

OIV Business Valuation International Conference
October 22-23, 2012

The Valuation of Intangible Assets

Mark L. Zyla CPA/ABV, CFA, ASA
Managing Director
Acuitas, Inc.
Atlanta, Georgia



Overview

2

- What are intangible assets?
- Which are the best methods to measure the fair market value of specific intangible assets?
- What are some advance methods of measuring the value of intangibles?

Valuation of Intangible Assets

3

- Acquisitions, mergers and sales of businesses or parts of businesses,
- Purchases and sales of intangible assets,
- Reporting to tax authorities,
- Litigation and insolvency proceedings, and
- Financial reporting

IVSC Technical Information Paper 3, *The Valuation of Intangible Assets*

How Intangible Assets Create Value

4

- History of Intangible Assets
- Increasing recognition that intangible assets create value for an entity
- Provide rights and privileges to the owner
- Represent an entity's intellectual capital

History of Intangible Assets

5

- Changes in technology impact mankind's development
 - 15th century – printing press
 - 19th century – telegraph
 - 20th century – telephone, television and Internet
- Global economies have experienced a tremendous shift from “bricks and mortar” business to information based businesses
- Increased recognition that intangibles add value
 - Globalization and international trade
 - Information based technologies
- A greater % of global market capitalization is derived from intangible assets

Economic Basis of Intangible Assets

6

- Intangible assets represent an intellectual advantage
- Exploit the intellectual property to achieve a competitive advantage in the market place
- Economic advantage is realized through enhanced margins
 - Those without possession of the intellectual property must pay for its use through licenses or royalty fees
 - Relationships with customers already exist, so marketing and selling costs are lower
 - An assembled workforce keeps hiring and training

Other Value Drivers for Intangible Assets

7

- The use of an intangible asset does not have physical limitations – nonrivalry scalability
 - ▣ Permits multiple users
 - ▣ Size of market is only limiting factor
 - ▣ eBay, FaceBook
- The value of the intangible asset increases as the number of users increases – networking effect
 - ▣ Adobe Flash Player

Key Terms

- An asset is *identifiable* if it either:
 - Is separable, that is, capable of being separated or divided from the entity and sold, transferred, licensed, rented, or exchanged, either individually or together with a related contract, identifiable asset, or liability, regardless of whether the entity intends to do so; or
 - Arises from contractual or other legal rights, regardless of whether those rights are transferable or separable from the entity or from other rights and obligations.

Source: IFRS 3, IVSC IVS 210 Intangible Assets, FASB ASC 805

Examples of Intangible Assets That Meet the Criteria for Recognition Apart from Goodwill

- Marketing-related intangible assets
 - Trademarks, trade names
 - Service marks, collective marks, certification marks
 - Trade dress (unique color, shape, or package design)
 - Newspaper mastheads
 - Internet domain names
 - Noncompetition agreements
- Customer-related intangible assets
 - Customer lists
 - Order or production backlog
 - Customer contracts and related customer relationships
 - Noncontractual customer relationships

Examples of Intangible Assets That Meet the Criteria for Recognition Apart from Goodwill

- Customer –or supplier related (continued)
 - Franchise agreements
 - Operating and broadcast rights
 - Use rights such as drilling, water, air, mineral, timber cutting, a den route authorities
 - Servicing contract such as mortgage servicing contracts
 - Employment contracts

- Artistic related intangible assets
 - Plays, operas , ballets
 - Books, magazines, newspapers, other literary works
 - Musical works such as compositions song lyrics, advertising jingles
 - Pictures, photographs
 - Video and audiovisual material including motion pictures, music videos, television programs

Examples of Intangible Assets That Meet the Criteria for Recognition Apart from Goodwill

- Technology-based intangible assets
 - ▣ Patented technology
 - ▣ Computer software
 - ▣ Unpatented technology
 - ▣ Databases, including title plants
 - ▣ Trade secrets, such as secret formulas, processes, recipes

Source: IVSC Technical Information Paper 3, FASB
Topic 805,

The Cost Approach

12

- Understand the economic foundation underlying the cost approach
- Distinguish reproduction cost and replacement cost
- Examine types of obsolescence
- Become familiar with the cost approach and underlying methods for valuing intangible asset
 - Historical Cost Trending
 - Unit Cost Method
 - Unit of Production Method
- Understand the limitations of the cost approach

Definition of the Cost Approach

13

“The cost approach is based on the economic principle that a buyer will pay not more for an asset than the cost to obtain an asset of equal utility, whether by purchase or by construction.”

IVSC Technical Information Paper 3 The Valuation of Intangible Assets 7.1

Reproduction vs. Replacement Cost

14

- Reproduction cost – the cost to construct an exact replica of the subject asset, using the same materials, standards, design, and workmanship at today's prices. Any obsolescence in the original will be duplicated.
- Replacement cost – the cost to construct an asset with equivalent utility using current materials, standards, design and workmanship. The replacement will exclude all curable obsolescence present in the original.
- Both are measured using valuation date costs.
- Either can be a starting point for the applying the cost approach.

Components of Cost

15

- When determining reproduction cost or replacement cost, consider all five components of cost
 - Material
 - Labor
 - Overhead
 - Developer's profit
 - Entrepreneurial Incentive (Opportunity Cost)
- Treatment of developer's profit and entrepreneurial incentive are inconsistent in practice.

