IASB Education Session
Valuation Concepts and Issues Overview (Agenda Paper 11B)
October 2007

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These notes are based on the staff papers prepared for the IASB. Paragraph numbers correspond to paragraph numbers used in the IASB papers. However, because these notes are less detailed, some paragraph numbers are not used.

The views expressed in this presentation are the views of the individual presenters and do not represent the views of their respective firms.

Agenda

Value Concepts in IFRS
The Purchase Price Allocation Process
Overview of Valuation Methodologies
Cost Approach
Market Approach
Income Approach
Other Items
Summary

Section one

Value Concepts in IFRS
The Purchase Price Allocation Process
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Relevance of Valuation for Financial Reporting

Relevance of valuation as an essential part of accounting, for example:

- IFRS 2 – Fair value (definition as in other standards plus "... or an equity instrument granted ...")
- IFRS 3 – Fair value
- IFRS 4 – Liability adequacy test, fair value
- IFRS 5 – Fair value less costs to sell
- IFRS 6 – Cost or revaluation model according to either IAS 16 or IAS 38
- IAS 2 – Cost or net realisable value
- IAS 16 – Fair value and revalued amount (i.e. fair value less accumulated depreciation)
- IAS 17 – Fair value, present value and net investment value
- IAS 19 – Fair value

Relevance of Valuation for Financial Reporting (continued)

Relevance of valuation as an essential part of accounting, for example:

- IAS 26 – Fair value
- IAS 36 – Recoverable amount as the higher of an asset's or cash-generating unit's fair value less costs to sell or its value in use
- IAS 37 – Best estimate of the expenditure required to settle the present obligation or expected value
- IAS 38 – Fair value and revalued amount (i.e. fair value less accumulated amortization or impairment loss)
- IAS 39 – Fair value, continuing involvement approach
- IAS 40 – Cost model vs. fair value model
- IAS 41 – Fair value

Overview of today's discussion

- Focus on fair value used in a business combination
  - Consistent with valuation concepts for other fair value measurements
  - Added complexity of identification of assets
  - Broadest usage of fair value
- Focus on a "typical" business
  - Some industries require unique approaches

Section two

Value Concepts in IFRS
The Purchase Price Allocation Process
Overview of Valuation Methodologies
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Key milestones in a purchase price allocation

Step 1

Analysis

Understand the transaction

- Consider **"facts and circumstances"** (transaction structure, rationale & objectives)
- Understand the **economics**
- Measurement of **purchase price** (cash deal / share deal, direct costs)

Step 2

Identification & Valuation

Fair value measurement

- **Identification** of assets acquired and liabilities assumed (including items not recorded in balance sheet of the acquired entity)
- Estimation of **remaining useful lives and pattern of economic benefit**
- **Fair value** measurement of acquired assets (tangibles and intangibles) and liabilities

Step 3

Subsequent Treatment

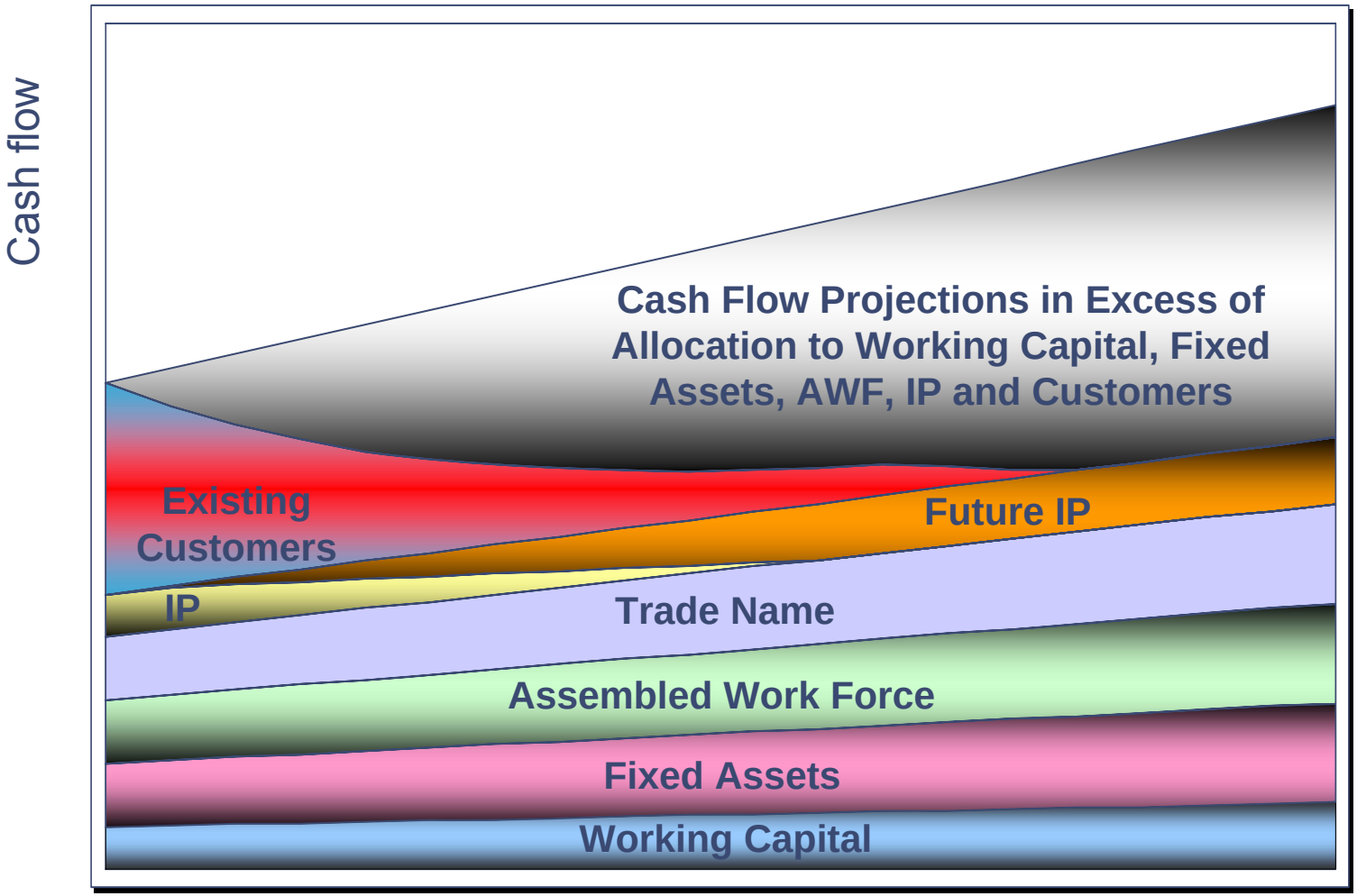
Goodwill and financial statement impacts

- Calculation of **remaining goodwill** including deferred tax impact
- Consideration of **impairment test** procedures

