

Functional Obsolescence Considerations in the Property Tax Valuation

Scott R. Miller

The identification and consideration of functional obsolescence is a consideration in any ad valorem property tax valuation. Functional obsolescence is considered explicitly in the cost approach methods. And, functional obsolescence is considered implicitly in the income approach and market approach methods. This discussion addresses how to define and identify the occurrence of functional obsolescence. Additionally, this discussion presents the procedures used in quantifying functional obsolescence in the application of the cost approach. Finally, this discussion presents illustrative examples of a cost approach functional obsolescence analysis. And, this discussion addresses some of the issues the valuation analyst may encounter in the quantification process.

INTRODUCTION

Functional obsolescence is often encountered by the valuation analyst in many industrial and commercial properties. At the same time, state and local property tax assessors are often reluctant to grant assessment reductions due to the recognition of functional obsolescence.

Property tax authorities are often reluctant to grant assessment reductions for functional obsolescence for several reasons.

First, functional obsolescence is not as easy to observe as physical deterioration. In fact, some components of functional obsolescence do not present tangible manifestations at all. Rather, the evidence of the functional obsolescence is only present in the taxpayer company financial statements.

Second, assessment authorities sometimes (correctly) conclude that the property functional obsolescence conditions are temporary. For example, the assessor may conclude that “next year, when the taxpayer introduces its new product line, the facility excess capacity will be utilized and the equipment excess operating costs will be reduced.”

Third, the assessor may blame the functional obsolescence on the property owner/operator. That

is, management is simply operating the facility (or the taxpayer company) inefficiently. Or, taxpayer management simply constructed a facility that was too large for the company’s needs.

This discussion focuses on the factors that the analyst should consider—and the procedures that the analyst should perform—when making the appropriate adjustments for functional obsolescence.

In the application of the income approach and the market approach to industrial and commercial property valuation, functional obsolescence is quantified implicitly.

In the industrial and commercial property valuation, the level of functional obsolescence is often reflected in

1. the decreased level of operating income of the subject taxpayer property (due to excess operating costs),
2. the decreased utilization of the subject taxpayer property, and
3. the competitive advantage of the taxpayer’s competitors due to their use of newer technology.

The value decreases due to these factors should be reflected implicitly in the cost approach analysis. Therefore, consideration of obsolescence in the valuation analyst's application of the cost approach is especially relevant in the industrial and commercial property valuation.

DEFINITION OF FUNCTIONAL OBSOLESCENCE

For purposes of an industrial or commercial property valuation, functional obsolescence occurs when the functional utility of real estate or tangible personal property is not comparable to new construction or operational standards.

Functional obsolescence can be either curable or incurable. Functional obsolescence is curable in the case where the capital cost to cure the obsolescence is less than the amount of the obsolescence. Functional obsolescence is incurable in the case where the capital cost to cure the obsolescence is greater than the amount of the obsolescence.

Functional obsolescence can be present when the taxpayer property is more than adequate (or super-adequate) for its intended purpose or less than adequate (or inadequate) for its intended purpose. A taxpayer property may exhibit super-adequacy when there is an excess in the capacity or quality of the subject property compared to current market standards.

Super-adequacy may exist where decreased demand for a taxpayer corporation's products renders a portion of the taxpayer's commercial or industrial property underutilized for the foreseeable future.

An inadequacy occurs when the taxpayer property is of a lower capacity or quality than the current market standard. For example, a 10-story commercial office building that does not have an elevator would be an example of a functional inadequacy.

As taxpayer properties age and owner/operator preferences change, functional obsolescence in the form of inadequacies may be present. However, when demand for the taxpayer company products is depressed, super-adequacy may be more common.

IDENTIFICATION OF FUNCTIONAL OBSOLESCENCE

Even the management of the taxpayer company may not immediately notice the existence of functional obsolescence. This is especially true in the case of seasoned industrial and commercial proper-



ties when the taxpayer management has not been exposed to comparable new construction.

Functional obsolescence may only be realized when the operating costs associated with the taxpayer property are compared to the comparable operating costs of a newly constructed property within the taxpayer corporation.

Taxpayer company management may also identify functional obsolescence by comparing the subject property to a competitor's property serving a similar purpose. When the taxpayer's competitors purchase or construct a new property, the taxpayer company management may be provided with a basis for comparison.

The comparison to a new commercial or industrial property within the taxpayer company, or the comparison to a taxpayer competitor's commercial or industrial property can indicate the existence of functional obsolescence in the subject property.

