



Andreas Becker

## What Will the Reader Learn?

- *Criteria that make an intangible eligible for valuation using MEEM*
- *Suitability of MEEM for various kinds of intangibles*
- *What to consider regarding MEEM valuation parameters, such as revenues, remaining useful life, operating income, contributory asset charges, discount rate, and tax amortization benefit*
- *How to apply MEEM*
- *What limitations MEEM has*

## 1 Introduction

It is possible to observe an increasing shift in asset classes from tangible to intangible assets, due to greater importance being attached to intellectual as opposed to physical property. This has focused considerable attention on ways to identify, measure, and recognize intangibles. In particular, business mergers in accordance with IFRS 3 or US-GAAP (ASC 805) require the measurement and recognition of intangibles that were originally created or otherwise obtained by the target. Such intangibles include trademarks, patents, in-process research and development (IPR&D), and customer-related intangibles. With a few exceptions, internally created intangibles are usually unrecognized by the entity that created them. The costs of internal development are typically charged as expenses.<sup>1</sup>

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<sup>1</sup>IFRS 3, item 13.

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A. Becker (✉)  
Deloitte GmbH Wirtschaftsprüfungsgesellschaft, Düsseldorf, Germany  
e-mail: [anbecker@deloitte.de](mailto:anbecker@deloitte.de)

This chapter focuses on the multi-period excess earnings method (MEEM), one of the income-oriented approaches. In contrast to other income approaches, MEEM is designed to apply only to one intangible asset (or group or portfolio of similar intangibles assets) that is the most relevant for cash flow generation, also known as the leading asset approach.<sup>2</sup>

MEEM addresses the fact that assets, in general, generate cash flow only in conjunction with other assets. It operates under the assumption that the entity consists only of this particular leading asset while all others—referred to as contributory assets—are leased from external sources for which fictitious expenses are charged. It is important that the MEEM is reserved for the leading asset and that all other assets are truly only contributory in generating cash flow for the leading asset. The income generated by this asset must be reliably isolated, to avoid some of the income being attributed to other assets. Typically, such leading intangible assets are customer-related assets, IPR&D, already developed technologies, or trademarks in the case of B2C markets.

Figure 1 depicts an example of a customer relationship valuation using MEEM. The first column indicates the sections that follow, where the relevant parameters and ways to determine them are described.

The sections of this chapter follow the steps of the general procedure in a MEEM valuation. Section 2.1 elaborates on the appropriate ways to isolate projected revenues pertaining to the valuation subject. Section 2.2 introduces the remaining useful life and how to estimate it. We present important adjustments to the operating margin applicable to revenue forecasting in Sect. 2.3. Then we delve into what makes MEEM a unique approach, namely contributory asset charges, in Sect. 2.4. To wrap up the MEEM model, we share the considerations needed for discount rates and tax amortization benefits with the reader in Sects. 2.5 and 2.6, respectively.

## 2 Determination of Valuation Parameters

### 2.1 *Attributable Revenues*

The business plan for the entity is the starting point for determining the relevant revenue streams for the MEEM model based on the leading asset. If necessary, such as when the planning period reflected in the business plan falls short of the expected useful life of the asset,<sup>3</sup> the forecast should be extended, pursuant to reasonable steady-state assumptions. When the internal accounting and planning is granular at the product or product group level this facilitates planning the relevant revenues of the intangible in an isolated fashion, because such revenues are easily attributable to

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<sup>2</sup>IDW S 5, item 40.

<sup>3</sup>See Sect. 2.2 for remaining useful life considerations.