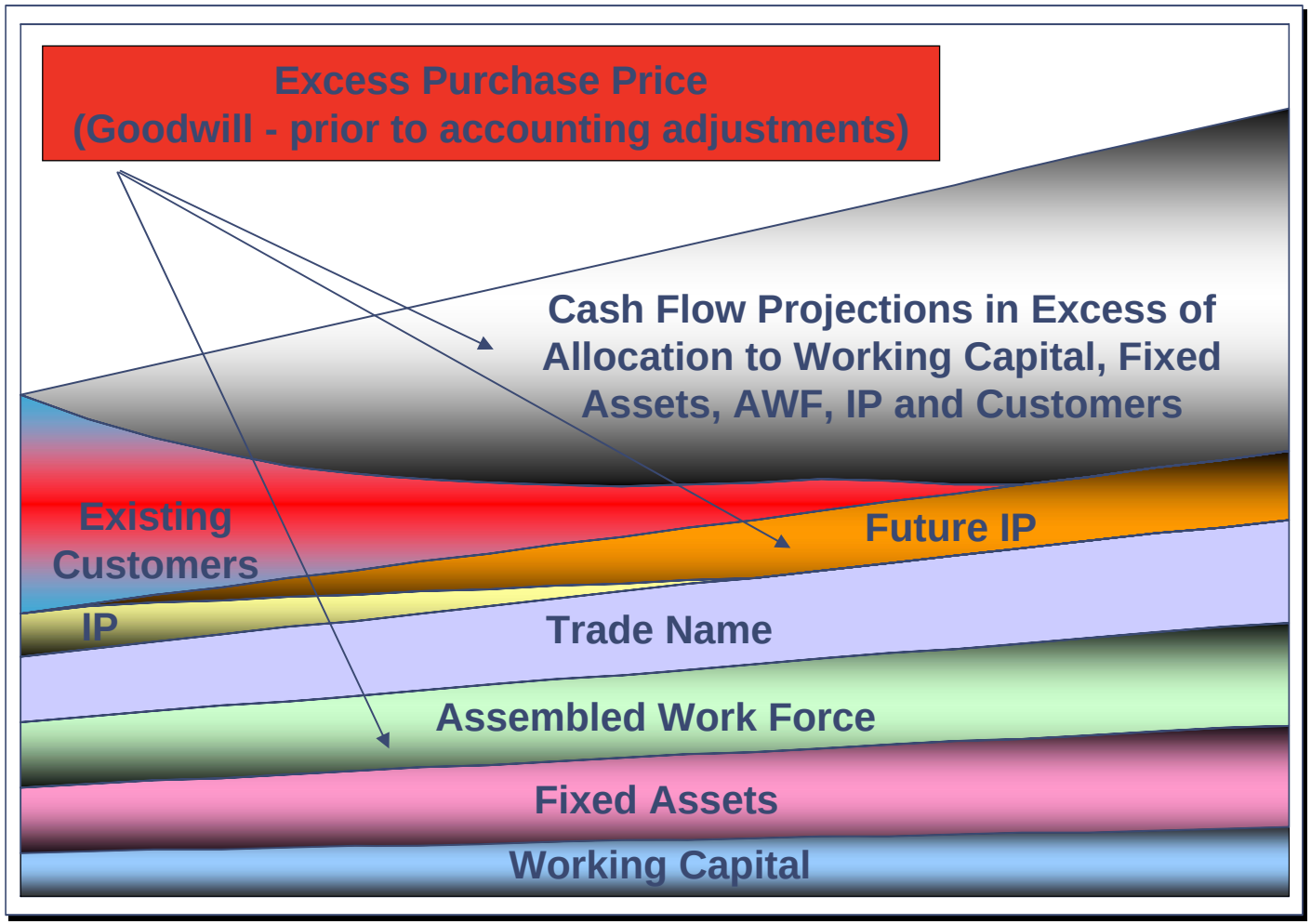
Identification of acquired assets

- Must understand the sources of cash flows and the relationships to the business's assets, including:
  - Tangible assets,
  - Identifiable intangible assets, **and**
  - Future intangible assets (which are components of goodwill)
- Understanding the economics is critical:
  - Why did they acquire this business?
  - What drives the value in this business?
- Identification of assets is not straightforward – judgment is often required
- Understand the accounting model (e.g., acquisition of a business vs. assets)

Identification of acquired assets: Components of Projected Financial Information



Identification of acquired assets: Components of Projected Financial Information



Section three

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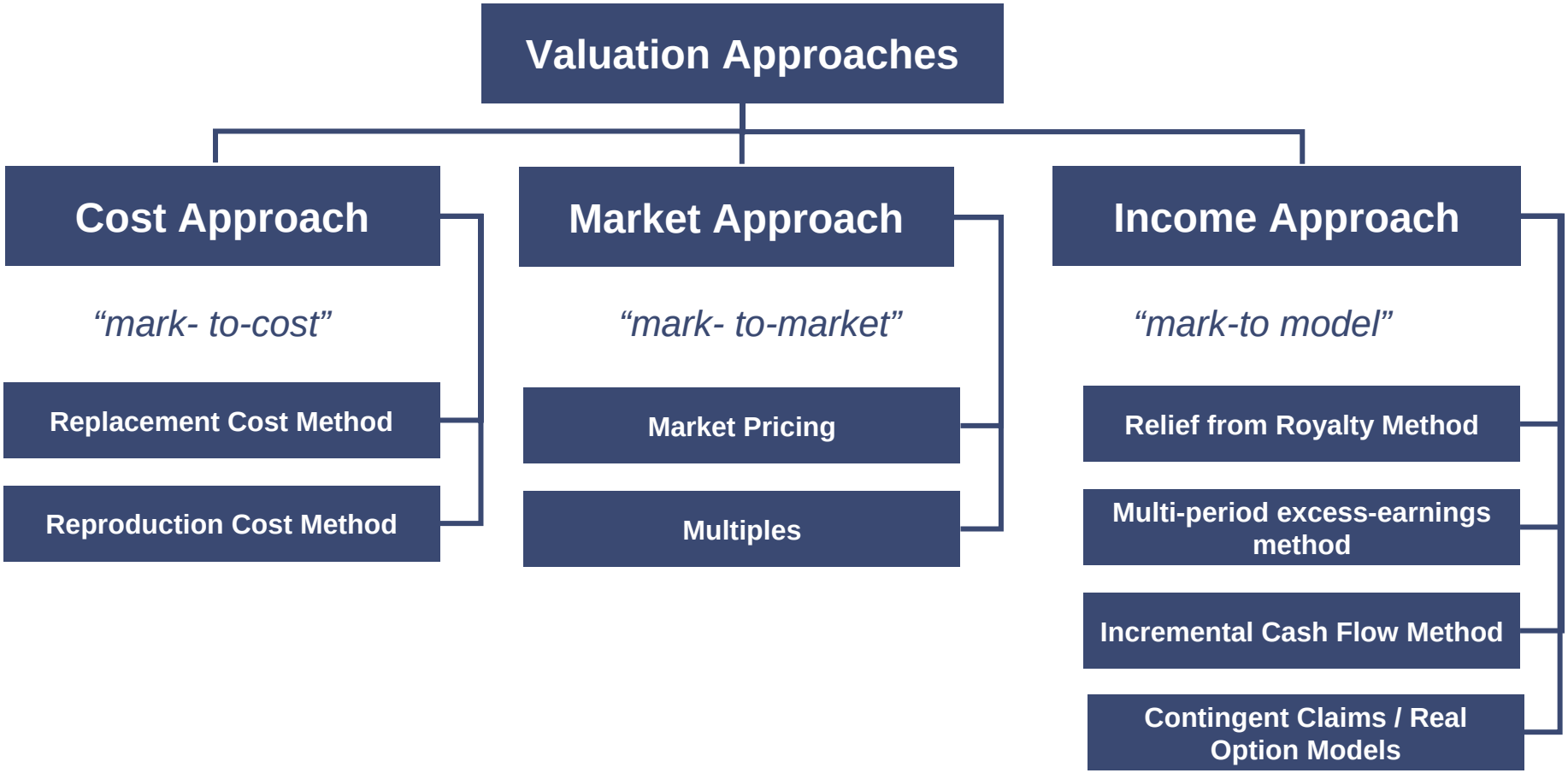
Overview of Valuation Methodologies



Apply most appropriate method considering economic benefits and valuation inputs available!

