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Measuring Economic Obsolescence

American Society of Appraisers - 2013 Current Topics In Fair Value Conference

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Disclaimer

All views expressed are the views of the individuals presenting and do not necessarily represent the views of PwC.

Target audience

The target audience for this presentation is:

- All valuation professionals attending the America Society of Appraisers – 2013 Current Topics In Fair Value Conference, particularly those preparing or reviewing valuations for financial reporting purposes.
- If you are not in the target audience listed above, you are welcome to remain for the presentation; however, please know that the material may not be as relevant to your role.

Course objectives

Upon completion of this course, learners will be able to:

- Understand what Economic Obsolescence is ("EO");
- Be able to identify when EO should be quantified;
- Understand the implications of not properly identifying EO and which conclusions of value will be affected;
- Understand the various methods used to quantify it.
- Understand various differing scenarios when it can be quantified; and
- Recognize that the identification and quantification of EO is a multi-discipline effort (Intangible, M&E, and Real Property). Often considerable consultation among valuation specialties and our clients is required.

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Section 1
Introduction

Introduction to Economic Obsolescence ("EO")

Definition of Economic Obsolescence

- ASA – Machinery and Equipment
  Economic obsolescence, sometimes called "external obsolescence," is the loss in value or usefulness of a property caused by factors or economic forces external and unrelated to the property itself. Examples of this form of obsolescence are increased cost of raw materials, labor, or utilities (without offsetting increase in product prices); reduced demand for the product; increased competition; legal, environmental, or other regulations; inflation or high interest rates; or similar factors.[1]
- Appraisal Institute – Real Property
  External Obsolescence is caused by conditions outside the property such as a lack of demand, changing property uses in the area, or national economic conditions.[2]

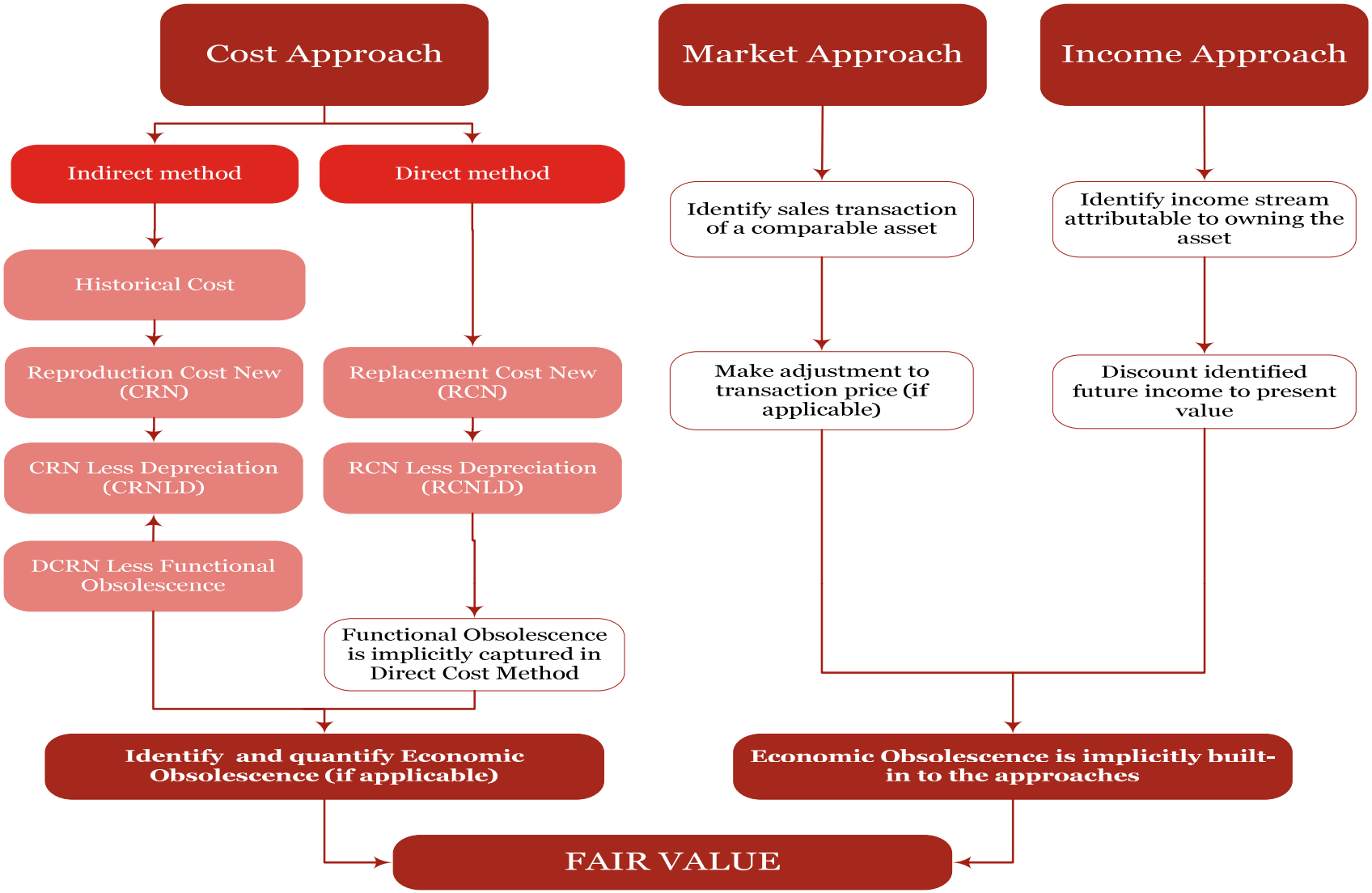
1. American Society of Appraisers, Valuing Machinery and Equipment: the Fundamentals of Appraising Machinery and Technical Assets, 2nd ed.
2 Appraisal Institute, The Appraisal of Real Estate