<b>Valuation of customer relationships</b>											
<b>Ch. €000</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>FY23</b>	<b>FY24</b>	<b>FY25</b>	<b>FY26</b>	
<b>2.1 Revenues</b>	16,000	16,800	17,640	18,522	19,448	19,643	19,839	20,037	20,238	20,440	
2.1 Deduction of order backlog	(500)										
<b>2.2 Attrition</b>	90.9%	81.8%	72.7%	63.6%	54.5%	45.5%	36.4%	27.3%	18.2%	9.1%	
<b>Revenues after attrition</b>	14,091	13,745	12,829	11,787	10,608	8,928	7,214	5,465	3,680	1,858	
<b>2.3 EBITDA margin</b>	14%	16%	17%	18%	19%	19%	19%	19%	19%	19%	
<b>EBITDA</b>	1,973	2,199	2,181	2,122	2,016	1,696	1,371	1,038	699	353	
Tax expenses	(592)	(660)	(654)	(636)	(605)	(509)	(411)	(311)	(210)	(106)	
<b>Cashflow after tax</b>	1,381	1,539	1,527	1,485	1,411	1,187	959	727	489	247	
Tangible assets	(231)	(225)	(210)	(193)	(174)	(146)	(118)	(90)	(60)	(30)	
WC	(119)	(116)	(108)	(100)	(90)	(75)	(61)	(46)	(31)	(16)	
Workforce	(13)	(13)	(12)	(11)	(10)	(8)	(7)	(5)	(3)	(2)	
Technology	(493)	(481)	(449)	(413)	(371)	(312)	(252)	(191)	(129)	(65)	
Trademarks	(296)	(289)	(269)	(248)	(223)	(187)	(151)	(115)	(77)	(39)	
IP&R&D	(16)	(16)	(15)	(13)	(12)	(10)	(8)	(6)	(4)	(2)	
<b>2.4 Contributory asset charges</b>	(1,168)	(1,140)	(1,064)	(977)	(879)	(740)	(598)	(453)	(305)	(154)	
<b>Cashflow</b>	213	400	463	508	531	447	361	274	184	93	
Mid-year convention	0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5	
<b>2.5 Discount rate</b>	9.8%	0.95	0.87	0.79	0.72	0.66	0.54	0.49	0.45	0.41	
<b>Present value</b>	203	347	366	366	348	267	196	135	83	38	
<b>Total present value</b>	2,350										
<b>2.6 Tax amortization benefit</b>	567										
<b>Fair value</b>	2,917										

**Fig. 1** MEEM model for a customer relationship valuation

products branded with a specific trademark. Otherwise, reasonable assumptions are crucial, to ensure that the model does not separately consider revenues twice.

Figure 2 illustrates a possible business plan, including the relevant information for Sect. 2.3.

In principle, valuation standards such as IDW S 5 require individual valuations of all identifiable intangibles. However, this approach is not always feasible in practice or may exhibit disproportionate complexity. Therefore, it is recommended that individual assets are summarized, either into groups or portfolios. A group of assets is characterized by their homogenous traits, such that measuring them as a group rather than individually does not influence the valuation result significantly. A portfolio of assets consists of largely homogenous assets that nonetheless are so insignificant individually that in practice they are only measurable in aggregate.<sup>4</sup>

The IDW S 5 standard refers principally to customer-related assets, as they often include a large number of individual relationships, but in principle it also applies to other intangible classes. In terms of customer-related assets, examples of traits that suggest homogeneity, and thus pave the way for a group or portfolio approach, are the customer concentration (high concentration favors individual valuation, whereas low concentration suggests an aggregated measurement), the size of individual customer revenues compared to total sales, the comparable expected useful life of a customer-related asset, and the degree of customer loyalty or retention. One typical adjustment to revenues concerns future customer relationships that are reflected in sales projections, when these are unrelated to the existing customer base being measured. In Fig. 1 this is reflected in the assumption that only 80% of the projected revenues are earned from existing customers, as potential customers do not comprise a recognizable asset. In practice, a valuation specialist will most likely rely on management estimates regarding the distribution of the customer base.

For technologies, a group or portfolio approach may be recommendable, when there is a limited number of largely homogenous technologies or a large number of individually insignificant technologies (e.g., recipes) that renders individual valuations impracticable.<sup>5</sup> Against the backdrop of homogeneity, technologies being commercialized must be differentiated from technologies still in the process of development (IPR&D). Technologies have an imminent cash flow potential in the planning period for commercialization, whereas IPR&D is only expected to generate cash flow much later on and is therefore subject to higher uncertainty. IPR&D projects should further be differentiated into those in their early and late development stages, because in general the probability of success differs significantly, depending on the development stage reached. The high uncertainty of such projects is one reason why planning for expected cash flow with IPR&D requires a complex set of assumptions, experience, and computations that are often related to real options or probability-weighted decision-tree methods.<sup>6</sup> Fundamental research

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<sup>4</sup>IDW, S 5, item 90.