Fair value hierarchy under US GAAP
Source of valuation inputs

Level 1 inputs (observable)	Quoted prices (unadjusted) in active markets for identical assets or liabilities
Level 2 inputs (observable)	• Quoted prices for similar assets or liabilities in active markets, • Quoted prices for identical or similar assets or liabilities in non-active markets, • Inputs other than quoted prices, • Market-corroborated inputs, adjusted as appropriate for differences
Level 3 inputs (unobservable)	• Unobservable inputs regarding the asset or liability (little, if any market activity) • Should reflect market participant assumptions • Reporting entity's own assumptions might need to be adjusted

fair value is a market-based measurement

Source: FAS 157.22-30

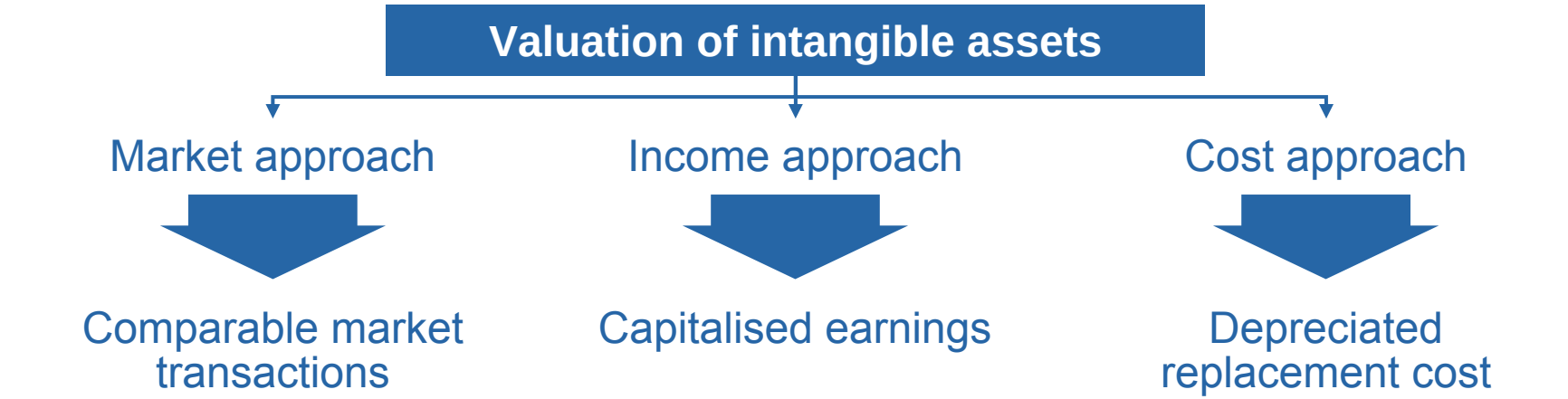
Typical valuation methodologies

Intangibles	Possible valuation methods
Brands and trademarks	Relief from Royalty Method, Price-Premium-Method, and recent market transactions (if available)
Technology	Relief from Royalty Method, Incremental Cash Flow Method, would also consider MEEM if the technology is enabling
Customer relations and order backlog	MEEM approach (most prevalent)
Customer lists	Replacement costs
IPR&D	Reproduction costs, DCF methods and MEEM
Software	Relief from Royalty Method, and replacement costs
Tangibles	**Possible valuation methods**
Real property	Market approach, and income approach
Machinery and equipment	Replacement costs, may also consider market approach for significant assets

Valuation approaches tangible assets
Overview

	Market approach	Income approach	Cost approach
	Comparable market transactions	Capitalised earnings	Depreciated replacement cost
Real Estate	Availability of comparable transactions Example: Vacant land, residential units	Availability of market rents and expenses Example: Office buildings	Availability of historical cost, index and total useful life information Example: Hospitals, industrial buildings
Machinery & Equipment	Availability of comparable transactions Example: Serial equipment Standardised equipment (computer, cars)	Availability of defined income and expense information attributable to the assets Example: Production lines Rare due to embedded intangibles	Availability of historical cost, index and total useful life information Example: High number of assets, special designed assets

Valuation approaches intangible assets Overview



Recent market transactions
Example: Brands and trademarks, Customer lists

Relief from Royalty Method
Example: Brands and trademarks, Technology, Software

Multi-period excess-earnings method approach
Example: Customer relationships and order backlog, Technology, IPR&D

Incremental Cash Flow Method
Example: Brands and trademarks, Technology

Reproduction Cost Method
Example: IPR&D

Replacement Cost Method
Example: Customer lists, Software

Section four

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Premise of value: Cost Approach

Concept – an investor will pay no more for an asset than the cost to purchase or construct an asset of equal utility

Cost approach

Cost approach valuation methods

Reproduction cost method

"cost to construct an exact duplicate"

Using same materials, production standards, design ...

Replacement cost method

"cost to construct equivalent utility"

Using modern materials, production standards, design ...

Derived fair value from these methods should be the same!

From cost to value

Cost approach provides a reasonable indication of value when all components of cost are included and all forms of obsolescence are considered

Reproduction cost (new)

- Curable functional and technological obsolescence

= Replacement cost (new)

- Physical deterioration
- Economic obsolescence (external)
- Incurable functional and technological obsolescence

= Value of (used) asset

Cost approach – Pro's and Con's

Cost Approach:

- Useful when measuring a unique internally developed asset that is used in conjunction with generating the cash flow of an enabling asset (e.g. billing software and customer relationships)
- Cost approach may not reflect value created through development of the asset (e.g. discovery of unique technology)
- Diversity in practice in its application
  - Historical costs to create the asset or prospective view that captures other lost profit elements
  - Approach dependent upon facts and circumstances
  - Pre-tax or after tax value?

Note – SEC Staff has expressed concern about its reliability & ability to capture all relevant costs.

Section five

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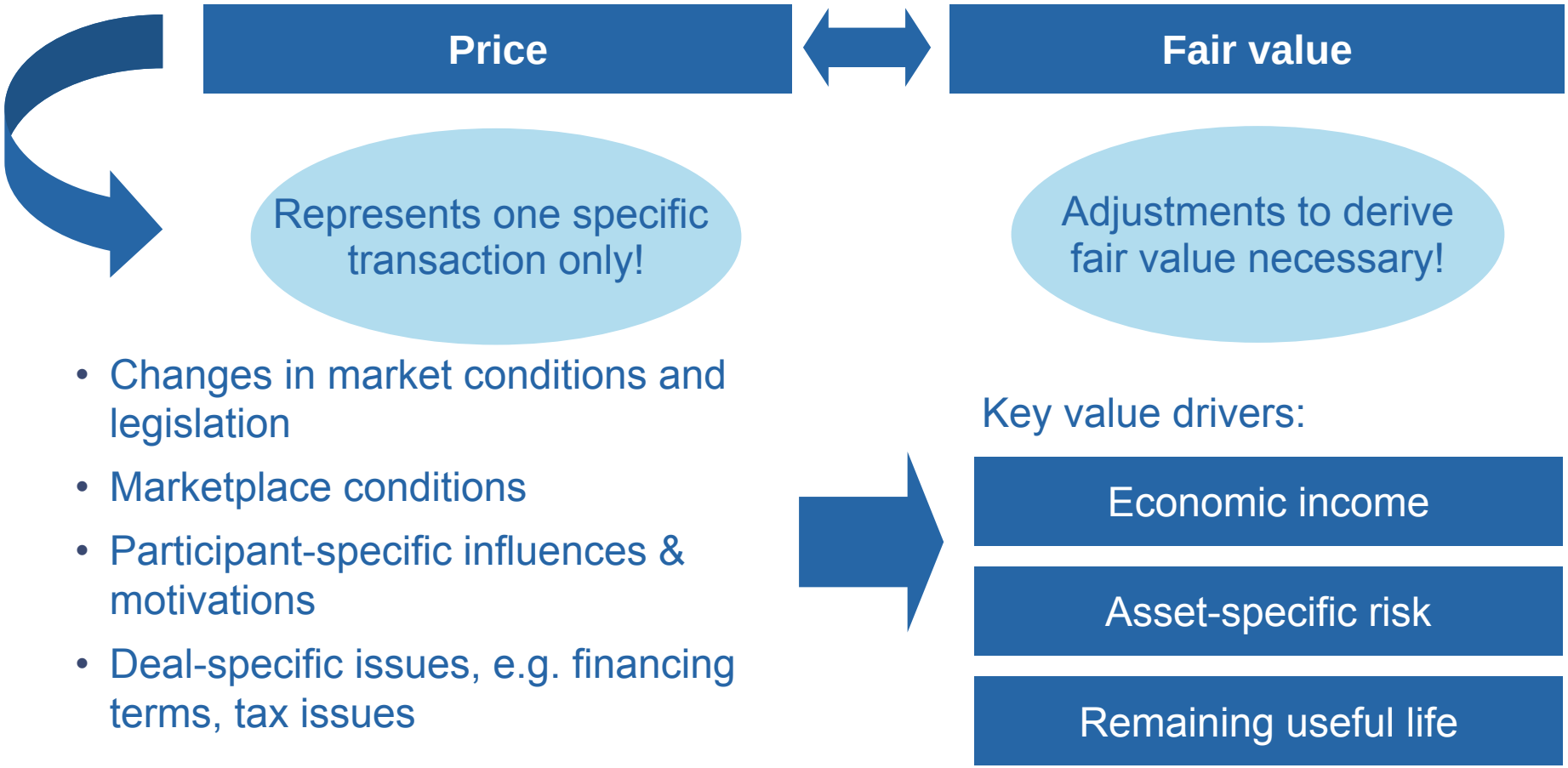
Premise of value: Market Approach