Introduction to Economic Obsolescence ("EO")

What is EO?

- EO is a market condition that exists when there is not enough underlying economic support for the subject asset (typically fixed assets) being valued.
  - Generally only applied in the context of the Cost Approach to value as EO is implicitly captured in the Income and Market Approaches.
- Quantification of EO applies only to an "in-use" premise of value. Would not be applied to an "in-exchange" premise of value.
  - In-Use - assumes that each of the assets will continue to be used as is and as part of the ongoing business in connection with other assets. Includes installation costs and other "soft costs".
  - In Exchange – Stand-alone value of the asset (often market approach value or some type of liquidation value).

Introduction to Economic Obsolescence ("EO")



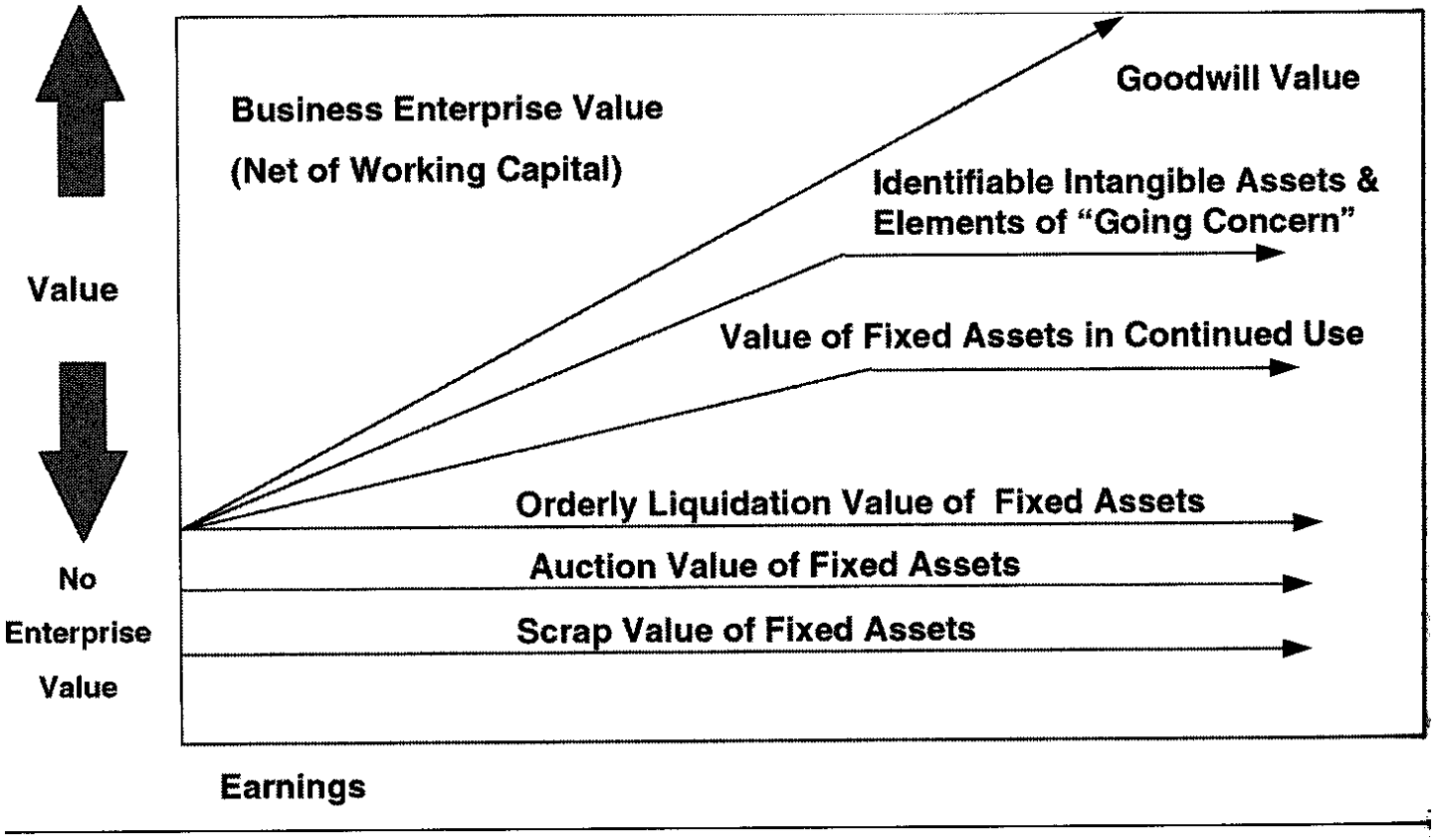
Introduction to Economic Obsolescence ("EO")

Cost Approach Refresher

- Cost Approach is based on the principle of substitution:
  - Assumes prudent investor will not purchase an existing asset for more than it will cost to replace that asset, assuming the same level of utility (e.g. asset of same condition and productive capacity).
- Fair Value under the Cost Approach for fixed assets calculated as:
  - Replacement Cost New ("RCN") less adjustments to account for depreciation/obsolescence (physical, functional, and economic)
    - RCNLD – Replacement cost new, less depreciation(term often used to reflect fair value under cost approach which should include any consideration of functional obsolescence)
    - Fair Value has been determined once any Economic Obsolescence has been quantified and RCNLD has been adjusted to reflect EO.

Introduction to Economic Obsolescence ("EO")

Standard of Value for Fixed Assets Relative to Earnings and Enterprise Value



Source: *Financial Valuation*, Hitchner

Introduction to Economic Obsolescence ("EO")

Why EO is an important consideration in the valuation of fixed assets.

- Many fixed assets do not lend themselves to the market approach of valuation, as active and verifiable secondary markets exist for relatively few asset types, and those that do exist involve mostly mobile assets.
- It is usually impossible (or prohibitively expensive) to identify the income associated with a particular machine or the components of a building in a complex business. For example, businesses would not track or attribute cash flows to a material handling conveyor system in a steel mill.
- Therefore, the cost approach is primarily utilized in valuing fixed assets. When relying on the cost approach, care should be taken to make sure that if EO exists, it is properly considered and quantified.

