Business Valuation in Germany

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Functional business valuation

- The “real” business value is a fiction
- Business value depends on
  - the valuation function or purpose
  - the legal and contractual requirements of valuation
  - the information obtainable by the valuator
- In a rational world, the valuation purpose determines
  - the valuation approach and
  - the valuation details
- Even a market price is no “real” business value, since different values are precondition of market transactions
- Value equals price only by chance: “the price you pay, the value you get”
Valuation topics

- Objects
- Purposes
- Approaches
- Valuators
- Details
Objects in Germany at a glance

Companies (2013)
3.6 m

Listed
800-850

In premium segments
150-160

Not listed

Other

< 10 employees
91%
Valuation process

Reason
- Valuation shall serve the purpose
- Reason does not automatically determine purpose

Purpose
- Decision function, arbitration function, argumentation function, taxation function, financial reporting function, ...

Approach
- Approach shall serve the purpose
- DCF, Multiples, Fair value according to IFRS, ...
Prominent valuators

- Courts
- Federal Financial Supervisory Authority (BaFin)
- Investment banks
- Public Auditors (WP)
- Arbitrators
- Court witnesses
- Professors
- M&A parties
- Tax payers
- Expropriated people
- Owners
- Experts
- Advisors
- Investment banks
- Public Auditors (WP)

W. Ballwieser – Business Valuation in Germany – OIV 2017
Prominent valuation organisations (1)

- **IDW** (Institut der Wirtschaftsprüfer in Deutschland) = Institute of Public Auditors in Germany
  - Issued *IDW Standard 1: Principles for the Performance of Business Valuations (IDW S 1) 2008*

- **DVFA** (Deutsche Vereinigung für Finanzanalyse und Asset Management)
  - Issued *Best Practice Recommendations Corporate Valuation, December 2012*

- **EACVA** (European Association of Certified Valuators and Analysts)
  - European partner of National Association of Certified Valuation Analysts (NACVA)

- **IVSC** (International Valuation Standards Council)
  - Issues *Bases of Value, Valuation Approaches and Methods, ...*
Prominent valuation organisations (2)

IVSC
Member Organisations

Professional valuation organisation members

**Australia**
Australian Property Institute
Chartered Accountants Australia and New Zealand

**Bangladesh**
Institute of Chartered Valuers
Bangladesh (Provisional)

**Belarus**
Society of Valuers

**Bosnia and Herzegovina**
Association of Certified Appraisers Bosnia Herzegovina

**Botswana**
Real Estate Institute of Botswana

**Brazil**
Instituto Brasileiro Avaliadores (IBAPE)

**Georgia**
Expertise Institute for Valuation of Assets of Georgia
Association of Professionals on Land & Realty

**Hong Kong**
Hong Kong Institute of Surveyors

**India**
Practising Valuers Association of India

**Indonesia**
Indonesian Society of Appraisers

**Italy**
Consiglio Nazionale Geometri Italy

**Japan**
Japan Association of Real Estate Appraisers

**Kazakhstan**
Republican Chamber of Appraisers of Kazakhstan

**Mongolia**
Mongolian Institute of Certified Appraisers

**Montenegro**
Institute of Certified Accountants of Montenegro
Institute of Internal Auditors of Montenegro

**Namibia**
Namibian Institute of Valuers

**Netherlands**
Raad voor Onroerende Zaken (ROZ), Real Estate Council

**New Zealand**
Property Institute of New Zealand

**Nigeria**
Nigerian Institution of Estate Surveyors and Valuers

**Norway**
Norges Takseringsforbund
Approaches

- Prominent use of **multiple approaches** by M&A parties
- Dominant use of **DCF approaches for compensation of minority shareholders** according to Aktiengesetz (AktG = Stock Corporation Act) or Umwandlungsgesetz (UmwG = Transformation Act)
  - AktG § 304 and 305: profit transfer agreement or contract of domination (Gewinnabführungs- oder Beherrschungsvertrag)
  - AktG § 320b: incorporation (Eingliederung)
  - AktG § 327a: squeeze-out
  - Various sections of UmwG: mergers

- **Average stock price as minimum compensation** in case of AktG (average of three months before first market information about planned measure)

- **Different approaches** in tax law (BewG = Bewertungsgesetz) or commercial law for financial reporting (HGB, IFRS)
Details – DCF approaches

DCF Approaches

Entity Approach

- APV (Adjusted Present Value)

Equity Approach

- WACC (Weighted Average Cost of Capital)
  - Tax Shield in numerator
  - Tax Shield in denominator

Flow to Equity FTE

- (Free Cash Flow FCF)
- (Total Cash Flow TCF)
Details – DCF Example (1)