Concept – prices from previous transactions provide empirical evidence for the value of an asset

Market approach



Multiples

Multiples may be used for valuation of individual asset subject to comparable market information

Factors influencing subject asset	x	Value of comparable asset / Factors influencing comparable asset	=	Value of subject asset
Tons of pollutants allowed	x	Value per ton of pollutants emitted	=	Value of emission right
Number of customers	x	Value per customer	=	Value of customer list

Analyse **similar** assets that have **recently been sold** and compare these assets to the subject asset.

Market approach – Pro's and Con's

- Can provide a reliable measure of fair value in a homogeneous market, however such markets are rare
- Captures incremental value created over cost and is generally more reliable than the income approach when comparable transactions are present
- Frequently inseparable from a related asset and therefore difficult to identify comparable transactions to determine fair value
- Due to uniqueness of intangible assets no active markets exist
- Can be distorted by transaction specific facts of which outside parties are not aware

Section six

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Premise of value : Income Approach

Concept – an asset is worth what it can earn

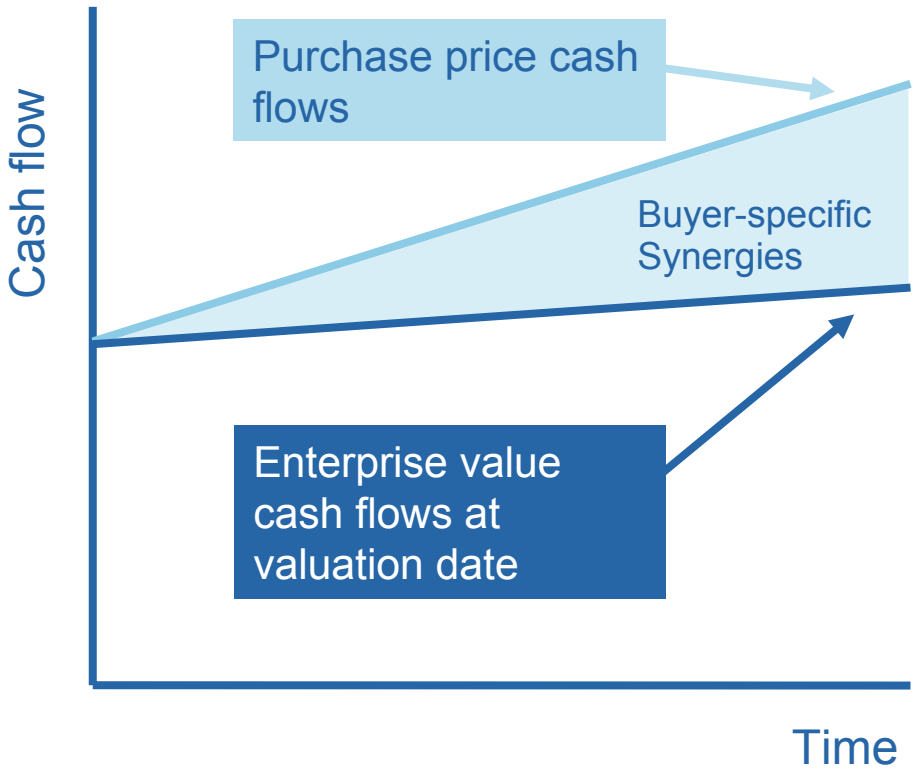
Valuation principles

1. Isolate the future cash flows an investor would expect the subject asset to generate

$$FV = \sum_{t=1}^{T} \frac{\text{Cash flow}_t}{(1 + \text{Discount rate})^t}$$

2. Discount future cash flows with an appropriate discount rate

Valuation principles
Selecting prospective financial information



Choose most appropriate prospective financial information

AND

Eliminate any buyer specific synergies

AND

adjust projections such that assumptions are consistent with those of market participants

Tax issues
Tax expenses and tax benefits

Cash flows
attributable to intangible asset

Tax expenses

Amortisation
for income tax purposes

Tax benefits

Apply effective tax rate of market participants!

Concept of tax amortisation benefit

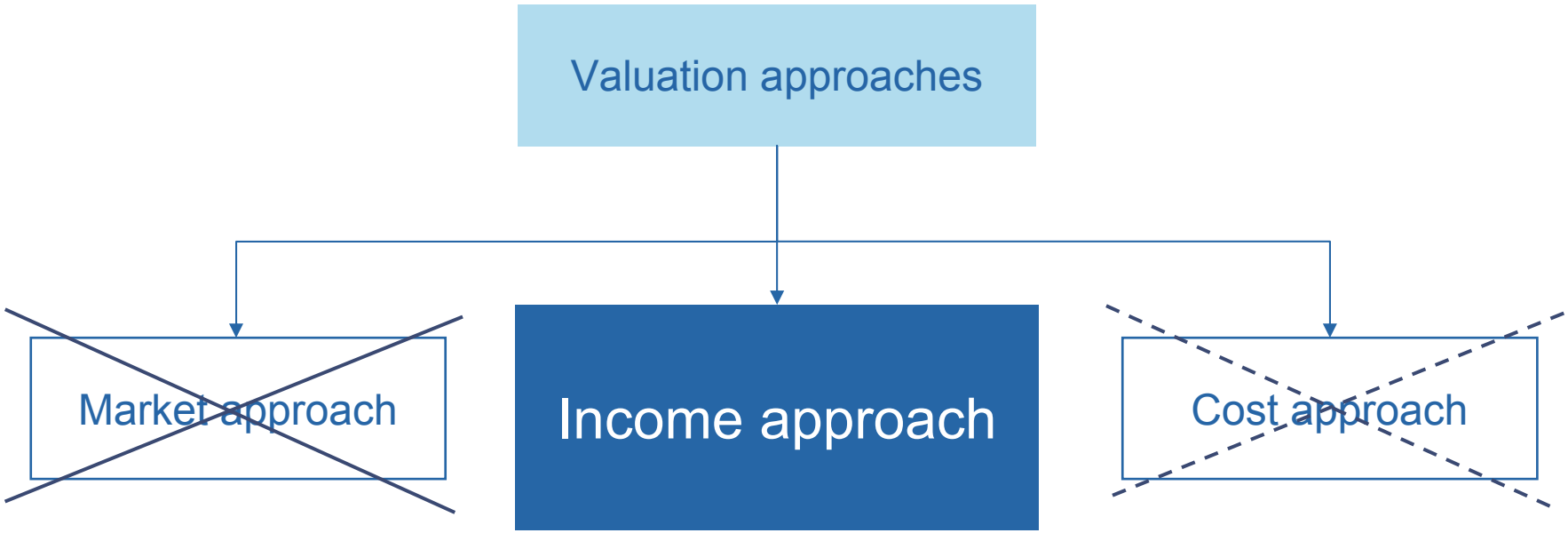
Acquisition of an asset e.g. Machine 100,000

Asset deal	Share deal
creates new tax basis	old book values are carried forward - tax basis unchanged

Deal structure and tax basis should not impact fair value

Difference in tax basis is reflected in computation of deferred taxes

Where to apply a tax amortisation benefit?