Section 2
Implications of Economic Obsolescence

Implications of EO

Not properly considering EO can have a material impact on a company's financial statements

- Can result in significant over-valuation of a company's fixed assets and therefore overstate depreciation expense and understate prospective earnings.
- Can result in unexpected impairment of fixed assets when they are tested for impairment under ASC 360/SFAS 144.
- Can impact the value ascribed to intangible assets valued using the multiple period excess earnings methodology ("MPEEM") as it will have an impact on depreciation and return on fixed assets.
- Results in understatement of goodwill and in some cases, could lead to "bargain purchase" conclusion when transaction is not really a bargain purchase.
- Implications on weighted average return on asset ("WARA") calculations.

Implications of EO

ASC 805/141R Considerations

- ASC 805/141R changed the accounting treatment for bargain purchases
  - Rather than taking a pro-rata write-down to acquired assets under old rules (often referred to as a "cram down"), buyer no longer takes a pro-rata write-down of the assets, but rather recognizes an extraordinary gain to account for "negative goodwill".
  - New bargain purchase treatment can lead to more value being ascribed to acquired assets, which therefore may overstate depreciation expense if EO not properly taken into account.
  - Can no longer use "cram down" method under old rule to essentially quantify the EO.
  - EO can vary by product, plant, reporting unit or cash generating unit. Needs to be investigated at the lowest level possible.

Implications of EO

Illustrative Impact on MPEEM when EO not properly considered

- Scenario 1: EO not considered (RCNLD of FA before EO = $75.0 million)

			2011	2012	2013	2014	2015	2016
	EBITDA		20,400	19,074	17,834	16,296	14,544	12,981
	Margin		*20.0%*	*20.0%*	*20.0%*	*20.0%*	*20.0%*	*20.0%*
(1)	Depreciation		6,885	6,763	6,599	6,396	6,146	5,632
	% of Revenue		*6.8%*	*7.1%*	*7.4%*	*7.8%*	*8.5%*	*8.7%*
	EBIT		13,515	12,311	11,235	9,900	8,398	7,349
	Taxes		5,406	4,925	4,494	3,960	3,359	2,940
	After-Tax Income		8,109	7,387	6,741	5,940	5,039	4,409
(2)	FA Charge	4.8%	2,974	2,432	1,965	1,559	1,204	909
	Other Assets	3.0%	3,060	2,861	2,675	2,444	2,182	1,947
	Excess Return		2,075	2,093	2,101	1,937	1,653	1,553
	Excess Margin		*1.7%*	*1.6%*	*1.4%*	*1.2%*	*1.0%*	*0.9%*
	PV Factor	12.0%	0.945	0.844	0.753	0.673	0.601	0.536
	Present Value		1,960	1,766	1,583	1,303	992	833
	Present Value before TAB		8,400					

(1) Calculated using fair value of fixed assets to appropriately capture "return of".
(2) Calculated based on projected FA levels and 4.8% required after-tax return.

Implications of EO

Illustrative Impact on MPEEM when EO not properly considered

- Scenario 2: EO considered (RCNLD of FA after EO = $50.0 million)

			2011	2012	2013	2014	2015	2016
	EBITDA		20,400	19,074	17,834	16,296	14,544	12,981
	Margin		*20.0%*	*20.0%*	*20.0%*	*20.0%*	*20.0%*	*20.0%*
(1)	Depreciation		4,760	4,956	5,064	5,091	5,037	4,689
	% of Revenue		*4.7%*	*5.2%*	*5.7%*	*6.2%*	*6.9%*	*7.2%*
	EBIT		15,640	14,118	12,770	11,205	9,507	8,292
	Taxes		6,256	5,647	5,108	4,482	3,803	3,317
	After-Tax Income		9,384	8,471	7,662	6,723	5,704	4,975
(2)	FA Charge	4.8%	2,056	1,739	1,449	1,183	938	728
	Other Assets	3.0%	3,060	2,861	2,675	2,444	2,182	1,947
	Excess Return		4,268	3,871	3,538	3,096	2,584	2,300
	Excess Margin		*3.6%*	*2.9%*	*2.4%*	*2.0%*	*1.6%*	*1.3%*
	PV Factor	12.0%	0.945	0.844	0.753	0.673	0.601	0.536
	Present Value		4,033	3,266	2,665	2,082	1,552	1,233
	Present Value before TAB		14,800					