Applying the Cost Approach

16

- Preferable approach when the asset is readily replaceable and when the costs of replacement are reasonably determined.
- Most often used for contributory assets that are not direct sources of the entity's cash flows
 - Assembled workforce
 - Internally developed software
 - Mailing lists
 - Engineering drawings
 - Package designs

Cost Approach Methods

17

- Historical cost trending – using the entity's records from the original purchase or creation and applying price indexes
- Unit cost method – a direct estimate of all the costs to create a similar replacement asset
- Unit of production method – relying on rules of thumb for determining cost that are commonly accepted in certain industries

Historical Cost Trending Example

18

- Suppose you have been hired to measure the fair value of ABC Company's internally developed customer order processing software.
- What factors might influence your decision to use historical cost trending?
 - Whether the software can be easily replaced
 - Whether the entity has maintained records from the development of the asset.

Historical Cost Trending Example

19

- Once you have calculated the current cost of reproducing the original software (trended original cost plus opportunity cost plus entrepreneur's profit), then ask:
- If ABC were creating the customer order processing software in 20X8, would it be better than the original software created in 20X2? Would it require less effort to create?
- If less effort is required, what does this indicate?
- Obsolescence in the original.

Obsolescence

20

- How you estimate economic obsolescence?
 - Comparative analysis of expected economic performance to historical, budget and industry to determine economic shortfall.
 - Economic shortfall is projected over the asset's useful life and discounted to present value.
 - Or, compare business enterprise value to total fair value of assets less liabilities. If BEV is less, the difference is obsolescence.
 - Or based on an estimate of overcapacity in an industry

Taxes Under the Cost Approach

21

- The last step in the analysis is to consider whether to include the impact of taxes in your analysis. The cost approach can be applied on a pretax or after-tax basis and there is divergence in practice.
- What are the factors that must be considered?
 - ▣ Tax structure of the entity
 - ▣ Tax structure of the transaction
 - ▣ Reason for the valuation – business combination, litigation, estate tax purposes

Taxes Under the Cost Approach

22

- The after-tax cost basis has two factors, the
 - The tax provision
 - A tax benefit from amortization of the intangible

Amortization Benefit Multiplier

23

- $TAB = VBA \times n / (-((AF \times t \times (1+r)^{0.5}) - 1))$
- Where:
 - TAB = Tax amortization benefit
 - VBA = Value benefit amortization
 - n = Number of years
 - AF = Annuity factor
 - t = Tax rate
 - r = Discount rate

ABC Corporation
Customer Order Processing Software
Replacement Cost based on Historical Cost Trending
as of June 30, 20X8

24

<u>Year Cost Incurred</u>	<u>Price Index</u>	<u>Historic Cost</u>	<u>Index Adjustment Factor</u>	<u>Cost</u>
20X0	168.9	1,124,800	210.3 / 168.9	\$1,400,506
20X1	173.5	1,362,874	210.3 / 173.5	1,651,945
20X2	175.9	1,237,400	210.3 / 175.9	1,479,393
Trended Original Cost				4,531,843
Opportunity Cost - 15%, 26 months recreate				1,472,849
Entrepreneur's Profit - 4%, 26 months to recreate				392,760
Reproduction Cost				6,397,452
Less: Obsolescence of 30%				(1,919,236)
Before Tax Replacement Cost				4,478,216
Less: Tax @ 38%				(1,701,722)
After Tax Replacement Cost				2,776,494
Amortization Benefit Multiplier				1.16
Fair Value of Customer Order Processing Software, rounded				\$3,221,000



Unit Cost Method

25

- The unit cost method is simply a direct estimate of all the costs that would be incurred to create a similar replacement.
- What is a logical first step?
 - Have a discussion with the original project manager to determine
 - the amount of time and effort it would take to replace the original
 - whether the replacement would be similar to the original, or
 - whether it would have enhanced capabilities and / or be more efficient (obsolescence in the original)

ABC Corporation
Inventory Control Software
Replacement Cost based on the Unit Cost Method
as of June 30, 20X8

	Estimate Hours to Replace	Hourly Rate	Materials	Direct Labor	Benefits, Overhead, Profit & Opportunity Costs ⁽¹⁾	Total Costs
Specification Development	500	\$80.50	-	40,250	28,980	\$69,230
Project Management	3,000	63.75	-	191,250	137,700	328,950
Analyst	12,200	48.50	-	591,700	426,024	1,017,724
Programmer	17,750	44.50	1,850	789,875	570,042	1,361,767
Documentation	2,300	38.75	725	89,125	64,692	154,542
Testing	1,500	34.50	-	51,750	37,260	89,010
Before Tax Replacement Cost						3,021,223
Less Tax @ 38%						(1,148,065)
After Tax Replacement Cost						1,873,158
						1.16
Fair Value of Inventory Control Software, rounded						\$2,173,000

(1) Benefits of 33%, overhead of 20%, opportunity costs of 15% and entrepreneur's profit of 4%.

Unit of Production Method

27

- Within certain industries, rules of thumb exist for determining costs
 - Within the construction industry, costs per square foot
 - Within the fast food industry, cost estimates are based on seating restaurant seating capacity
 - Within the beverage bottling industry, franchise rights for distribution within a geographic are based on the number of cases sold
 - Within the software industry, cost is estimated based on the number of lines of code

ABC Corp – Unit of Production Example

28

- ABC Corp is a automobile rental company that is part of an international franchise. Within the industry, the value of the franchise is commonly estimated to be worth \$1,000 per automobile. Therefore, the replacement cost is simply the # autos X \$1,000.
- What other factors must be considered / measured?
 - Economic obsolescence
 - Tax effects
 - Whether value is consistent with other methods and approaches

ABC Corporation
Auto Rental Franchise
Replacement Cost based on Unit of Production Method
as of June 30, 20X8

29

Franchise Location	Number of Automobiles	Replacement Cost per Auto ⁽¹⁾	Total Replacement
Gainesville, Florida	98	1,000	\$98,000
Jacksonville, Florida	330	1,000	330,000
Tallahassee, Florida	168	1,000	168,000
Augusta, Georgia	74	1,000	74,000
Brunswick, Georgia	42	1,000	42,000
Savannah, Georgia	115	1,000	115,000
Charleston, South Carolina	248	1,000	248,000
Columbia, South Carolina	174	1,000	174,000
Hilton Head, South Carolina	229	1,000	229,000
Replacement Cost Before Obsolescence Adjustment			1,478,000
Less: Obsolescence of 10% ⁽²⁾			(147,800)
Before Tax Replacement Cost			1,330,200
Less: Tax @ 38%			(505,476)
After Tax Replacement Cost			824,724
Amortization Benefit Multiplier			1.16
Fair Value of Auto Rental Franchise, rounded			\$957,000

(1) Per Business Reference Guide, 17th Edition, automobile rental companies have a franchise value of \$1,000 per auto.