Already included in market prices

TAB to be included dependent on tax legislation

Usually not applicable

Discount Rate

- An appropriate discount rate should be utilised based on the risk profile of underlying asset, liability or business
- Guideline benchmarks for selecting appropriate discount rates:
  - Weighted average cost of capital (WACC)
  - Internal rate of return (IRR)
  - Weighted average return on assets (WARA)
  - Other
- Discount rate and cash flows need to be on a like for like basis
  - taxes in cash flows, use a post tax rate
  - risk in cash flows, use a risk free rate

Discount Rate (continued)

- As the valuation of an asset or liability is based on the future cash flows associated with it, consideration should also be given to the level that these projected cash flows have been risk adjusted:
  - Expected cash flows (most of the risk is captured in the cash flows) – WACC represents the best indication for a discount rate
  - Single scenario (optimistic or pessimistic) -- either adjust the cash flows OR the discount rate
    - IRR becomes the mechanism by which the discount rate is adjusted

Cost of capital
Company WACC

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

- Risk-free rate, market-risk premium and underlying index used for beta regression should correspond.
- Determinants of the WACC calculation should be derived from peer group.
- Apply interest rate from hypothetical buyer (e.g. YTM of corporate bonds).
- One index for the whole peer group.
- WACC might not be acceptable for some industries

Take the perspective of a market participant!

Cost of capital considerations

WACC

- Should reflect an optimal capital structure for the target company
- But, an optimal structure is unknown, so a peer group is used
- Might differ from the structures of the acquirer and acquiree

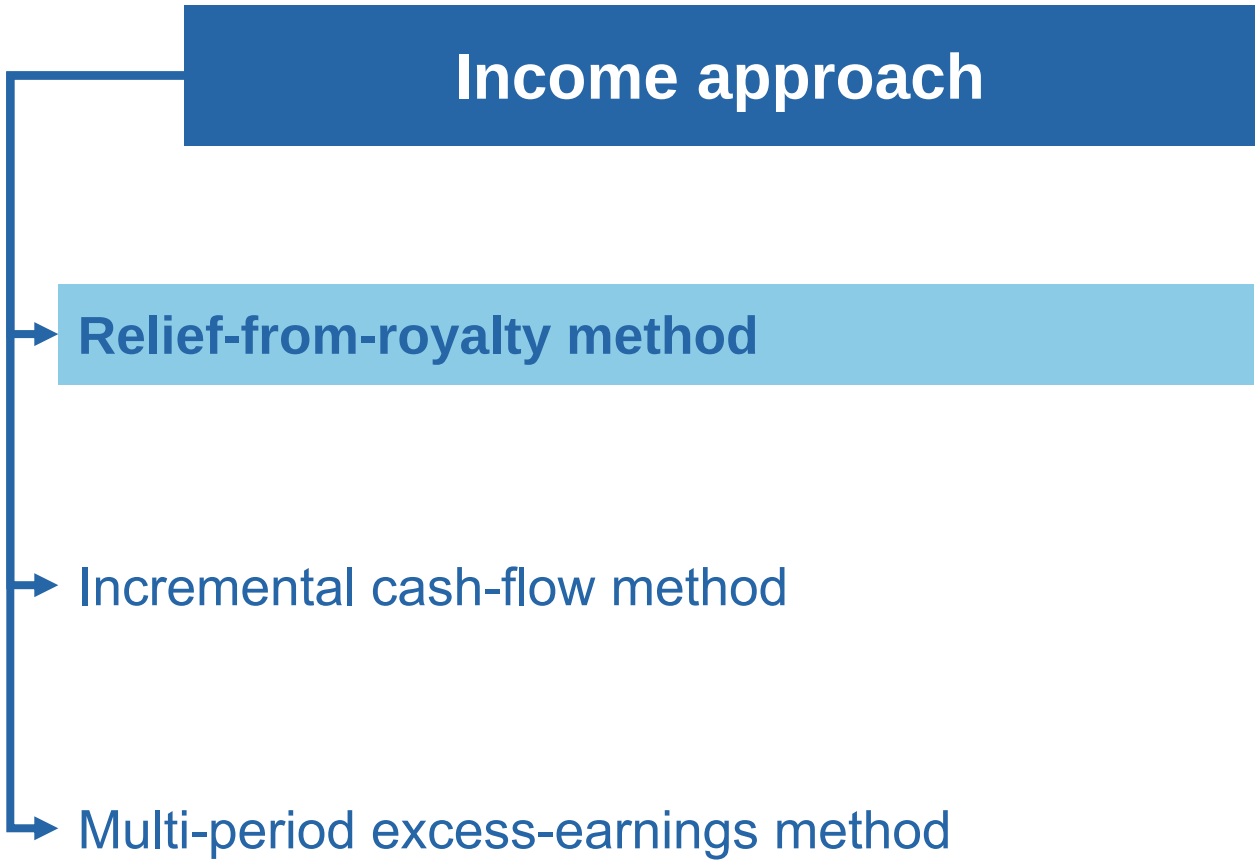
Cost of debt

- Based on a peer group
- Yield-to-maturity for corporate bonds preferred to cost of debt incurred

Cost of equity

- Peer group preferred over the acquirer or acquiree
- Risk-free rate, market-risk premium and the underlying index used for Beta regression should interrelate (e.g. 20y US T-Bond yield, US market risk premium and S&P 500 for beta regression)
- Consideration of entity specific risk premiums and other

Income approach methods



Relief-from-royalty method Concept

The royalty savings are the expected cash flows for the subject intangible asset!

Relief-from-royalty method
Valuation steps

1.	**Determine royalty rate for comparable asset**
2.	**Multiply with matching valuation base**
3.	**Subtract tax expenses**
4.	**Calculate the present value of royalty savings**
5.	**Compute the tax amortisation benefit**

Relief-from-royalty method
Royalty Rate Assessment

- Evaluate royalty rates in the context of the subject group of assets (e.g. cash generating unit) to determine if there is sufficient profitability to support the market rates.
- Assess the royalty rate in the context of the maximum implied royalty for the enterprise and relative to other intangible assets.
- Determine whether the royalty rate is inclusive of maintenance R&D (e.g. technology) or marketing (e.g. trade name). If not deduct the maintenance expense from the royalty stream.

Relief-from-royalty method: Sources of inputs and common issues

- Royalty rates derived from published sources:
  - court cases,
  - proprietary databases,
  - actual agreements

- Sources are assessed for comparability to the subject asset

- However, public sources of information may not disclose all the terms of the agreements, such as initial payments.