(1) Calculated using fair value of fixed assets to appropriately capture "return of".
(2) Calculated based on projected FA levels and 4.8% required after-tax return.

Implications of EO

Illustrative Impact on MPEEM when EO not properly considered

- Factoring in fair value of fixed assets after EO results in 76% increase in the fair value of the intangible asset.
- Important to note that when there is a material difference between the fair value of fixed assets and book value of fixed assets, depreciation expense in MPEEM must be adjusted to properly reflect "return of" using the fair value of the fixed assets.

Section 3
Identification and Quantification of Economic Obsolescence

Identifying EO

Qualitative Factors

Qualitative Factors to Consider in Identifying EO

- Industry – EO typically found in industries that are:
  - Asset intensive, where there are material levels of tangible assets,
  - And have a high degree of earnings volatility.
- Is the property fulfilling reasonable identifiable economic demand for the service it provides or which it houses? Indications of EO may include:
  - Excess capacity / low utilization;
  - Decreases in industry margins or sustained industry losses;
  - Decrease in demand;
  - Changes in use;
  - Changes in customer preferences; and
  - Increased levels of competition.

Identifying EO

Quantitative Factors

Quantitative Factors to Consider in Identifying EO

- Bargain purchase – does the initial valuation allocation imply a bargain purchase or an unreasonably low level of goodwill when other factors indicate the transaction should result in a reasonable level of goodwill?
- Is the business or portion of business operating with sustained minimal profits or operating losses?
- After taking return "on and of" the fixed assets (based on estimated fair value), is there a reasonable excess margin remaining?
- Does WARA look unreasonable – e.g. low levels of goodwill or extraordinary implied high return on goodwill?
- Can the value of individual primary assets or asset groups be reasonably estimated?
  - If so, can we compare cost center value to the value ascribed to fixed assets?

Identifying EO

Other Considerations

Other EO Considerations

EO can be a **temporary** condition. It is often a reflection of the same elements the market and income approaches seek to quantify, and helps to reconcile the cost approach to market and income conclusions. For example:

- A major automotive manufacturer performed purchase accounting as a result of the 363 sale from bankruptcy.
- Significant EO was quantified and applied to the manufacturer's tangible assets at the purchase date.
  - Post IPO, the automotive manufacturer is doing better. If a valuation was performed today, any EO would be significantly less and could possibly not exist at all.
- What changed? Demand has increased. Consumers are buying cars again. Consumers have better access to credit. Pent-up demand increased as the US car fleet aged by a few years. The automotive manufacturer is building cars consumers want to buy.
- Conclusion: EO can be a temporary or variable condition.

Identifying EO

Quantitative Example

Excess Cash Flows are Negative After Taking Return on FA

			2011	2012	2013	2014	2015	2016
	Revenue		1,200	1,284	1,374	1,470	1,573	1,683
	EBITDA		144	154	165	176	189	202
	Margin		*12.0%*	*12.0%*	*12.0%*	*12.0%*	*12.0%*	*12.0%*
(1)	Depreciation		105	118	131	146	162	179
	% of Revenue		*8.7%*	*9.2%*	*9.6%*	*9.9%*	*10.3%*	*10.6%*
	EBIT		39	36	33	30	27	23
	Taxes		15	14	13	12	10	9
	Implied Tax Rate		38.0%	38.0%	38.0%	38.0%	38.0%	38.0%
	Net Income		24	23	21	19	17	14
	Projected FA Balance		641	626	605	576	540	496
(2)	FA Charge	5.0%	32	31	30	29	27	25
	Excess Return		(8)	(9)	(9)	(10)	(10)	(10)
	Excess Margin		*-0.6%*	*-0.7%*	*-0.7%*	*-0.7%*	*-0.6%*	*-0.6%*

(1) Calculated using fair value of fixed assets to appropriately capture "return of".
(2) Based on assumed required rate of return of 5.0%.