(2) Management estimate of overcapacity within local markets.

Fair Value Measurement: Practical Guidance and Implementation, John Wiley & Sons 2012. Used with permission.



Limitations of the Cost Approach

30

- No direct incorporation of economic benefits
 - Duration or timing of benefits
 - Trends in benefits
- Risk is not incorporated
- Estimates become more subjective as time elapses from the date of original creation
- Obsolescence is difficult to quantify
- There is divergence in practice in the treatment of taxes, entrepreneur's profit and opportunity costs

– The Market Approach

31

- Learn how to apply the market approach when valuing certain intangible assets
- Understand the differences between various methods under the market approach
- Understand the limitations of the market approach to value intangible assets

Definition of the Market Approach

32

“ The market approach provides an indication of value by comparing the subject asset with identical or similar assets for which price information is available.”

IVSC Technical Information Paper 3, paragraph 5.1

The Market Approach

33

- The market approach is most commonly applied to the measurement of a business entity or reporting unit
 - ▣ Relies on market multiples such as the P/E ratio
- Can be applied to the measurement of fair value of intangible assets, but market information is often limited

Applying the Market Approach to Intangible Assets

34

- Relief from Royalty Method
 - Contains both market approach and income approach methods
 - Based on the theory that owning an intangible asset relieves the owner from having to pay license fees to a third party for a similar asset
- Guideline Transaction Method
 - Based on multiples from similar intangible assets applied to an operating parameter
 - Difficult to apply in practice due to lack of information

Relief from Royalty Method - WW Wireless Example

35

- What attributes of a license agreement would be assessed when determining the degree of comparability between a hypothetical license for the domain name and potential comparable licenses?
- Royalty rates is similar
- The economic measure to which the rate is applied
- The geographic area covered by the license
- Whether the license is exclusive or not
- The term of the license
- Whether the subject industry would support a similar royalty rate
- Any other risk / return attributes of the license
- How is the appropriate royalty rate selected?
- Selection is based on statistical analysis and judgment.

**WW WIRELESS, INC
INTERNET DOMAIN NAMES
AS OF DECEMBER 31, 20X0**

36 Licensor	Licensee	Date	Terms	Royalty	
				Low	High
Arlington Fulbright Inc.	Passion Technologies, Inc.	May-09	International	1.0%	2.0%
DigiWigiTech	TopTechNology.com	Dec-08	Non-transferable	2.0%	4.0%
ThatName.Com	Cottage Industry Inc.	Sep-08	North America	2.0%	4.0%
ChaseHatMadden.com	Central Chemical Co	Jul-08	NA	4.0%	4.0%
Technology Alliance Group	Titians Technology GMBH	Apr-08	International	0.1%	1.5%
Silverstein Jacobs LLC	Heartkind.com	Nov-07	Exclusive	1.0%	1.0%
FirstPass.com	Sky Blue Sailing, Inc.	Jun-07	Exclusive	1.0%	2.0%
				High	4.0%
				3rd Q	2.0%
				Mean	1.6%
				Median	1.0%
				1st Q	1.0%
				Low	0.1%
				Mode	1.0%
				Selected Royalty Rate:	1.0%

Relief from Royalty Method - WW

Wireless Example

37

- The relief from royalty method also incorporates basic discounted cash flow assumptions. Other than the royalty rate, what other basic DCF assumptions would be incorporated into the fair value measurement of the domain name?
- Projections for the economic measure to which the royalty rate is applied (revenues)
- Normalized growth rate
- Remaining useful life
- Cost of Capital (covered under the income method)
- Tax rate (covered under the income method)

WW WIRELESS, INC
VALUATION OF DOMAIN NAME
AS OF DECEMBER 31, 20X0

38	20X1	20X2	20X3	20X4	20X5	20X1 + 30 years
Revenue	\$125,000,000	\$131,250,000	\$140,437,500	\$150,268,125	\$159,284,213	\$343,510,942
<i>Growth</i>		5%	7%	7%	6%	3%
Pre-Tax Royalty Savings @ 1%	1,250,000	1,312,500	1,404,375	1,502,681	1,592,842	3,435,109
Less: Taxes	(475,000)	(498,750)	(533,663)	(571,019)	(605,280)	(1,305,342)
After-Tax Royalty Savings	775,000	813,750	870,713	931,662	987,562	2,129,768
Partial Period	0.06	1.00	1.00	1.00	1.00	1.00
Period	0.03	0.56	1.56	2.56	3.56	29.56
Present Value Factor	0.994	0.902	0.752	0.627	0.522	0.005
PV of After-Tax Royalty Savings	48,556	734,363	654,807	583,870	515,752	9,716
Sum of PV of Savings	5,603,327					
Amortization Benefit Multiplier	1.15					
Preliminary Value	6,438,222					
Concluded Value, Rounded	<u>\$6,438,000</u>					

Assumptions	
Discount Rate	20.0%
Long-Term Growth Rate	3.0%
Tax Rate	38.0%
Royalty Rate	1.0%
Remaining Useful Life	30 years

The Market Approach

39

- The market approach to valuing intangible assets can be one of the best indications of value. Unfortunately, information about comparable transactions is sometimes difficult to find. Even with available information the analyst must consider a variety of factors, such as
 - The type of intangible asset
 - The geographic region or other restrictions under the agreement
 - The time frame of the agreement
 - The terms of any royalties paid
 - The exclusivity of the agreement
 - The underlying industry and marketing dynamics

The Income Approach

40

- Learn when the income approach is appropriate
- Be able to apply the various methods under the income approach
- Develop the appropriate rate to discount cash flows from intangible assets

Definition of the Income Approach

41

“Valuation methods under the income approach determine the value of an intangible asset by reference to the present value of future income, cash flows or cost saving that could be reasonably expected to be achieved by a market participant owning the asset.”