<sup>5</sup>IDW, S 5, item 118.

<sup>6</sup>See AICPA (2011), pp. 142ff for further details on the decision-tree approach.

<b>Business plan</b>										
€000	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26
<b>Revenues</b>	20,000	21,000	22,050	23,153	24,310	24,553	24,799	25,047	25,297	25,550
Revenues growth p.a.		5.0%	5.0%	5.0%	5.0%	1.0%	1.0%	1.0%	1.0%	1.0%
<b>EBITDA</b>	2,000	2,310	2,646	3,010	3,403	3,437	3,472	3,507	3,542	3,577
EBITDA margin	10%	11%	12%	13%	14%	14%	14%	14%	14%	14%
R&D expenses in % of revenues	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Sales expenses for new customer acquisition in % of revenues	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Trademark maintenance expense	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Inventory step-up adjustment	-1%									
<b>EBITDA margin adjusted</b>	14%	16%	17%	18%	19%	19%	19%	19%	19%	19%

**Fig. 2 Business plan**

beyond the scope of developing specific technologies cannot be identified as an intangible asset, according to IDW.<sup>7</sup>

In accordance with the IFRS 13 definition of fair value as a market-based measurement, any buyer-specific synergies that expected from a business merger must be disregarded, while expected market-participant synergies are acceptable for reflection in the projections.

In some rare cases, it may be impossible to identify a single leading asset. If two intangibles are considered equally significant in terms of generating cash for the entity, it is in principle possible to apply MEEM to both assets. Using two MEEM models simultaneously can lead to two different outcomes. Either the appraiser is able to split the revenue streams of both assets neatly along some identifiable edge, or the revenues overlap without an objective solution for how to disentangle them. In the first case, where the revenues of both assets are mutually exclusive, applying two simultaneous MEEM models is unproblematic, because both models have a perfectly distinct derivation of cash flow levels without being dependent on the valuation of the other (profit-split solution). In the second case, however, it is necessary to account for the confounding cash flow effects by taking into consideration contributory asset charges spanning both models,<sup>8</sup> which proves problematic as the measurement of one asset depends on the measurement of the other. This creates a circular reference that has no analytical solution.

The main caveat for the profit-split solution is that the projected financial information is unlikely to convey the degree of detail needed to clearly distinguish between the two cash-generating assets. Nevertheless, in some cases it is possible and typically used in practice. When valuing an order backlog separately from customer relationships, both valuations are typically done using MEEM.<sup>9</sup> The revenues from order backlog and customer relationships can often be split easily into mutually exclusive revenue projections.

The simultaneous application of interrelated MEEM models where such a distinction cannot be made reliably is not considered best practice and should be avoided. If the financial information is not separable or clearly allocable to each asset, the preferred solution is to value the lesser of the two leading assets using the next best method and to reflect this in the MEEM model against the leading asset with a contributory asset charge.<sup>10</sup>

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<sup>7</sup>IDW, S 5, item 116.

<sup>8</sup>See AICPA (2013) for a guide to dual MEEM approaches.

<sup>9</sup>For technical reasons, since order backlog usually depletes in less than a year, such a model is based on a single period.

<sup>10</sup>The Appraisal Foundation (2010), p. 19.

## 2.2 *Remaining Useful Life*

The remaining useful life is highly significant for the valuation of intangible assets. The remaining useful life is the period when economic benefits are expected from the intangible asset.