Identifying EO

"Real World" Examples

Examples of cases where EO has been identified:

1. A chemical manufacturer carves out a division. The enterprise value indicates a value lower than a RCNLD value of the fixed assets. This is a case where capital investment level is a barrier to entry. Investors would not enter this business due to high capital costs of a new plant. Yet existing plants can continue to operate profitably with cap-ex levels sufficient to maintain the operations.
2. A fast food restaurant chain is acquired with a portfolio of company owned restaurants. The overall Company is generating positive cash flows and there are positive excess returns for other assets. However, there are restaurants in the portfolio that are operating with little to no profits. It is necessary to identify and quantify EO for these poor performing restaurants.

Identifying EO

"Real World" Examples

Examples of cases where EO has been identified:

3. A company specializing in sterilization services builds facilities based on customers' needs at a specific location. There are certain assets that are no longer fully utilized due to reduced customer demand. There are no other customers in the area that can replace the demand. Therefore the facility has excess capacity and it is necessary to identify and quantify EO due to inutility.

Quantifying EO

Methods to Quantify Economic Obsolescence

- Income Approach – (Direct Application to the asset)
  - Can be used when a set of cash flows can be attributed to the enterprise or asset.
  - At the plant level or enterprise level for commodity goods manufacturing when <u>no or minimal intangible assets can be identified.</u>
  - Often an entire plant, production line, or real estate location.
  - Practical applications for business valuation teams:
    - Discount rate considerations
    - Forecast period equal to the estimated useful life of the asset
    - Terminal value comprised of salvage value and net working capital
    - Capital expenditures should exclude expansion, only maintenance attributable to that particular asset/asset group

Quantifying EO

Methods to Quantify Economic Obsolescence

- Market Approach – (Direct application to the asset)
  - Generally applicable for assets that have active, identifiable and verifiable secondary markets.
  - Assets are roughly homogeneous in utility and have elements of comparability.
  - Computing equipment, vehicles, real property, ships, planes, rail cars etc.

Quantifying EO

Methods to Quantify Economic Obsolescence

- Cost Approach
  - Generally required when valuing many individual assets.
  - Orderly Liquidation value is the lowest level (floor) of the fixed assets. This essentially represents a cash value that can be realized.
  - EO adjustment to cost approach conclusions using:
    - Inutility Calculation
    - Market comparisons
    - Income approach estimates
  - After accounting for EO, the Fair Value is typically below RCNLD and above Orderly Liquidation value (see graphic page 7).
  - Remember: Every approach to quantify EO has imperfections. Only through consultation among and between specialties will all the identified intangible and tangible assets fit together properly.

Section 4
Advanced topics

Advanced Topics

Case Study – QSR Restaurants

- Background and History
  - A publicly-traded fast quick service restaurant ("QSR") chain is purchased by a private equity firm. The Company has historically been profitable and is expected to remain profitable.
- Indications of EO
  - Initial valuation via the cost approach indicated a very high fixed asset value relative to the overall purchase price.
  - Review of financial results by restaurant indicate that the portfolio of restaurants have several underperformers with below average revenue/EBITDA or restaurants that have negative EBITDA.
- Effects if not quantified.
  - Goodwill would be understated, depreciation of PPE would be overstated, potential future impairment issues (especially because the Company does long-lived impairment testing at the individual restaurant level).
- Method used to quantify
  - Market approach was employed to estimate the value of the underlying property (e.g. multiple was applied to store-level EBITDA metrics) and EO was applied to the extent that the RCNLD of the real property was greater than the estimated market value indicated by a market approach.