IVSC Technical Information Paper 3 *The Valuation of Intangible Assets*. Paragraph 6.1

Income Approach Methods

42

- Discounted cash flow (DCF)
- Multi-period Excess Earnings Method (MEEM)
- Income Increment / Cost Decrement Method (With / Without Method)
- Profit Split Method

General Considerations for Prospective Financial Information (PFI)

43

- When you use PFI as the basis for your analysis, what are the questions you must ask?
 - ▣ Does the forecast correspond to internal budgets or external forecasts by stock analysts?
 - ▣ Is the current forecast consistent with previous forecasts?
 - ▣ Do the assumptions in the forecast appear reasonable in relation to historical performance?
 - ▣ Do the assumptions in the forecast appear reasonable in relation to performance of guideline companies or assets?

Multi-period excess earnings method (MPEEM)

44

- Value is based on cash flows attributable to the subject intangible asset
 - Typically the primary generator of cash flows for the entity
 - Technology
 - Customer relationships
- Contributory asset are secondary assets
 - A contributory asset charge is deducted from cash flows for each secondary asset to cover a reasonable return “on” the asset
 - An investor expects to receive a return “on” his investment and a return “of” his investment, similar to interest and principal on

Steps in Applying the Multi-period Excess Earnings Method (MPEEM)

45

1. Develop a fundamental understanding of the entity's operations and its value drivers.
2. Determine the subject asset's contribution to company revenues. If the subject asset is a wasting asset and will decline over time, apply a decay factor.
3. Estimate the PFI attributable to the subject intangible asset
4. Deduct a charge for the use of the tradename based on market royalty rates.
5. Deduct taxes to get debt free net income attributable to the subject asset

Steps in Applying the Multi-period Excess Earnings Method (MPEEM)

46

6. Determine which contributory assets assist in generating debt free net income (i.e. working capital, fixed assets, other intangible assets)
7. Estimate an appropriate rate of return for contributory assets
8. Subtract returns on contributory assets from debt free net income
9. Discount residual cash flows to the present at a risk adjusted rate of return
10. Sum of present value of cash flows adjusted for amortization benefit is the fair value of the subject intangible asset

Contributory Asset Charges

47

- Underlying theory for contributory asset charges (CACs)
 - The charge represents an attribution of earnings to the contributory asset owned by the entity, or
 - The charge is similar to the payment of a usage fee for an asset owned by a third party
 - Either way, the return on investment would include a pure investment return and a recoupment of the original investment
- CAC provide a required return “on” the contributory asset
- Include a return “of” the contributory asset in the CAC
 - When asset has to be replaced over time
 - CACs for fixed assets
- No return “of” the contributory asset in the CAC
 - When asset does not deteriorate and is continuously replenished over time
 - CACs for working capital and assembled workforce

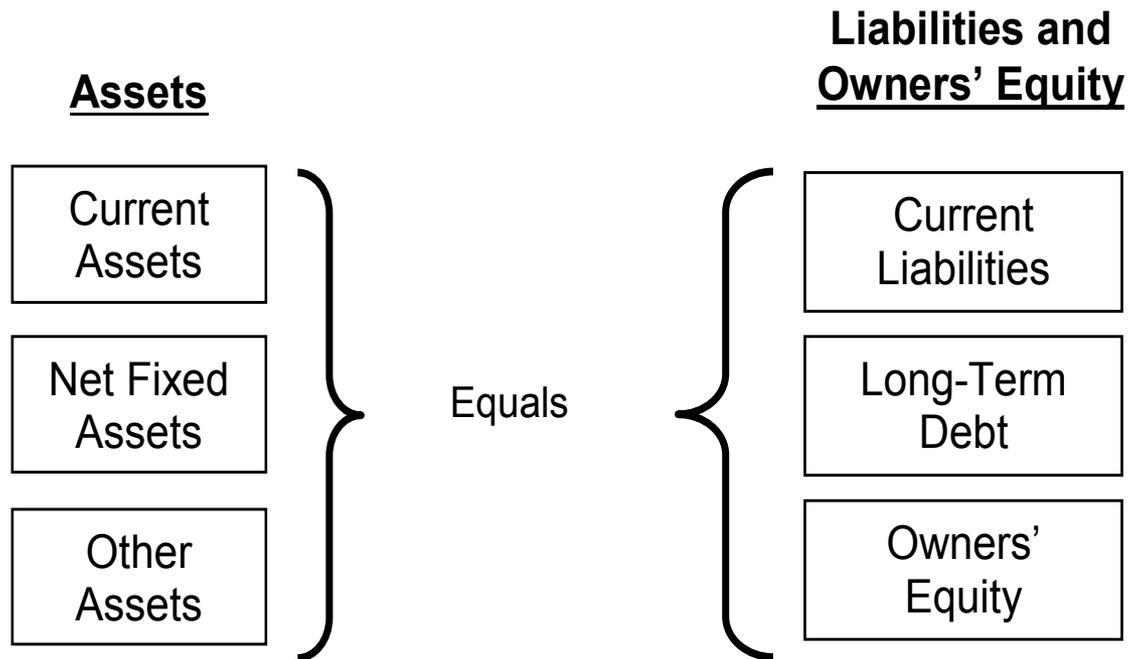
Contributory Asset Charges by Asset Category