Relief-from-royalty method
Example – Total Excess Income

		2007	2008	2009	2010	2011	Residual
Revenue		€ 1,000	€ 1,100	€ 1,430	€ 1,716	€ 1,802	€ 1,856
Gross Profit	60%	600	660	858	1,030	1,081	1,114
Operating Expenses	25%	250	275	358	429	450	464
Maintenance R&D	1%	10	11	14	17	18	19
EBITDA		340	374	486	583	613	631
Depreciation	15%	150	165	215	257	270	278
EBITA		190	209	272	326	342	353
Taxes @	40%	76	84	109	130	137	141
Debt-Free Net Income		114	125	163	196	205	212
Capital Charges	5%	50	55	72	86	90	93
Excess Income		64	70	92	110	115	119
Capitalized Residual Value							2,375
Present Value Factor	12%	0.9449	0.8437	0.7533	0.6726	0.6005	0.6005
PV Excess Income		60	59	69	74	69	1,427
Total PV Excess Income		€ 1,758					

Relief-from-royalty method
Example – Total Implied Royalty Rate for All Intangible Assets

		2007	2008	2009	2010	2011	Residual
Revenue		€ 1,000	€ 1,100	€ 1,430	€ 1,716	€ 1,802	€ 1,856
Gross Profit	60%	600	660	858	1,030	1,081	1,114
Operating Expenses	25%	250	275	358	429	450	464
Maintenance R&D	1%	10	11	14	17	18	19
Total Implied Royalty	10.7%	107	117	153	183	192	198
EBITDA		233	257	334	400	420	433
Depreciation	15%	150	165	215	257	270	278
EBITA		83	92	119	143	150	155
Taxes @	40%	33	37	48	57	60	62
Debt-Free Net Income		50	55	72	86	90	93
Capital Charges	5%	50	55	72	86	90	93
Excess Income		-	-	-	-	-	(0)
Capitalized Residual Value							(0)
Present Value Factor	12%	0.9449	0.8437	0.7533	0.6726	0.6005	0.6005
PV Excess Income		-	-	-	-	-	(0)
Total PV Excess Income		€ 0					

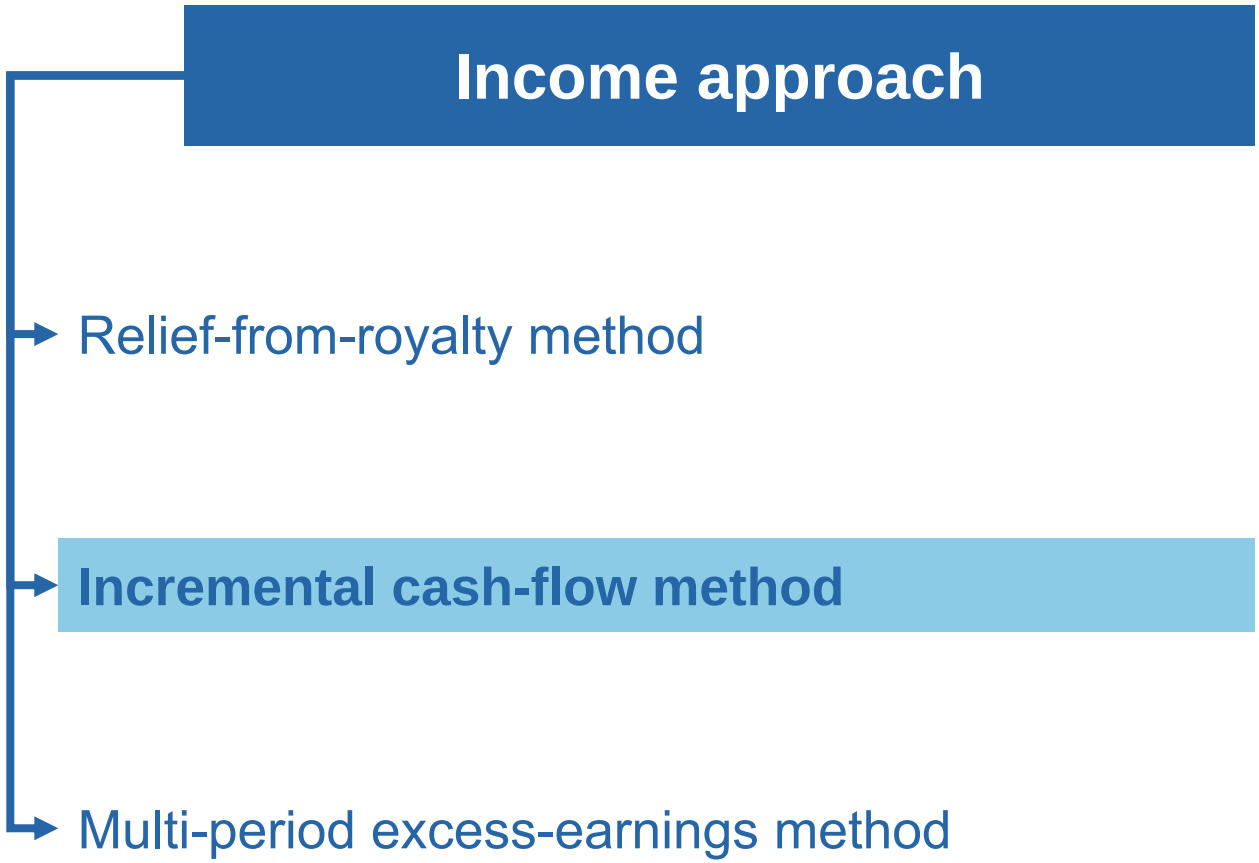
Relief-from-royalty method
Example – Fair Value of Technology

		2007	2008	2009	2010	2011
Revenue		€ 1,000	€ 800	€ 600	€ 400	€ 200
Royalty	3%	30	24	18	12	6
Maintenance R&D	1%	10	8	6	4	2
Net Royalty		20	16	12	8	4
Taxes @	40%	8	6	5	3	2
After Tax Net Royalty		12	10	7	5	2
Present Value Factor	12%	0.9449	0.8437	0.7533	0.6726	0.6005
PV After Tax Net Royalty		11	8	5	3	1
Total Present Value		30				
Tax Amortization Benefit		6				
Fair Value - Technology		€ 35				

Relief from royalty approach – Pro's and Con's

- Dependent on the comparability of the subject asset to market based royalty agreements
- Market based agreements may or may not disclose sufficient information to evaluate the royalty rate
- It is intended to reflect the profit that a licensor and licensee would require for their respective efforts and use of other assets
- Should be evaluated in the context of the subject business to ensure there is sufficient income to support the royalty rate

Income approach methods



Incremental cash-flow method Concepts

Incremental cash-flow method

Cost savings

The intangible asset allows the owner to lower costs

Incremental revenue

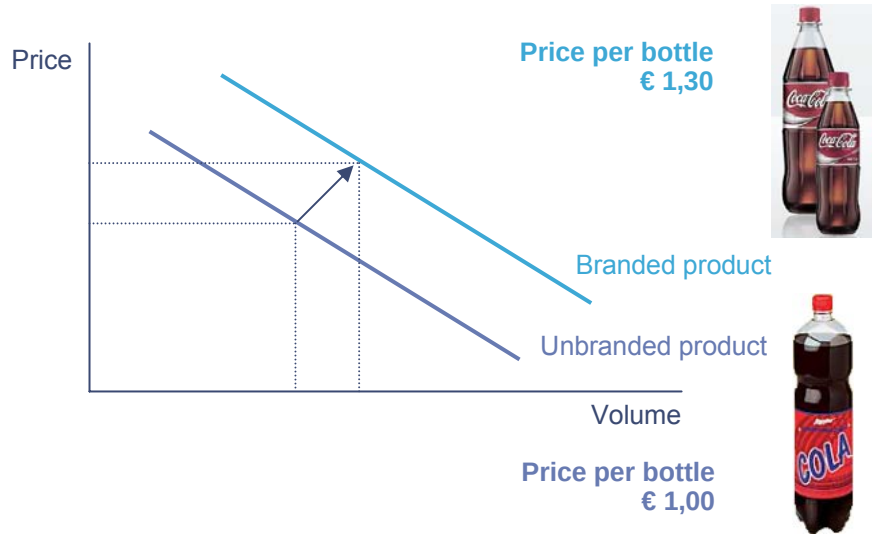
The intangible asset allows the owner to earn incremental revenue, e.g. to charge a price-premium