Advanced Topics

Case Study – QSR Restaurants (continued)

Detailed Calculation

- Land was valued via the market approach. Building, site improvements, and restaurant equipment and furniture were valued via the cost approach
- Value of the restaurant was estimated by applying EBITDA multiple to adjusted store level LTM EBITDA
  - Selected multiple was based on a review of multiples that the company paid when it sold restaurants to franchisees or when it purchased restaurants from franchisees.
  - Adjusted EBITDA - adjusted by 1) off-market lease component, if applicable, in order to be able to derive a restaurant value that is unencumbered by off-market leases and 2) royalty rate attributable to the brand to remove the value associated with this intangible asset.
  - Since land was valued via market approach, land value is subtracted from the resulting restaurant value to determine the value to support the remaining assets.

Advanced Topics

Case Study – QSR Restaurants (continued)

Detailed Calculation

- Restaurant value less land value sets the maximum supportable value for the remaining restaurant assets.
- Max supportable value is compared to estimated value of fixed assets (excluding land) to determine if there is indication of EO.
  - Indication of EO exists when RCNLD of assets (before EO) > max supportable value.
- Where indications of EO are observed, EO is applied to the fixed asset values
  - Floor value was set at orderly liquidation value of the fixed assets (sets max EO penalty applied)
  - In the following example some stores have an indicated maximum supportable value which is lower than "Orderly Liquidation Value". Since Orderly Liquidation represents a realizable value, which is the floor, default to OLV in those cases.

Advanced Topics

Case Study – QSR Restaurants (continued)

Detailed Calculation

	Revenue	Restaurant EBITDA	Off-Market Rent	Brand Royalty (1)	Adjusted EBITDA	Selected Multiple	Restaurant Value	Land Fair Value	Max Supportable Value
Restaurant 1	800	40	0	16	24	5.0	120	30	90
Restaurant 2	200	10	(5)	4	1	5.0	5	NA - leased	5
Restaurant 3	1,100	100	10	22	88	5.0	440	NA - leased	440
Restaurant 4	900	80	0	18	62	5.0	310	40	270

	Max Supportable Value	Fixed Assets RCNLD (2)	Indication of EO (3)	OLV (4)	Concluded Fixed Asset Value	Indicated EO	Comments
Restaurant 1	90	250	Yes	38	90	160	apply EO - not to exceed max supportable value
Restaurant 2	5	150	Yes	23	23	127	value at OLV as max supportable value less than OLV
Restaurant 3	440	300	No	30	300	0	no indication of EO
Restaurant 4	270	230	No	35	270	5	no indication of EO

(1) Based on assumed royalty rate of 2.0% of revenue.
(2) Determined via cost approach - excludes land value.
(3) Compare max supportable value to RCNLD.
(4) For illustration purposes - estimated at 15% of RCNLD.

Advanced Topics

Case Study – QSR Restaurants (continued)

Significant Implication if EO Not Quantified

- Company tested their long-lived assets for impairment at the individual restaurant level (e.g. each restaurant is considered to be the lowest level for which cash flows can be identified)
  - If EO was not properly identified and quantified, Company would have taken unnecessary impairment when the first impairment test performed after the acquisition (client was required by auditor to perform annual long-lived impairment test)
  - Company was able to validate EO calculations by performing impairment test and confirming there was no unexpected impairment

Section 5
Closing Points

Conclusions

Consideration of EO

EO is very complex because it is not clearly identifiable and cannot be easily quantified

- Properly quantifying EO is complex process and requires consideration of multiple approaches and sometimes thinking "out of the box" to quantify it:
  - Appraisers should work closely with management to assist in identifying EO and obtaining necessary information to quantify it.
  - Should be close coordination between the business valuation and fixed asset teams to appropriately identify and quantify EO.
- Too often, we see appraisers apply generalizations or simplified approaches to quantify EO (e.g. "cram down" or pro-rata application to all assets)
  - Result is that EO may be applied to assets that do not have an EO condition (e.g. apply EO to all assets of company that has multiple plants without assessing economics affecting each plant)

Section 6
Q&A

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