48

- Required rate of return should be commensurate with the relative risk
 - Considers the level of debt financing that could be secured
 - Considers market participant costs of equity and debt
 - Considers degree of certainty in realizing future cash flows from the asset
- Hierarchy of required returns increases as you move down the balance sheet as the type of financing available shifts from debt to equity
 - CAC should be consistent with weighted average return of assets (WARA) and the weighted average cost of capital

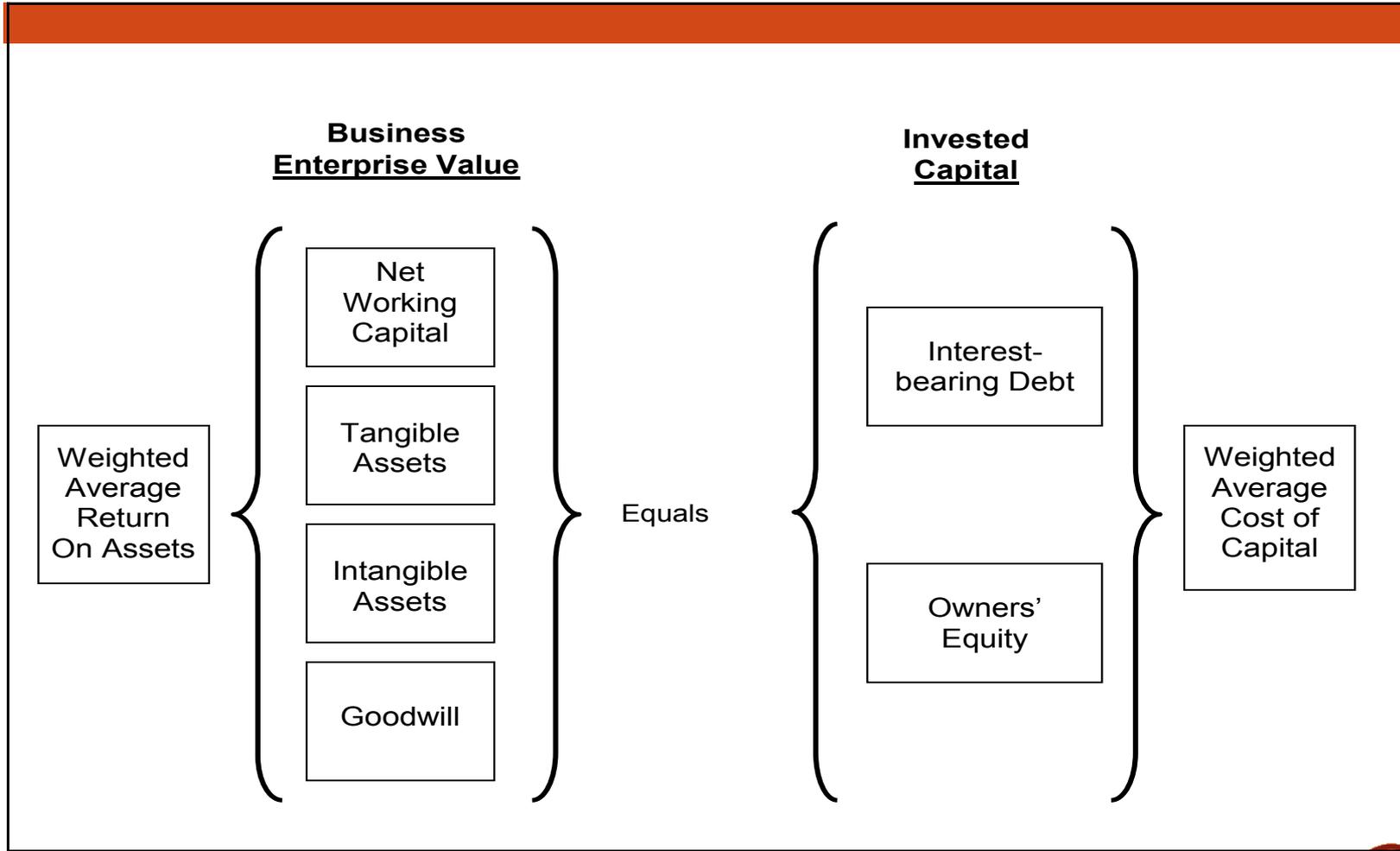
Historic Cost Balance Sheet

49



Economic Balance Sheet

50



Fair Value Balance Sheet

51

Fair Value Assets

Current Assets

Tangible Assets

Intangible Assets

Goodwill

Equals

Fair Value Liabilities & Owner's Equity

Current Liabilities

Long-Term Debt

Owners' Equity

Best Practices for Contributory Asset Charges

52

The Appraisal Foundation *Best Practices for Valuations in Financial Reporting: Intangible Asset Working Group – Contributory Assets*

- Issued May 31, 2010
- Companion “Toolkit” with sample spreadsheets that illustrate contributory asset charge (CAC) calculations
- Non-authoritative

JT Austin – MPEEM Example

53

- JT Austin's patented technology is going to be measured using the MPEEM because it is the company's most significant asset with respect to revenue generation.
- What tangible and intangible assets might contribute to the company's ability to generate revenues?
 - Working capital
 - Property and equipment
 - Assembled workforce
 - Customer relationships
 - Trademarks / tradenames
 - Non-compete agreements