- **P&L forecast, perpetuity model, expectation values**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Taxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>2,000.00</td>
<td></td>
</tr>
<tr>
<td>Expenses</td>
<td>1,400.34</td>
<td></td>
</tr>
<tr>
<td>EBITDA</td>
<td>599.66</td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>280.00</td>
<td></td>
</tr>
<tr>
<td>EBIT</td>
<td>319.66</td>
<td></td>
</tr>
<tr>
<td><strong>Interest</strong></td>
<td><strong>8% of 1,400</strong></td>
<td><strong>112.00</strong></td>
</tr>
<tr>
<td>EBT</td>
<td>207.66</td>
<td></td>
</tr>
<tr>
<td>Local bus tax</td>
<td>Tax factor 408%</td>
<td>33.65</td>
</tr>
<tr>
<td>Corp inc tax</td>
<td>15.825%</td>
<td>32.86</td>
</tr>
<tr>
<td>Net income</td>
<td>Dividend</td>
<td>141.15</td>
</tr>
</tbody>
</table>
## Details – DCF Example (2)

- **P&L forecast, perpetuity model, expectation values**

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Taxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>2,000.00</td>
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<tr>
<td>EBIT</td>
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<td></td>
</tr>
<tr>
<td><strong>Interest</strong></td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>EBT</td>
<td>319.66</td>
<td>96.23</td>
</tr>
<tr>
<td>Local bus tax</td>
<td>Tax factor 408%</td>
<td>45.65</td>
</tr>
<tr>
<td>Corp inc tax</td>
<td>15.825%</td>
<td>50.59</td>
</tr>
<tr>
<td>Net income</td>
<td>Dividend</td>
<td>223.43</td>
</tr>
</tbody>
</table>

### Tax Shield TS

96.23 – 66.51 = **29.72**
## Indirect FCF calculation

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net income</td>
<td>141.15</td>
</tr>
<tr>
<td>+ Interest I</td>
<td>112.00</td>
</tr>
<tr>
<td>- Tax shield TS</td>
<td>29.72</td>
</tr>
<tr>
<td>+ Depreciation D</td>
<td>280.00</td>
</tr>
<tr>
<td>- Revenues without cash flow</td>
<td>0.00</td>
</tr>
<tr>
<td>- Investment</td>
<td>280.00</td>
</tr>
<tr>
<td>+ Disinvestment</td>
<td>0.00</td>
</tr>
<tr>
<td>Free Cash Flow FCF</td>
<td><strong>223.43</strong></td>
</tr>
</tbody>
</table>
Details – DCF Example (4)

- **APV**

  Equity Value = Entity Value – Debt

  \[
  \text{FCF} + \frac{\text{TS}}{r_E} + \frac{\text{TS}}{r_D} - D
  \]

  \[
  = \frac{223.43}{0.1101453} + \frac{29.72}{0.08} - 1,400 = 1,000
  \]

  Based on CAPM with unlevered beta.
Details – DCF Example (5)

- **FCF**

Equity Value = Entity Value – Debt = \( \frac{FCF}{WACC} - D \)

\[
WACC = r_E \frac{E}{E + D} + r_D (1 - t) \frac{D}{E + D}
\]

\[
WACC = 0.14115 \frac{1,000}{2,400} + 0.08(1 - 0.26535) \frac{1,400}{2,400} = 9.30962\%
\]

\[
E = \frac{223.43}{0.0930962} - 1,400 = 1,000
\]

Based on CAPM with levered beta
What if we do not know the equity value of 1,000?

Entity Value = E + D = \( \frac{FCF}{WACC} \) => (E + D)WACC = FCF

\[(E + D)(r_E^l \frac{E}{E + D} + r_D^l (1 - t) \frac{D}{E + D}) = FCF\]

\[r_E^l E + r_D^l (1 - t) D = FCF\]

\[r_E^l E = FCF - r_D^l (1 - t) D\]

\[E = \frac{FCF - r_D^l (1 - t) D}{r_E^l}\]

\[E = \frac{223.43 - 0.08(1 - 0.26535)1,400}{0.14115} = 1,000\]
Details – DCF Example (7)

- FTE

\[
E = \frac{FTE}{r_E} = \frac{141.15}{0.14115} = 1,000
\]
Details – DCF Example (8)

- In the setting of perpetuity, identical values only result when the Modigliani-Miller (1963) equation is fulfilled

\[ r_E^l = r_E^u + (r_E^u - r_D)(1 - t) \frac{D}{E} \]

\[ 0.14115 = 0.1101453 + (0.1101453 - 0.08)(1 - 0.26535) \frac{1,400}{1,000} \]

- Other settings have other implications and requirements to get an identical business value
In Germany, the **FTE approach („Ertragswert“)** is dominant, especially used by Big 4 companies, though other approaches are well known and used in the back office.