Valuation of intangible assets

Valuation of a trademark by the Incremental Cash Flow method (example)

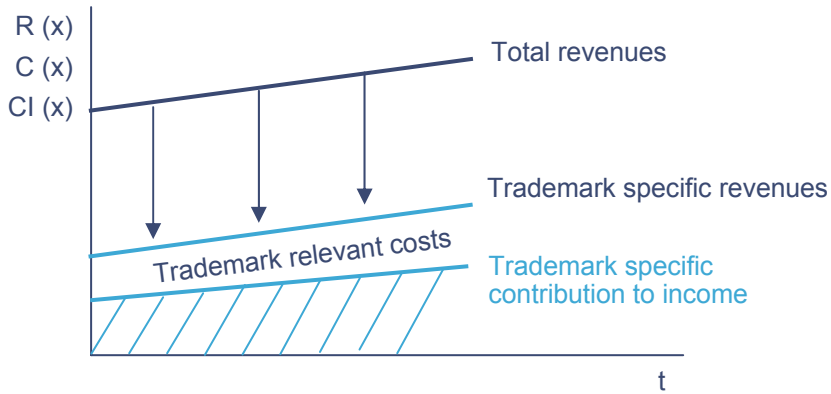
Trademark-premium

Price effect
Volume effect
Distribution effect



Trademark-forecast

Trademark specific revenues



Trademark-risk

Risk survey and present value calculation

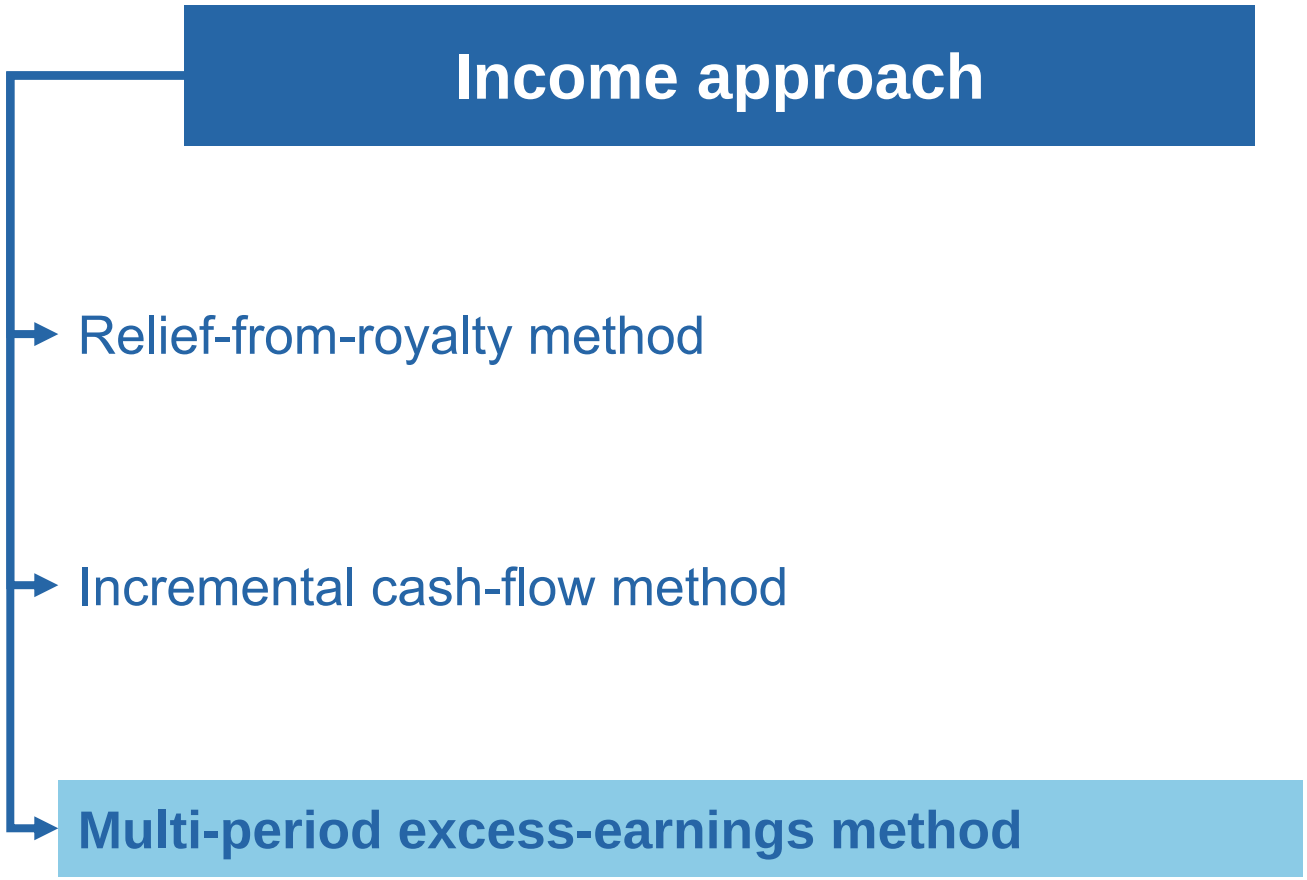
Incremental cash-flow method
Valuation steps

1.	Derive pre-tax incremental cash flows of subject intangible
2.	Subtract tax expenses
3.	Consider incremental contributory asset charges
4.	Calculate the present value of incremental cash flows
5.	Compute the tax amortisation benefit

Incremental cash flow method – Pro's and Con's

- Provides a direct measure of the economic benefit provided by the asset
- The application of contributory asset charges is dependent upon the nature of the increment. For example premium pricing would not require a contributory asset charge for PP&E, but a working capital charge would be appropriate. *Note – the concepts of contributory asset charges are discussed later in the presentation.*
- Cost savings and premium pricing are more readily measurable, however incremental market share becomes more subjective
- Baseline assumptions may only be available within the subject entity and may be difficult to identify for market participants

Income approach methods



MEEM
Valuation steps

1. Derive future cash flows for subject intangible asset
2. Subtract tax expenses
3. Apply contributory asset charges
4. Calculate present value of future cash flows
5. Compute the tax amortisation benefit