Contributory Asset Charges by Asset Category

54

- What are appropriate sources for contributory asset charges?
- Working capital ?
 - bank prime lending rate (after-tax), or commercial paper rate, some equity financing required
- Fixed assets?
 - market participant bank financing rates for similar assets (after-tax), blended debt / equity rate
- Identifiable intangible assets?
 - rate based on relative risk of asset compared to WACC, required return is highly correlated with equity rate of return
- IPR&D?
 - rate similar to venture capital returns for early stage companies
- Goodwill attributable to assembled workforce ?
 - WACC
- Is unidentifiable goodwill a contributory asset?
 - Maybe, use a rate higher than identifiable intangible assets

JT AUSTIN TECHNOLOGY INC
AS OF OCTOBER 31, 20X1
REQUIRED RETURN ON CONTRIBUTORY ASSETS

('000s)		<u>20X1</u>	<u>20X2</u>	<u>20X3</u>	<u>20X4</u>	<u>20X5</u>	<u>Thereafter</u>
Total Revenue		12,593,002	13,250,000	14,150,000	15,150,000	15,750,000	16,222,500
Multiplied by: DFWC %		15.2%	15.2%	15.2%	15.2%	15.2%	15.2%
Debt-Free Working Capital Balance		1,914,136	2,014,000	2,150,800	2,302,800	2,394,000	2,465,820
Required Return On Working Capital	6.5%	124,598	131,099	140,004	149,898	155,834	160,509
Capital Expenditures		275,830	397,500	424,500	454,500	472,500	486,675
Depreciation		275,830	397,500	424,500	454,500	472,500	486,675
Net Fixed Assets Balance	\$ 1,175,200	1,175,200	1,175,200	1,175,200	1,175,200	1,175,200	1,175,200
Required Return On Capital Investment	7.0%	82,691	82,691	82,691	82,691	82,691	82,691
Non-competition Agreement Beginning Value	\$ 194,000						
Non-competition Agreement Required Return	23.0%	44,620	44,620	44,620	44,620	44,620	-
Assembled Workforce Beginning Value	\$ 530,000						
Assembled Workforce Required Return	23.0%	121,900	121,900	121,900	121,900	121,900	121,900
Customer Relationships Beginning Value	\$ 865,000						
Customer Relationships Required Return	25.0%	216,250	216,250	216,250	216,250	216,250	216,250
Required Return on Contributory Assets		4.7%	4.5%	4.3%	4.1%	3.9%	3.6%

JT Austin Example

56

- MPEEM is used to measure the value of JT Austin's patented technology
- Can you use a decay factor assuming that benefits accrue to the company for 15 years, even though depreciable life is 5 years?
- How do you determine the royalty rate for using the trade name?
- What two costs does the contributory asset charges cover?
 - ▣ Includes a return "on" the contributory asset and
 - ▣ Includes a return "of" the contributory asset, where appropriate
- How are the contributory assets are measured?
 - ▣ Appraised value
 - ▣ Replacement cost
 - ▣ DCF

JT AUSTIN TECHNOLOGY INC
OCTOBER 31, 20X1
VALUATION OF PATENTED TECHNOLOGY

57

	20X1	20X2	20X3	20X4	20X5	20X5 Plus 10 Years
Projected Companywide Revenue	\$12,593,002	\$13,250,000	\$14,150,000	\$15,150,000	\$15,750,000	\$21,166,683
Decay Factor	0.98	0.88	0.72	0.59	0.48	0.06
Surviving Company Revenues	12,384,292	11,594,988	10,137,992	8,886,879	7,564,118	1,375,756
EBITDA	2,229,173	2,782,797	2,433,118	2,132,851	1,815,388	330,182
Average EBITDA Margin	18%	24%	24%	24%	24%	24%
Less: Depreciation	271,259	347,850	304,140	266,606	226,924	41,273
EBIT	1,957,914	2,434,947	2,128,978	1,866,245	1,588,465	288,909
Less: Charge for Use of Tradename	123,843	115,950	101,380	88,869	75,641	13,758
Adjusted EBIT	1,834,071	2,318,998	2,027,598	1,777,376	1,512,824	275,151
Less: Taxes	(696,947)	(881,219)	(770,487)	(675,403)	(574,873)	(104,557)
Debt-Free NI Before Contributory Charge	1,137,124	1,437,778	1,257,111	1,101,973	937,951	170,594
Less: Contributory Asset Charge	(581,190)	(522,881)	(434,508)	(361,575)	(298,140)	(49,394)
Contributory Asset Charge as a % of Revenue	4.7%	4.5%	4.3%	4.1%	3.9%	3.6%
DFCF to Patented Technology	555,935	914,898	822,603	740,398	639,810	121,200
Partial Period	0.17	1.00	1.00	1.00	1.00	1.00
Period	0.08	0.67	1.67	2.67	3.67	13.67
Present Value Factor	0.983	0.871	0.708	0.576	0.468	0.059
Present Value of Debt-Free Cash Flows	91,316	796,883	582,516	426,263	299,473	7,157
Sum of PV of DFCF	2,861,019					
Amortization Benefit Multiplier	1.13					
Preliminary Value	3,225,052					
Value Patented Technology, Rounded	\$3,225,000					

Assumptions	
Discount Rate	23%
Tax Rate	38%
Remaining Useful Life	5 years
Royalty Rate	1%



Income Increment / Cost Decrement Method

58

- Compares DCF from two sets of PFI
 - First scenario – assumes the subject intangible asset is being used to generate incremental cash flows for the entity
 - Second scenario – assumes the subject intangible asset is not available for use
 - The difference represents the fair value of the subject asset
- Most commonly used to measure the fair value of non-compete agreements