Functional obsolescence in the form of super-adequacies or inadequacies may be identified through an analysis of new construction features. An analysis of a newly constructed industrial or commercial property may provide the valuation analyst (or the subject property owner/operator) with a better understanding of current market norms and standards.

FUNCTIONAL OBSOLESCENCE CONSIDERATIONS IN THE THREE APPROACHES

Functional obsolescence should be considered in each of the three generally accepted industrial and commercial property valuation approaches. Functional obsolescence is implicitly considered in

the income approach and in the market approach to industrial and commercial property valuation.

In the cost approach, functional obsolescence is considered explicitly. And, an explicit value adjustment for the existence of functional obsolescence is required in a cost approach valuation analysis.

Income Approach

The income approach is generally applied to the industrial and commercial property valuation by capitalizing a normalized income stream. Functional obsolescence should implicitly affect both

1. the estimated normalized level of the operating income generated at the taxpayer property and
2. the estimated direct capitalization rate or yield capitalization rate.

In the estimation of a normalized level of operating income generated at the taxpayer property, the valuation analyst may consider

1. all future capital expenditures required to cure the inefficient taxpayer property and
2. all excess operating costs related to the inefficient taxpayer property.

Therefore, the level of functional obsolescence is implicitly considered in the determination of a normalized level of taxpayer property operating income.

For example, let's consider a taxpayer corporation industrial facility that was constructed to handle a level of business at a certain level of production and sales. Now let's consider that 25 percent of the area in the facility is now not utilized due to a decrease in demand for the taxpayer products.

The valuation analyst should take into consideration either

1. the cost to eliminate the super-adequate excess taxpayer facility space or
2. the excess operating expenses (e.g., heating and air conditioning) to operate the super-adequate taxpayer facility.

Because of this adjustment to normalized operating income, no additional adjustment for functional obsolescence would be necessary in the income projection component of the income approach valuation analysis.

In the estimation of a market-derived capitalization rate, the valuation analyst may make adjustments to account for the difference in the level of

functional obsolescence between the subject property and any comparable companies used in the capitalization rate analysis.

This consideration is more important if any selected publicly traded comparable companies considered in the development of a capitalization rate suffer from a significantly different level of functional obsolescence compared to the taxpayer company.

Adjustments to account for taxpayer property functional obsolescence may also be considered in the selection of the company-specific risk premium component of the yield capitalization rate.

In practice, it may be difficult to accurately quantify the level of functional obsolescence in the selected capitalization rate (whether yield or direct) than in the level of normalized operating income.

When accounting for functional obsolescence, the valuation analyst may find it easier to project future capital expenditures and operating costs specific to a taxpayer property that is experiencing functional obsolescence.

Market Approach

Similar to consideration of functional obsolescence differences when estimating a market-derived capitalization rate, it is important for the valuation analyst to consider functional obsolescence differences between the selected comparable properties and the subject taxpayer property in the application of the market approach.

Functional obsolescence is implicitly accounted for

1. in the unadjusted pricing multiples derived from comparable property sales, where those properties are similarly affected by functional obsolescence or
2. through an adjustment to the pricing multiples derived from property sales where those properties have different levels of functional obsolescence.

Companies or facilities operating in the same industry may be affected by similar forms of functional obsolescence. For example, consider two manufacturing companies operating at full capacity.

The valuation analyst should consider and apply adjustments to reflect differences in size or capacity, market conditions, age, condition of improvements, and location between the subject taxpayer property and any comparable industrial or commercial properties.

If the valuation analyst determines that the subject taxpayer property and the comparable property

suffer from different levels of functional obsolescence, then the valuation analyst should adjust the comparable property pricing metrics to make it more comparable to the subject taxpayer property.

The valuation analyst should make the market-derived pricing metrics reflect the level of functional obsolescence in the subject taxpayer property.

Cost Approach

The valuation analyst should consider the effect of functional obsolescence on the value of a taxpayer property when applying the cost approach. In the application of the cost approach, an adjustment for functional obsolescence is explicitly quantified.

Therefore, such an adjustment should be separately accounted for in the cost approach analysis. Standardized depreciation tables do not account for property-specific functional obsolescence. Therefore, a separate analysis is necessary in the cost approach valuation.