- Strategy advisors usually prefer the **APV approach**
- Companies normally prefer the **WACC-FCF approach**, since it can be easily combined with value reporting (e.g., EVA) and financial reporting rules (IFRS or HGB)
- All approaches are accepted in jurisdiction
In practice, the calculation is much more complex.

In most cases, forecasts are carried out in two phases, a detailed planning phase (1 to 3 or 4 years) and a second phase which is usually based on long-term projections, leading to a terminal value – three phases are rare.

The weight of terminal value is high.

Only in valuations according to AktG or UmwG personal taxes are integrated.

Fiction of all owners being natural persons residing in Germany liable to unlimited domestic taxation.

Those valuations are dominated by IDW S 1, the business valuation standard of Public Auditors.

IDW S 1 is no law, but a safe haven, since Public Auditors have to give reasons in case of deviation.
Details – German reality of DCF (3)

<table>
<thead>
<tr>
<th>Acquirer (parent company)</th>
<th>Vendor (subsidiary)</th>
<th>Valuation date</th>
<th>Equity value EV</th>
<th>DPP</th>
<th>PV of TV</th>
<th>Percent of EV</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAG</td>
<td>Degussa</td>
<td>1/1/2006</td>
<td>8.194bn</td>
<td>2006-2008</td>
<td>7.705bn</td>
<td>94%</td>
<td>1.5%</td>
</tr>
<tr>
<td>ALBA</td>
<td>Inter-seroh</td>
<td>12/31/2010</td>
<td>435.9m</td>
<td>2011-2013</td>
<td>410.1m</td>
<td>94%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Deutsche Bank</td>
<td>Deutsche Postbank</td>
<td>12/31/2014</td>
<td>5.344bn</td>
<td>2015-2019</td>
<td>5.152bn</td>
<td>92%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Endress+ Hauser</td>
<td>Analytik Jena</td>
<td>12/31/2014</td>
<td>87.28m</td>
<td>2016-2019</td>
<td>85.5m</td>
<td>98%</td>
<td>1.33%</td>
</tr>
<tr>
<td>Bourso-rama</td>
<td>OnVista</td>
<td>1/1/2015</td>
<td>18.228m</td>
<td>2015-2019</td>
<td>24.091m</td>
<td>132%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

In some cases, using three phases instead of two reduces the weight of terminal value to about 60% of equity value.
In the function of a **neutral valuer**, a Wirtschaftsprüfer acts as an expert who, by means of comprehensible methods, determines a value of the business, independent of the individual ideals of the parties concerned – the **objectified business value**.

In the function of an **advisor**, the Wirtschaftsprüfer determines a subjective value for decision-making purposes, which can indicate to a specific investor the maximum amount he could invest in a business (**upper price limit**) or the minimum amount a seller must demand (**lower price limit**) without his economic position deteriorating as a result of the transaction.

In his function as **arbitrator/intermediary** in the event of conflict, giving due consideration to the various subjective value ideals of the parties concerned, the Wirtschaftsprüfer works to arrive at an **arbitration value**.
Details – IDW S 1 (2)

- Calculation of the **objectified business value** using FTE DCF ("Ertragswert")
  - Forecasting is principally carried out in two or more phases
  - Valuation is based on the earning power as at the valuation date
  - So-called pseudo synergy effects – characterised by the fact that they can be realised without undertaking the measures underlying the reason for the valuation – have to be taken into account
  - Stock portfolio is taken as an alternative for having ownership of the business
  - Discount rate is constructed modularly: risk-free rate of return, equity risk premium, personal income tax rate, growth rate
  - Yield curve is used for estimation of risk-free rate of return
  - CAPM or Tax-CAPM is used for estimation of equity risk premium
Details – IDW S 1 (3)

- Yield curve for estimation of risk-free rate of return using Svensson method

Details – IDW S 1 (4)

- Svensson method in simultaneous time

\[
i_s(t,t+T,b) = \beta_0 + \beta_1 \frac{1 - e^{(-T/\tau_1)}}{T/\tau_1} + \beta_2 \left( \frac{1 - e^{(-T/\tau_1)}}{T/\tau_1} - e^{(-T/\tau_1)} \right) + \beta_3 \left( \frac{1 - e^{(-T/\tau_2)}}{T/\tau_2} - e^{(-T/\tau_2)} \right)
\]

\[
b = (\beta_0, \beta_1, \beta_2, \beta_3, \tau_1, \tau_2)
\]

- Estimation of parameter vector b is based on daily market prices of coupon bonds

- Parameter vector is published daily by ECB and Deutsche Bundesbank
Details – IDW S 1 (5)

