate for the risk they undertake by investing their capital.

CRO – Chief Risk Officer

DPS – Dividend per Share

Total declared or estimated dividend the shareholder is entitled to receive.

DY – Dividend Yield Measures the dividend per share as a percentage of the share price.

EBIT – Earnings Before Interest and Taxes

EBITDA – Earnings Before Interest, Taxes, Depreciation and Amortization

eop – end of period

EPS – Earnings per Share

Calculated by dividing the net profit after minorities in a given period by the number of weighted shares outstanding.

EV – Enterprise Value

EV is a measure of the company's total value including the market value of equity and the market value of debt capital.

FY – Financial Year

Reporting year of the company, which can deviate from the calendar year.

FX – Foreign Exchange

Currency other than local and/or reporting currency.

Net debt - Is a measure that shows the company's debt situation netting the amount of long- and short-term interest-bearing financial liabilities with its cash and other liquid assets.

Opex – Operating expenditures

Opex includes day-to-day expenses like material or personnel expenses.

PBT – Profit Before Tax

PBV – Price Book Value - The PBV is a valuation ratio calculated by dividing the share price by the (estimated) book value per share.

PER – Price Earnings Ratio - The PER is a valuation ratio calculated by dividing the share price by the (estimated) earnings per share.

PPE – Property, Plant & Equipment

ROE – Return on Equity

The ROE measures net income as a percentage of average shareholders' equity in a given period (usually one year).

ROTE – Return on Tangible Equity

The ROTE measures net income as a percentage of average shareholders' tangible equity in a given period (usually one year).

TP – Target Price

12-month fundamental share price target according to various valuation techniques for calculating the fair value per share.

TV – Terminal Value - The terminal value is the present value at a future point in time of all future cash flows expecting a stable growth rate forever after a detailed planning horizon. It is most often used in multi-stage discounted cash flow analysis.

WACC – Weighted Average Cost of Capital - Calculation of the company's cost of capital by proportionately weighting of all sources of capital like equity and debt.

ytd – year to date - Measuring any performance since the start of the calendar year or financial year.

Data: as of June 27