The following indicators can be used to determine the remaining useful life for customer relationships:

- Contract terms and expected contract renewals
- Legal, regulatory, economic, and technological aspects
- Typical product lifecycles and information about estimated useful lives from similar intangibles (market benchmark)
- Technical or economic obsolescence factors of products and services
- Stability of the industry
- Expected actions by competitors
- Level of maintenance expenses to retain customers
- Period of customer dependence, based on economic, legal, and technical factors
- Dependency of customer relationships on the reputation of the company and other intangible values
- Demographic aspects with respect to the existing customer structure<sup>11</sup>

For trademarks, the primary indicators of the remaining useful life are product lifecycles, historical empirical values, and market benchmarks based on technical developments and changes in customer behavior.<sup>12</sup> For intangible assets of technology certain legal factors (e.g., expiration date of patents) and the expected lifetime of the technology should be considered. The expected lifetime of the technology is restricted to the expected time before a completely new technology will be developed that will replace the existing technology.<sup>13</sup>

Evidence for derivation of the remaining useful life can be obtained using statistical (survivor curves) and analytical methods based on historical data. As a result, the practitioner derives an attrition rate to reflect that customers are lost due to the competitive environment or while technologies are being replaced. Whereas for some industries (e.g., telecommunication, energy contracts) customer churn rates are typically analyzed, for many other businesses the derivation of useful life of a customer relationship is no trivial task. In order to derive a meaningful rate at which the customer base deteriorates over time, the valuation professional should find a reasonable way to define customer loss. Statistical methods often fail due to the lack of available data.

Figure 3 is an example of a customer relationship useful life analysis seen in practice. We advise the reader to take this approach with a grain of salt, because it focuses exclusively on the downside of customer sales volatility, even when sales

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<sup>11</sup>IDW, S 5, items 98–101.

<sup>12</sup>IDW, S 5, item 72.

<sup>13</sup>IDW, S 5, items 133–135.

**Only downside revenue changes per customer**

	2011	2012	2013	2014	2015	2016
Customer 1	37	32	32	32	32	32
Customer 2	44	38	38	31	22	15
Customer 3	23	12	7	7	7	7
Customer 4	19	19	19	19	19	19
Customer 5	17	17	17	17	16	11
Customer 6	16	16	16	14	13	8
<b>Total</b>	<b>156</b>	<b>134</b>	<b>129</b>	<b>120</b>	<b>109</b>	<b>92</b>

CAGR (\*12-17) (10.0%)  
 =-1/CAGR 10

**Revenues per customer**

Customer	2011	2012	2013	2014	2015	2016
Customer 1	37	32	33	36	35	41
Customer 2	44	38	38	31	22	15
Customer 3	23	12	7	13	13	15
Customer 4	19	43	24	30	30	41
Customer 5	17	20	17	18	16	11
Customer 6	16	20	17	14	13	8
<b>Total</b>	<b>156</b>	<b>165</b>	<b>136</b>	<b>142</b>	<b>129</b>	<b>131</b>

**Fig. 3** Derivation of customer relationship useful life



volatility is not dependent on loyalty aspects. It assumes that declining sales to a customer over time indicate that the supplier will never regain revenues from the customer once they are lost, leading to declining or leveling of sales per customer.

While the table on the left of Fig. 3 lists the historical revenues generated by each identifiable customer (alternatively: customer group or portfolio) over the last 5 years, the table on the right considers revenues that are less than or equal the revenue of the previous period. This approach attempts to model the existing portion of a customer's business in a given base year, ignoring any ramp-ups from business gained afterward. The rationale of this approach is that to some extent the attrition counteracts the growth of sales inherent in the business plan. In the present example, the base year is 2012. With the strong assumptions described earlier, we consider the cumulative average growth rate (CAGR) per period from the base year to the most recent period as the inverse of the estimate for the useful life of an average customer relationship.<sup>14</sup>

The attrition rate in the example in Fig. 1 stretches over the useful life of 10 years, which was determined by the computations in Fig. 3. Therefore, the annual attrition is  $1/(\text{useful life} + 1)$ , such that in year 11 no revenues remain from existing customers on the valuation date.