- Recommendation since 2005 and 2016, resp.
  - Use parameters of vector b presented by Deutsche Bundesbank or European Central Bank (ECB)
  - Estimate spot rate curve for three months before and up to valuation date
  - Calculate arithmetic means of spot rates
  - Calculate flat rate which ensures an identical present value to using mean spot rate curve
  - Round flat rate to next 1/4 % value
  - If flat rate is less than 1 %, round flat rate to next 1/10 % value
Details – IDW S 1 (6)

Source: KPMG Kapitalkostenstudie 2016, p. 24
Details – IDW S 1 (7)

- CAPM

\[ \mu(r_j) = r_f + \beta_j \cdot [\mu(r_M) - r_f] \]

\[ \beta_j = \frac{\text{cov}(r_j, r_M)}{\text{var}(r_M)} = \frac{\sigma_{jM}}{\sigma_M^2} = \frac{\sigma_j \cdot \sigma_M \cdot \rho_{jM}}{\sigma_M^2} \]

Market model

\[ r_{jt} = r_{ft} - \beta_j r_{ft} + \beta_j r_{Mt} + e_{jt} \Rightarrow \ a_j + b_j r_{Mt} + e_{jt} \]

- IDW 2012 recommends equity risk premium without personal taxes in a range of 5.5 % to 7.0 %
Details – IDW S 1 (8)

- Tax-CAPM

\[ \mu(r_j)(1-t_p) = \left( r_f + \beta_j \left[ \mu(r_M) - r_f \right] \right)(1-t_p) \]

- IDW 2012 recommends equity risk premium after personal taxes in a range of 5.0 % to 6.0 %
Example: Interseroh – valuation date 12/31/2010

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basiszins vor pers. Ertragsteuern</td>
<td>3.50%</td>
<td>3.50%</td>
<td>3.50%</td>
<td>3.50%</td>
</tr>
<tr>
<td>Pers. Ertragsteuern</td>
<td>0.92%</td>
<td>0.92%</td>
<td>0.92%</td>
<td>0.92%</td>
</tr>
<tr>
<td>Basiszins nach pers. Ertragsteuern</td>
<td>2.58%</td>
<td>2.58%</td>
<td>2.58%</td>
<td>2.58%</td>
</tr>
<tr>
<td>Marktrisikoprämie nach pers. Ertragsteuern</td>
<td>4.5%</td>
<td>4.5%</td>
<td>4.5%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Beta unverschuldet</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Verschuldungsgrad zu Marktwerten</td>
<td>23%</td>
<td>26%</td>
<td>16%</td>
<td>7%</td>
</tr>
<tr>
<td>Beta verschuldet</td>
<td>1.48</td>
<td>1.51</td>
<td>1.39</td>
<td>1.28</td>
</tr>
<tr>
<td>Risikoprämie nach pers. Ertragsteuern</td>
<td>6.66%</td>
<td>6.80%</td>
<td>6.26%</td>
<td>5.76%</td>
</tr>
<tr>
<td>Wachstumsabschlag</td>
<td></td>
<td></td>
<td></td>
<td>1.1%</td>
</tr>
<tr>
<td>Kapitalisierungszinssatz nach pers. Ertragsteuern</td>
<td>9.24%</td>
<td>9.37%</td>
<td>8.83%</td>
<td>7.27%</td>
</tr>
</tbody>
</table>

Source: Bericht (2011), p. 86
Details – IDW S 1 (10)

- IDW S 1 does **not** support additional risk premiums as part of discount rate for:
  - Illiquidity risk (illiquidity premium)
  - Small size (small stock risk premium)
  - Insolvency risk (insolvency premium)
  - Missing diversification of owner ("total beta" instead of CAPM beta)
IDW S 1, para. 164:
“Simplified price determinations are sometimes used for entities in practice. These include, in particular, the use of earnings multiples or sales or product quantity-oriented multiples.”

IDW S 1, para. 167:
“... simplified pricing methods can form a basis for plausibility checks of the results of the valuation using dividend discount or DCF methods.”
Developments

- Criticism is offered against the domination of DCF methods over multiples in IDW S 1, e.g. by DVFA.
- Actually, a few courts require expert reports of court witnesses to use multiple approaches besides DCF methods in case of shareholder compensation according to AktG or UmwG.
- But up to now, multiples are not accepted in the Supreme Courts, Bundesgerichtshof (BGH) and Bundesverfassungsgericht (BVerfG), resp.
Literature

- IDW (2008), IDW Standard: Principles for the Performance of Business Valuations (IDW S 1 (Version 2008)), (Status at April 2, 2008), [Translation Status: December 2, 2008], can be ordered as Print on Demand by IDW Verlag, Düsseldorf.
Thank you very much! Questions welcome!

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