MEEM
Valuation steps

3. **Apply contributory asset charges**

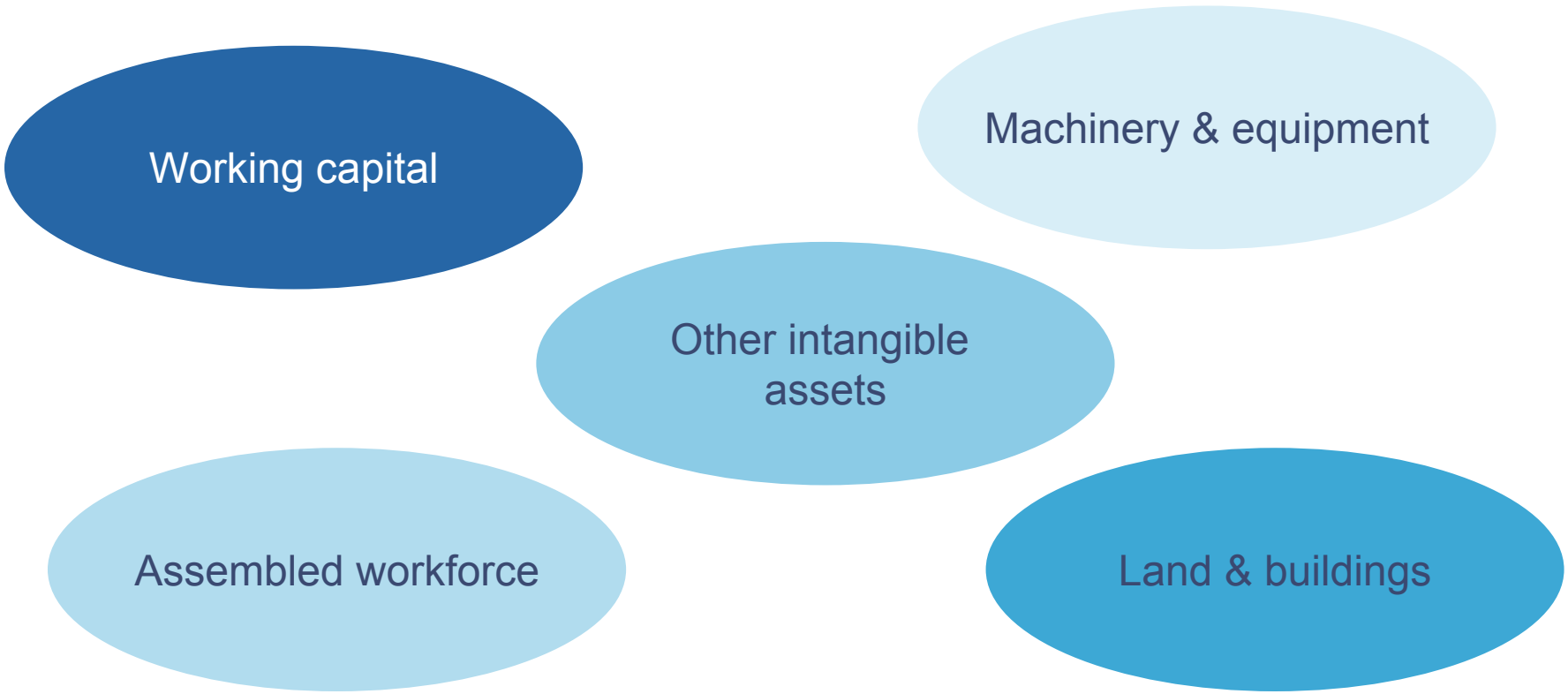
Question:
Would the subject intangible asset generate the same revenues independent from other assets?

NO → Charge an economic rent for the other assets needed to generate the aggregate cash flows.

Concept of contributory asset charges

MEEM
Valuation steps

Possible contributory asset charges:



Contributory Asset Charges

- Contributory asset charges are a means of allocating cash flows such that an adequate rate of return is provided for the supporting assets
- Excess earnings are those that remain after consideration of all contributory assets
- It should not be presumed that contributory assets are more reliably measured than the subject asset and they do not have a priority in the process.
- The application of the MEEM is an iterative process whereby the results are evaluated in the context of all of the assets of the group and adjustments may be made to the contributory assets
- Diversity in practice in calculating contributory asset charges

MEEM – General Framework
Example - Customer Relationship Intangible Assets

	2006	2007	2008	2009	2010
Total Revenue	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000
Attributable to current customers	100%	80%	60%	40%	20%
Revenue - Current Customers	1,000	800	600	400	200
Gross Profit	650	520	390	260	130
Operating Expenses	200	160	120	80	40
Depreciation	150	120	90	60	30
Technology (Income allocation)	**20**	**16**	**12**	**8**	**4**
Brand Intangibles (Income allocation)	**120**	**96**	**72**	**48**	**24**
EBITA	160	128	96	64	32
Taxes	64	51	38	26	13
Debt-Free Net Income	96	77	58	38	19
Contributory Asset Charges:					
Working Capital	**20**	**16**	**12**	**8**	**4**
Fixed Assets	**30**	**24**	**18**	**12**	**6**
Workforce	**10**	**8**	**6**	**4**	**2**
Excess Income - Current Customers	36	29	22	14	7

MEEM – Pro's and Con's

- The MEEM is dependent upon the ability to prepare reasonable expected cash flows. This is mitigated somewhat by assessing the projections in the context of the total business unit.
- Suffers from inability to recognise ALL relevant going concern components in the contributory assets charges.
- All of the "excess" income is attributed to an amortisable intangible asset and/or goodwill.
- Goodwill is created, in part, by the mortality of the current customers.
- Period of charge for contributory assets needs to be carefully assessed.
- Future assets are also considered in estimating the excess income.
- Other intangible assets are considered in the contributory asset charges.

MEEM:
Rates of return and reasonableness checks

- Rates of return for the contributory assets are based on the nature of the assets and their respective risk characteristics
- Implied rate of return for future assets (e.g. goodwill) should also be evaluated and compared to the related assets of the business as a reasonableness check
- The fair values of the identifiable assets should be reconciled to the fair value of the business unit

Evaluation of the components of Goodwill

- Goodwill is defined as a residual value
- Gain an understanding of the components of goodwill in order to assess the reasonableness of the fair values of the identifiable intangible assets and other assets and liabilities.
- Such components may consist of:
  - Future customer relationships
  - Future technology
  - Future brands
- Understanding the nature of the future assets assists in evaluating the value drivers of the subject business
- Also provides a vehicle to assess the relative rates of return for the current and future assets

Weighted Average Return on Assets (WARA)

- WARA is a commonly accepted approach to calculate the implied rate of return on residual goodwill
- It is a general approach based on fair values and respective rates of return
- In principal the weighted average rate of return, including goodwill, should equate to the enterprise value discount rate (WACC or IRR)
- WARA does not give consideration to the pattern of projected cash flows and may result in a skewed outcome
- A more refined approach to calculating the implied rate of return on goodwill is to explicitly discount the cash flows attributable to goodwill (e.g. enterprise value cash flows less those attributable to the identified assets)

Drivers of Diversity

- Issue is generally not which model, but how employed
  - WACC (discounts & premia, beta, peer group, tax regime)
  - Relevant Business Plan
  - Synergies (market participants vs. buyer specific)
  - Avoid double-counting of cash flows
  - Tax Amortization Benefit (tax rate, duration)
- Determination of useful life
- Stand-alone valuation vs. portfolio approach
- Nature of reasonability checks employed (WARA vs. IRR)
- Level of professional scepticism applied to management inputs
- Use of subjective assumptions/judgements

Section seven

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Other Items
Summary

Useful life Determination

"…the useful life of an intangible asset is related to the expected cash inflows that are associated with that asset." (IAS 38.BC61)

Many factors are considered in determining the useful life

- Expected use by the company and market participants
- Typical product life cycles for the asset
- Technical, technological, commercial or other types of obsolescence
- Industry, demand, competitors
- Period of control over the asset ...

Measuring a contingent liability of the acquiree

Contingent liabilities of subsidiary

Recognition at fair value

- For recognition IFRS 3 dominates IAS 37
- Probability determines valuation, not recognition
- After initial recognition: Value at higher of
  - Amount that would be recognised in accordance with IAS 37, and
  - The amount initially recognised less, when appropriate, cumulative amortisation recognised in accordance with IAS 18 (IFRS 3.48)

Source: IFRS 3.47ff.

Contingent assets of subsidiary

No recognition

Issues in valuing contingent liabilities

- Limited experience in valuing contingent liabilities within the appraisal profession
- Most practioners will use an expected value approach
  - Might not be consistent with the exit price concept in SFAS 157
- Significant judgment required as these risks are often unique
- Can be difficult to appropriately identify the market participants
- How do you achieve completeness?

Section eight

Value Concepts in IFRS
The Purchase Price Allocation Process
Overview of Valuation Methodologies
Cost Approach
Market Approach
Income Approach
Other Items
Summary

Key takeaway points

- Valuation is part art, part science
- Practitioners often agree on the model to use, but inputs are often subjective
- Valuation practice is guided by the concepts of corporate finance
  - Underlying standards and rules are scarce
  - Guidance is often designed for multiple purposes
- Accounting standards, such as SFAS 157, help to mitigate diversity in practice