JT Austin Example

59

- The \$10.278 million value of invested capital shown in the DCF, includes the benefit from the previous owner's agreement not to compete.
 - ▣ It represents the “with” scenario.
- What assumptions would you need to make in order to calculate the business enterprise value without the non-compete agreement?
 - ▣ An estimate of the revenues lost because of competition
 - ▣ The probability that the previous owner will compete

JT AUSTIN TECHNOLOGY INC
AS OF OCTOBER 31, 20X1
ANALYSIS OF NON-COMPETITION AGREEMENT

60

	20X1	20X2	20X3	20X4	20X5	Terminal Value
Revenue	\$12,593,002	\$13,250,000	\$14,150,000	\$15,150,000	\$15,750,000	\$16,222,500
Revenue Lost to Competition	3,148,251	3,047,500	2,830,000	2,424,000	1,575,000	-
x Probability of Competition	20%	20%	20%	20%	20%	
Adjusted Revenue	\$11,963,352	\$12,640,500	\$13,584,000	\$14,665,200	\$15,435,000	\$16,222,500
Cost of Sales	7,417,278	7,331,490	7,878,720	8,505,816	8,952,300	9,409,050
Gross Profit	4,546,074	5,309,010	5,705,280	6,159,384	6,482,700	6,813,450
SG&A Expenses	2,392,670	2,275,290	2,445,120	2,639,736	2,778,300	2,920,050
EBITDA	2,153,403	3,033,720	3,260,160	3,519,648	3,704,400	3,893,400
Depreciation	262,039	379,215	407,520	439,956	463,050	486,675
EBIT	1,891,365	2,654,505	2,852,640	3,079,692	3,241,350	3,406,725
Less: Taxes	(718,719)	(1,008,712)	(1,084,003)	(1,170,283)	(1,231,713)	(1,294,556)
Debt-Free Net Income	1,172,646	1,645,793	1,768,637	1,909,409	2,009,637	2,112,170
Plus: Depreciation	262,039	379,215	407,520	439,956	463,050	486,675
Less: Capital Expenditures	(262,039)	(379,215)	(407,520)	(439,956)	(463,050)	(486,675)
Less: Incremental Working Capital	(190,000)	(126,405)	(135,840)	(146,652)	(154,350)	(162,225)
Cash Flows to Invested Capital	982,646	1,519,388	1,632,797	1,762,757	1,855,287	1,949,945
Terminal Value in 20X5						9,749,723
Partial Period	0.17	1.00	1.00	1.00	1.00	1.00
Period	0.08	0.67	1.67	2.67	3.67	3.67
Present Value Factor	0.983	0.871	0.708	0.576	0.468	0.468
Present Value of Cash Flows to Invested Capital	161,407	1,323,399	1,156,243	1,014,856	868,396	4,563,511
Sum of PV of DFCF (20X1 to 20X5)	4,524,302			7,400,000		
PV of Terminal Value	4,563,511			/15		
Pv of Tax Benefit - Amortization of Intangibles	1,018,655			493,333		
Fair Value without Non-competition Agreement	10,106,468			38%		
Invested Capital with Non-competition Agreement	10,278,000			187,467		
Preliminary Value of Non-competition Agreement	171,532			5.43		
Amortization Benefit Multiplier	1.13			1,018,655		
Value of Non-competition Agreement	\$194,000					

Assumptions:	
Discount Rate	23%
Tax Rate	38%
Long-Term Growth	3.0%
Life Non-compete	5 years

The Profit Split Method

61

- A widely recognized method in the licensing and legal communities
 - Also known as the 25% rule
 - Commonly used in the valuation of intellectual property such as patented technology
- Assumes the fair value is based on what a third party would pay to license the asset
- Splits revenue and profits into two groups
 - Those attributable to the hypothetical license
 - Those attributable to the entity's other assets
- Would the profit split method use a one period or multi-period DCF model?
- The profit split can be a one period or multi-period method.

TTT Technology Illustration

62

- TTT Technology produces and sells microchips used in electronic toys
- The company markets its products under the name “Total Teknology”
- The name is widely recognized in the toy industry
- The company believes it could license the name for an amount equal to 25% of profits
- Projected revenues are \$35.4 million for next year
- What other DCF assumptions are inputs to the model?
 - Useful life
 - Capitalization rate

TTT TECHNOLOGY, INC
AS OF DECEMBER 31, 20X1

VALUATION OF TRADE-NAME USING THE PROFIT SPLIT METHOD

Revenue	\$	35,400,000	
Operating Margin	x	35%	(1)
Profit Before Tax		12,390,000	
Less: Taxes @ 38%		(4,708,200)	
Profit After Tax		7,681,800	
Percentage Split		25%	(3)
		1,920,450	
Capitalization Rate		15%	(4)
Concluded Value, Rounded		\$12,803,000	

Assumptions:	Notes:
Operating Margin (1) 35%	(1) Based on management projections.
Income Tax Rate (2) 38%	(2) Estimated corporate tax rate.
Estimated Profit Split (3) 25%	(3) Based on management estimate of a hypothetical royalty rate of 5.4% of revenues.
Long-Term Growth Rate (1) 5%	(4) Discount rate less the long-term growth rate.
Discount Rate (5) 20%	(5) Equals the weighted average cost of capital.
Projected Life of Trade Name Indefinite	

Options and Other Advanced Methods for Valuing Contingency Based Intangible Assets

64

- Identify real options that have contingent characteristics
- Discover methods for applying options valuation methods to non-financial assets
- Understanding other valuation methods for valuing intangible assets

Limitations of Traditional Approaches

65

- DCF typically uses “most likely” cash flows from PFI
- PFI is static, not providing for future changes in assumptions
- Cannot address management flexibility in the decision making process
- Do not consider valuation impact of contingent outcomes

Advanced Methods

66

- One of the fastest growing areas of financial theory and application
- Flexibility in decision-making and contingent events
- Ability to utilize models that are more in tune with the real world
- Widely used to value capital investments, intangible assets, and even companies themselves

Examples of Advanced Valuation Methodologies for Intangible Assets

67

- Option pricing models
 - ▣ Black-Scholes
 - ▣ Binomial Models
- Monte Carlo Simulations
- Decision Trees

Real Options

68

- A real option gives the owner the right, but not the obligation to do something
 - ▣ Similar to a financial option
- Real options are often derived from the ownership rights of intangible assets.
 - ▣ Real options provide flexibility in management decision making.