In most cases, as illustrated in the example in Fig. 3, practitioners assume a linear attrition rate. Alternatively, an accelerating or decelerating attrition rate could be appropriate. It is also possible to commence the attrition after a certain forecast period (e.g., 5 years). By making use of such options, the fair value of an intangible asset is highly influenced by management, because no binding specifications exist.<sup>15</sup>

In certain cases, it is possible to consider an infinite lifetime for the intangible asset. There may be no time restrictions for the use of the intangible asset, or it may not be possible to estimate the period for which economic benefits are expected.

Applying an infinite remaining useful life for customer relationships and technologies is considered inappropriate, as existing customers will eventually be lost.<sup>16</sup> However, for trademarks, an infinite remaining useful life may be appropriate, but it cannot be used by default.<sup>17</sup>

Intangible assets with an infinite or indefinite remaining useful life are not amortized for international accounting purposes; instead, they are tested for impairment on an annual basis.

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<sup>14</sup>For further methods of deriving useful life, please refer to The Appraisal Foundation (2016), pp. 83ff.

<sup>15</sup>Dörschell et al. (2010), p. 982.

<sup>16</sup>IDW S 5, items 99, 135.

<sup>17</sup>IDW S 5, item 71.

### 2.3 *Operating Income*

After identifying the relevant revenues for the intangible asset, an operating margin needs to be analyzed and determined. Typically, an EBITDA margin should be applied on the revenue streams allocated to the respective intangible asset. The EBITDA should not include any buyer-specific synergies. Moreover, further adjustments to projected future cash flows may be necessary, to remove the effects of activities unrelated to the subject intangible asset.

Any adjustment to the business plan depends on the asset that is valued using MEEM. In cases of customer-related assets, such margin adjustments might include operating expenses that are not attributable to existing customers or to marketing expenses. There are two reasons why marketing expenses may have to be adjusted. One argument is that marketing expenses are relevant for attracting new customers. Moreover, if marketing expenses support a trademark or brand that is valued separately from the respective asset under MEEM, any such supporting assets would be considered contributory asset charges.

In some cases, it might be appropriate to exclude research and development (R&D) expenses from the valuation of customer relationships or technologies, when such R&D expenses are associated with new products that will only be purchased by new customers. The key question thus is are R&D expenses relevant for future cash flow that should be recognized as from the existing asset to be valued.

Another typical adjustment would be for an inventory step-up. In case of a business merger, the book value of the inventory needs to be stepped-up to fair value.<sup>18</sup> This would have an impact on gross margins of planned future years, when the stepped-up amount turns over (Fig. 2).

If the intangible asset to be valued is an order backlog, the margin should be adjusted for sales expenses, since they will have already been incurred on the valuation date and orders have already been placed.

When the subject of a MEEM valuation is an IPR&D project, the projections must be adjusted for expenses and other income that is not directly attributable to the IPR&D project or a future product that is subject to current developments.

### 2.4 *Contributory Asset Charges (CACs)*

Economic benefits do not arise solely from individual assets, but also from a compound of several assets. A clear allocation of revenues to each intangible asset would be perfect, but rarely possible as other assets contribute to the success. Contributory asset charges (CACs) are applied in order to isolate the cash flow related to the subject intangible asset. CACs represent the return on investment that an owner of the asset would require.

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<sup>18</sup>IFRS 3.

Examples of CACs are for properties, buildings, technical equipment, or working capital. In addition, a practitioner considers intangible assets such as technologies, trademarks, or workforce, irrespective of whether they are recorded on the balance sheet or not. However, nonoperating assets are excluded from such an analysis.<sup>19</sup>

The starting point for the derivation of CACs is the individual fair value of the assets. For assets recorded on the balance sheet (e.g., property, plant, equipment, working capital) the book value needs to be increased by identified step-ups, in order to derive the fair value. When the market prices for fixed assets are not observable, such tangibles are valued using a replacement cost approach. For intangible assets (e.g., technology, workforce), a valuation professional derives the fair value using present value models, such as the relief-from-royalty approach for technologies and trademarks, or by applying a cost approach for the workforce.