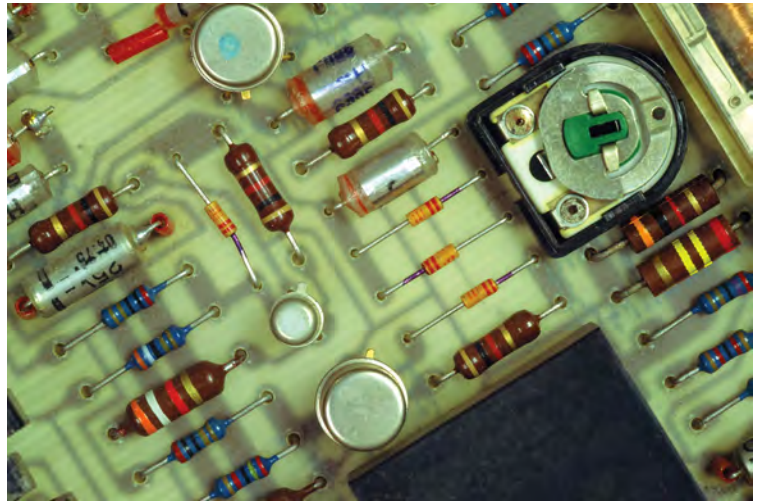
As described earlier, an industrial facility with excess capacity may suffer from functional obsolescence as a result of a decrease in demand for the company's products. This level of obsolescence may be curable or incurable, but it represents a real decrease in the value of the taxpayer industrial or commercial property.

When applying the cost approach to industrial and commercial property valuation, a typical formula for the valuation analyst to follow is:

$$\begin{aligned} & \text{Reproduction Cost New} \\ - & \text{Incurable Functional Obsolescence} \\ = & \text{Replacement Cost New} \\ - & \text{Physical Deterioration} \\ - & \text{Economic Obsolescence} \\ - & \text{Curable Functional Obsolescence} \\ = & \text{Market Value} \end{aligned}$$

This procedure for analyzing cost and obsolescence is typically appropriate when using the cost approach to estimate the value of taxpayer industrial or commercial properties for ad valorem tax purposes.

The classification of curable and incurable obsolescence requires some consideration on the part of the valuation analyst. If correcting for functional obsolescence is economically feasible, the obsolescence influence is classified as curable. If it does not make economic sense to cure for the obsolescence influence, it is classified as incurable.



Generally, to be considered curable, the cost of correcting the functional obsolescence should be the same or less than the expected increase in present value due to the correction.

If an instance of functional obsolescence is classified as curable, the value adjustment is often measured using the cost to cure method. The cost to cure method simply involves adjusting the value of the taxpayer property by the cost to correct the functional obsolescence influence.

The distinction between curable and incurable obsolescence is not always clear. Let's consider the example of an industrial facility with excess capacity that will remain obsolete for the foreseeable future.

The cost of maintaining the excess obsolete area may be greater than the cost to eliminate the excess area, leading the valuation analyst to conclude that the functional obsolescence is curable.

However, the valuation analyst should also consider the possibility that the obsolete capacity may once again become viable in the future.

THE QUANTIFICATION OF FUNCTIONAL OBSOLESCENCE

After identifying and classifying any instances of functional obsolescence, the adjustment for obsolescence should be quantified. The valuation analyst may quantify the functional obsolescence using

1. the excess capital cost method or
2. the excess operating cost method.

The excess capital cost method requires the analyst to calculate the difference between (1) the

reproduction cost new and (2) the replacement cost new of the taxpayer industrial or commercial property.

The excess operating cost method requires the valuation analyst to estimate the present value of the additional operating costs attributable to the functional obsolescence.

The Excess Capital Cost Method

This method of quantifying the adjustment for functional obsolescence is commonly applied when the instance of obsolescence is incurable.

The excess capital cost is the difference between what the property owner/operator would have to pay to reproduce the exact same property and what the property owner/operator would have to pay to replace the property with one that does not suffer from functional obsolescence.

The difficult task in the application of the excess capital cost method is estimating the cost to reproduce the industrial or commercial property and the cost to replace the industrial or commercial property with one that does not suffer from functional obsolescence.

However, once the valuation analyst estimates the cost to reproduce/replace the property, the calculation to measure the functional obsolescence is relatively easy. The adjustment for functional obsolescence using the excess capital cost method is simply the mathematical difference between the two cost estimates.

For example, let's consider an industrial facility with 10,000 square feet of space. When it was first constructed, the entire area of the facility was utilized. Due to a decrease in demand for the taxpayer's products, the facility now (and for the foreseeable future) will only utilize 7,500 square feet of space.

Let's assume that the valuation analyst determines the cost to construct such a facility is \$100 per square foot.