Real Options – Flexibility in Management Decision Making

69

- What are some examples of real options?
 - ▣ Abandonment
 - ▣ Expansion
 - ▣ Contraction
 - ▣ Interactions with other assets
 - ▣ Timing of entrances or exits
 - ▣ Flexibility to switch
 - ▣ Barrier option

Sunrise Corp Example

70

- Assume Sunrise Corp owns a patent that will allow it to develop a product to harness wind energy more efficiently
- The patent can be viewed as a real option
 - ▣ If expected cash flows exceed the cost to develop, the company will proceed with development
 - ▣ If costs to develop exceed expected cash flows, management will shelve patent and stop development
- Use Black-Scholes to measure the fair value of the patent

Sunrise Corp Example

71

- The present value of cash flows from this new product is expected to be \$100 million. (S)
- Cost of development is estimated at \$125 million. (X)
- The patent is for five years. (T)
- The current five-year Treasury bond rate is 3%. (R)
- The average earnings variance for publicly traded energy companies is 30%. (Σ)

**SUNRISE CORPORATION
AS OF DECEMBER 31, 20X0
VALUATION OF PATENT USING
BLACK-SCHOLES OPTIONS PRICING METHOD**

72

Exercise Price	\$ 125,000,000
Years to Expiration	5
Days to Expiration	1,825
Volatility	30%
Risk Free Rate - r	3.00%
d ₁ (1)	0.2264
N(d ₁)	0.5895
N(-d ₁) or [1-N(d ₁)]	0.4105
d ₂ (1)	(0.4444)
N(d ₂)	0.3284
N(-d ₂) or [1-N(d ₂)]	0.6716
Quarterly Dividend Rate	-
Dividend Yield	0.00%
Call Value (2)	\$ 23,626,720

Notes:

(1) N(d) = Cumulative density function (area under the normal curve) and d₁ and d₂ is as follows:

$$d_1 = \frac{\ln(\text{Market price}/\text{Exercise price}) + ((r + ((\text{Volatility}^2/2)) * \text{years to expiration})}{\text{Volatility} * (\text{years to expiration})^{1/2}}$$

$$d_2 = d_1 - ((\text{volatility}) * (\text{years to expiration})^{1/2})$$

(2) Call Price = Market Price * N(d₁) - [Exercise Price * e^{-r(time to expiration)} * N(d₂)]



Useful Life Analysis of Intangible Assets

73

- Understand why the useful life is an important consideration when measuring the fair value of an intangible asset
- Factors to consider when evaluating useful life

Useful Life of an Asset

74

■ Factors that should be considered in the estimation of the useful life of an intangible asset :

- Expected use of the asset
- Expected use of similar assets
- Legal, regulatory, and contractual provisions that may limit the useful life or enable renewal or extension
- The effects of obsolescence, demand, competition, and other economic factors
- Required future maintenance expenditures

Useful Life of an Asset

75

The remaining useful life of an asset is often the shortest life in the factors presented below:

- *Legal life* – The asset has some legal protection such as a patent, trademark or copyright.
- *Contractual life* – The contractual life is the contractual term involving the intangible asset, such as a lease, customer agreement or supplier agreement. Analysis of the life should include common renewal periods for the same or very similar terms.
- *Functionality and technological issues* – An asset's life may be limited by expected changes in technology. For example, the life of software that is continuously updated is defined by functionality and technological issues.
- *Economic life* – Economic life is the period during which the intangible asset generates positive cash flow.
- *Analytical (actual turnover)* – The analytical factor is based on a statistical analysis of turnover trends. This analysis can be performed on such intangible assets as customer

Mark Zyla, CPA/ABV, CFA, ASA

76

Mark L. Zyla is a Managing Director of Acuitas, Inc. an Atlanta Georgia based valuation and litigation consultancy firm. Mark received a BBA degree in Finance from the University of Texas at Austin and an MBA degree with a concentration in Finance from Georgia State University. Mark also completed the Mergers and Acquisitions Program at the Aresty Institute of The Wharton School of the University of Pennsylvania and the Valuation Program at the Graduate School of Business at Harvard University.

He was a member of The Appraisal Foundation's Business Valuation Best Practices Working Group on Contributory Asset Charges and the AICPA's Fair Value Resource Panel. He is currently working on the AICPA's Impairment Practice Aid Task Force. He is also the Chairman of the AICPA's *Fair Value Measurement* Conference Committee. Mark is a former member of the Business Valuations Committee of the AICPA, and a former Chairman of the ABV Examination Committee of the AICPA. He is also a member of the Business Valuation Standards Subcommittee of the ASA.

Mark is a frequent presenter and author on valuation issues. Mark is the co-author of the course, "*Fair Value Accounting: A Critical New Skill for All CPAs*" published by the AICPA. He is the author of *Fair Value Measurements: Practical Guidance and Implementation 2nd ed.* recently published by John Wiley & Sons.



Mark Zyla, CPA/ABV, CFA, ASA

Managing Director

Acuitas Inc.

One Midtown Plaza

1360 Peachtree Street NE, Suite 950

Atlanta, GA 30309

404-898-1137

www.acuitasinc.com

Fair Value Measurements Blog:

www.acuitasinc.com/blog