With an asset-specific discount rate and the asset's remaining useful life the appraiser converts the fair value to an annuity. The annuity related to expected net sales will result in a contributory asset charge. When using the relief-from-royalty approach for the valuation of technology and/or a trademark, the royalty rate applied represents the contributory asset charge.<sup>20</sup>

The levels of contributory asset charges are based on the asset's depreciation (return of asset) and its required return (return on asset). To determine return on asset, the weighted average cost of capital (WACC) may be the preferred choice. The rate of return from tangible fixed assets or working capital could be even lower. Please note that contributory asset charges must be net of taxes to match after-tax cash flows.<sup>21</sup>

Figure 4 provides an example of contributory asset charges. The amount of CAC depends on the fair value of the asset related to an appropriate sales basis (e.g., average planned sales for 10 years).

## 2.5 *Discount Rate*

The discount rate applied for deriving the present values of cash flows is obtained from a peer group, assuming a market-participant point of view that is consistent with fair value requirements. From a set of firms comparable to the valuation object, the analyst estimates the equity and debt market risk of the appropriate industry, in order to derive a term structure of the weighted average cost of capital (WACC). Figure 5 illustrates a possible peer group and a set of equity beta estimates, based on a time series analysis for different estimation periods and employing the capital asset pricing model. The necessary data set originates from market data providers, such as

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<sup>19</sup>Dörschell et al. (2010), p. 981.

<sup>20</sup>Dörschell et al. (2010), p. 984.

<sup>21</sup>Dörschell et al. (2010), p. 981.

Asset charges in thousand													
Asset	Tax rate	RUL/Years return on	Cost of capital choice	Return on (after tax)	Return on/of (after tax)	Fair Value (incl. TAB)	TAB	Fair Value (excl. TAB)	FV in % of sales	CAC (a. tax)	CAC (p. tax)	Basis (Sales)	Basis
Tangible assets	30.0%	16	40% equity	5.8%	9.5%	4,804.3	1.2	3,920.1	16.6%	1.6%	2.3%	23,576	Average revenues FY17B to FY26P
Working Capital	30.0%	0.25	50% equity	4.7%	4.7%	4,146.2	1.0	4,148.2	17.6%	0.8%	1.2%	23,576	Average revenues FY17B to FY26P
Workforce	30.0%	15	WACC	8.8%	11.7%	209.6	1.2	176.3	0.7%	0.1%	0.1%	23,576	Average revenues FY17B to FY26P
Technology	30.0%	10								3.5%	5.0%		Royalty rate
Trademarks	30.0%	20								2.1%	3.0%		Royalty rate
IP&D	30.0%	18	WACC	8.9%	10.9%	831.4	1.2	699.2	1.0%	0.1%	0.2%	23,576	Average revenues FY17B to FY26P

Fig. 4 Contributory asset charges example

**Fig. 5** Peer group analysis, beta risk estimation. (Data source: Capital IQ)

**Levered beta overview, MSCIW**

Peer company	2 Y Weekly	5 Y Monthly
Electrocomponents plc	1.16	1.40
Esprinet S.p.A.	0.82	2.18
Midwich Group Plc	n.s.	n.s.
DistIT AB (publ)	n.s.	n.s.
ASBISc Enterprises Plc	n.s.	n.s.
Northamber plc	n.s.	n.s.
APC Technology Group plc	1.03	2.64
Lagercrantz Group AB (publ)	1.46	1.01
Yleiselektroniikka Oyj	n.s.	0.73
Itway S.p.A.	1.40	2.26
Toshiba Corporation	n.s.	1.00
<b>Mean</b>	<b>1.17</b>	<b>1.60</b>
<b>Median</b>	<b>1.16</b>	<b>1.40</b>

Notes: (1) n.s. - not significant at the 5% level.; (2) MSCIW - MSCI Wrold Index

Bloomberg and Capital IQ. The final decision on which parameter specification to select is at the discretion of the valuation specialist.

Figure 6 lists a term structure for a WACC derivation of various useful lives

Adding asset-specific surcharges indicates that an intangible exhibits higher uncertainty than the risk portrayed by the WACC. For instance, such risks could be related to the structure of agreements and the probability of whether agreements and rights can be enforced. In the context of technologies, risks also extend to the feasibility of turning technologies into marketable products and the probability that patents are susceptible to breach. It is crucial to avoid multiple counting of specific risk components by accounting for them only once, i.e., either in cash flows, remaining useful life, or the discount rate.<sup>22</sup>

The remaining useful life of the asset being valued should be aligned with the corresponding term of the WACC, but the individual cash flows are discounted, assuming a flat cost of capital, irrespective of whether a cash flow occurs 1 or 10 years in the future. The appraiser typically discounts cash flows using the mid-year convention, which assumes that the projected cash flows are realized in the middle of the year rather than at the end.

A common plausibility check for the application of the cost of capital is WACC-to-WARA (Weighted Average Return on Assets) analysis. The sum of fair value-weighted returns on all tangibles, intangibles, and goodwill should equal the WACC. This plausibility check is useful and recommended when the entire asset base of a business is determined at fair value and when the valuation practitioner assigns asset-specific surcharges to some intangible assets. WACC-to-WARA analysis facilitates the detection of any incongruence between an intangible asset’s risk profile and its required rate of return.<sup>23</sup>

<sup>22</sup>IDW, S 5, item 136.

<sup>23</sup>Reimsbach (2011), p. 234.

<b>Determination of WACC</b>												
<b>Years</b>	<b>0.25</b>	<b>0.5</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>7</b>	<b>9</b>	<b>11</b>	<b>13</b>	<b>30</b>
<b>Risk-free rate</b>	<b>0.8%</b>	<b>1.0%</b>	<b>1.1%</b>	<b>1.3%</b>	<b>1.5%</b>	<b>1.6%</b>	<b>1.8%</b>	<b>2.1%</b>	<b>2.2%</b>	<b>2.3%</b>	<b>2.4%</b>	<b>3.0%</b>
Market risk premium	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Country risk premium (1.23 X CS)	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Beta (unlevered)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Leverage	17.1%	17.1%	17.1%	17.1%	17.1%	17.1%	17.1%	17.1%	17.1%	17.1%	17.1%	17.1%
Tax rate	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Beta (levered)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
<b>Risk premium</b>	<b>9.0%</b>	<b>9.0%</b>	<b>9.0%</b>	<b>9.0%</b>	<b>9.0%</b>	<b>9.0%</b>	<b>9.0%</b>	<b>9.0%</b>	<b>9.0%</b>	<b>9.0%</b>	<b>9.0%</b>	<b>9.0%</b>
<b>Cost of equity</b>	<b>9.8%</b>	<b>10.0%</b>	<b>10.1%</b>	<b>10.3%</b>	<b>10.5%</b>	<b>10.7%</b>	<b>10.8%</b>	<b>11.1%</b>	<b>11.3%</b>	<b>11.4%</b>	<b>11.4%</b>	<b>12.0%</b>
Cost of debt	1.8%	1.8%	1.9%	2.2%	2.5%	2.7%	3.0%	3.4%	3.7%	4.0%	4.2%	4.8%
Country risk premium	-	-	-	-	-	-	-	-	-	-	-	-
<b>Cost of debt pre tax</b>	<b>1.8%</b>	<b>1.8%</b>	<b>1.9%</b>	<b>2.2%</b>	<b>2.5%</b>	<b>2.7%</b>	<b>3.0%</b>	<b>3.4%</b>	<b>3.7%</b>	<b>4.0%</b>	<b>4.2%</b>	<b>4.8%</b>
Tax rate	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
<b>Cost of debt</b>	<b>1.2%</b>	<b>1.3%</b>	<b>1.4%</b>	<b>1.5%</b>	<b>1.7%</b>	<b>1.9%</b>	<b>2.1%</b>	<b>2.4%</b>	<b>2.6%</b>	<b>2.8%</b>	<b>3.0%</b>	<b>3.3%</b>
Equity ratio	85.4%	85.4%	85.4%	85.4%	85.4%	85.4%	85.4%	85.4%	85.4%	85.4%	85.4%	85.4%
Debt ratio	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%
<b>WACC</b>	<b>8.6%</b>	<b>8.7%</b>	<b>8.8%</b>	<b>9.0%</b>	<b>9.2%</b>	<b>9.4%</b>	<b>9.6%</b>	<b>9.9%</b>	<b>10.0%</b>	<b>10.1%</b>	<b>10.2%</b>	<b>10.7%</b>

**Fig. 6** WACC derivation (some columns are omitted)

## 2.6 Tax Amortization Benefit

A tax amortization benefit (TAB) reflects the present value of tax savings related to the amortization of an intangible asset over its useful life. The application of TAB should be independent from the transaction structure, whether the intangible asset results from an asset or share deal. It is more a hypothetical construct that typically tangible assets as well as intangible assets can be amortized over their useful lives and such depreciation or amortization is tax deductible. This is in line with a market participant's perspective, who could in general opt for an asset deal to acquire a specific intangible asset.<sup>24</sup>

There may be certain jurisdictions where TAB is unavailable under current tax law or it may not apply to non-profit organizations, etc. In such cases, the valuation specialist should consult with the relevant tax experts. In principle, TAB should be applied, because the value of an intangible asset should be independent from the tax jurisdiction of the legal entity that owns the asset.

In practice, the acquirer's local tax jurisdiction is typically taken for determining the relevant tax rate and the amortization period for the respective assets. For example, in Germany, an intangible is amortized over its remaining economic useful life. The United States tax authorities currently dictate a flat tax period of 15 years, regardless of the economic useful life of the asset. Sometimes it might be adequate to weight the tax rate based on sales in the respective geographic markets. Typically, the tax rate should be aligned with the tax rate used to derive after-tax cash flows.

## 3 Critical Assessment

The MEEM approach is appropriate when the subject intangible asset represents a company's primary or leading asset, and other assets are just supporting this leading asset to generate cash flow. In other circumstances, MEEM may be employed to value secondary assets when the leading asset of the business can be appropriately valued using other methods. Applying MEEM to two intangibles can lead to circularity problems and this is not advisable.

The advantage of MEEM is the strict basis on the overall profitability of the business that is derived from the business plan. In a business merger, the appraiser should perform a fair value test, to ensure that the business plan represents a reliable basis for estimating the purchase price. If the business plan is taken and contributory asset charges for other supporting assets are deducted, the risk of overvaluing an asset is reduced.

When valuing customer relationships, MEEM is in practice very often the only possible valuation approach.<sup>25</sup> An alternative to MEEM is the distributor method,

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<sup>24</sup>AICPA (2011), p. 125.

<sup>25</sup>Rzepka and Scholze (2010), p. 306.

which is comparable to the relief-from-royalty approach.<sup>26</sup> Such methods could be applied to marketing-driven businesses, when their leading asset is a trademark and whose customer relationships exist primarily through distributors.

The MEEM approach is slightly more complicated to apply than relief-from-royalty. There are several parameters that need to be considered, to derive the residual cash flows that are attributable to the intangible asset being valued. There is a degree of professional judgment necessary when isolating attributable revenues, estimating margins for the respective asset, and determining churn rates for the cash flows.

Estimation of the remaining useful life of an intangible is another challenge, in common with other income approaches for valuing intangible assets. In the case of customer relationships, a historical sales analysis may to some extent unearth patterns in customer relations of previous periods, but it may be inappropriate to extrapolate into the future. However, even when historical data is available it is unlikely to cover an entire business cycle, which is desirable to enable the drawing of inferences from the sample.<sup>27</sup>

The valuation specialist should be clear when applying MEEM that this method absorbs the residual profits that have not been applied to other assets using alternative methods. The residual cash flows allocated to the intangible asset (after deducting contributory asset charges) and the useful life estimated for the subject asset are the most critical assessments to make.

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<sup>26</sup>The Appraisal Foundation (2016), p. 39.

<sup>27</sup>The Appraisal Foundation (2016), p 29.