The valuation analyst may determine that an indication of the functional obsolescence associated with the subject industrial facility is the difference between

1. the reproduction cost of a similar 10,000 square foot facility and
2. the replacement cost of an adequate similar 7,500 square foot facility.

In this example, given that the functional obsolescence is incurable, the functional obsolescence adjustment equals \$250,000 (i.e., [10,000 sq. ft. – 7,500 sq. ft.] x \$100).

The Excess Operating Cost Method

This method of quantifying the adjustment for functional obsolescence is commonly applied when the instance of functional obsolescence is curable.

This method is appropriate when the functional obsolescence is curable. This is because this method quantifies the economic penalty associated with operating the taxpayer property instead of fixing the instance of functional obsolescence and eliminating the excess operating cost.

Excess operating costs associated with functional obsolescence include (1) material, (2) labor, and (3) overhead.

Material costs may include the cost of carrying excess raw material and work-in-process inventory, as well as the excess cost of waste due to a functionally obsolete facility.

Labor costs may include the costs of employee fringe benefits and employment taxes, as well as the direct costs of excess facility operators, material handlers, and so forth.

Excess overhead costs may include the costs of excess electricity, gas, water, property and casualty insurance, rent, security, and ad valorem tax expense associated with operating the functionally obsolete portion of the property.

It may be difficult for the valuation analyst to identify and estimate the excess operating costs



associated with the functional obsolescence. The valuation analyst should first identify the areas where functional obsolescence exists and then attempt to quantify the differences between the subject property operating costs and a normal level of operating costs.

This analysis requires a determination of what a normal level of operating costs would be if the functional obsolescence did not exist.

In estimating a normal level of operating expenses, the valuation analyst may consider

1. industry norms,
2. cost data from competitors,
3. cost data from other properties operated by the subject taxpayer, and
4. historical operating cost information from the subject industrial or commercial property.

Once the valuation analyst determines the excess operating costs, these costs should be estimated over the remaining useful life (RUL) of the subject property. RUL is typically the shorter of the subject property's physical life or economic life.

The valuation analyst then should calculate the present value of the excess operating costs using an appropriate present value discount rate. The discount rate should reflect the required return given the risk associated with the ownership of the subject taxpayer property.

The discount rate should reflect

1. the subject property owner's cost of capital,
2. the time value of money, and
3. the risk specific to ownership of the subject property.

To help clarify the application of the excess operating cost method, let's revisit the example of the industrial facility with obsolete square footage. The analyst should first quantify the excess operating cost associated with the extra square footage in the facility. Let's recall that the hypothetical 10,000 square foot facility may have 2,500 square feet of obsolete space for the foreseeable future due to a decrease in demand for the taxpayer's products.

The valuation analyst may estimate that the facility has an additional annual operating expense of \$10.00 per square foot for costs such as heating, cooling, and maintenance.

The excess operating cost associated with the obsolete square footage would be \$10.00 per square foot times 2,500 square feet. This results in an annual excess operating cost due to the functional obsolescence of \$25,000.

The next procedure in the process is to estimate the period of time that the property owner/operator would incur the excess operating costs. In the case of a recessionary environment, the return to full capacity usage may one day be a reality, but the time frame may be difficult for the valuation analyst to estimate.

If the valuation analyst believes that the subject property will no longer suffer from functional obsolescence at some point in the future, it may be prudent to apply a discounted cash flow approach for the time period that the functional obsolescence is expected to exist.

For simplicity purposes, let's assume that the valuation analyst does not foresee a reversal of the functional obsolescence in the future. If this is the case, the time period equals the RUL of the subject property. Let's assume that the RUL in this example is a great length of time, say 50 years.

Because this hypothetical situation involves a taxpayer property that (1) is expected to maintain the current level of functional obsolescence and (2) has a lengthy RUL, the valuation analyst may decide to capitalize the excess operating cost as an annuity in perpetuity.

If the taxpayer property (1) is not expected to maintain the current level of obsolescence and (2) has a finite and quantifiable RUL, then it may be prudent for the analyst to project future excess operating expenses attributable to the functional obsolescence for use in a discounted cash flow analysis.

This may be the case when the valuation analyst believes that the excess costs associated with the functional obsolescence will likely change in the future.

Whether the valuation analyst capitalizes the excess operating costs or applies a discounted cash flow approach, the next procedure is to estimate an appropriate present value discount rate or direct capitalization rate.

To maintain simplicity in this example, let's assume that the valuation analyst decides to apply a direct capitalization rate of 10 percent in the annuity in perpetuity model.

The final procedure in this example of the excess operating cost method is to capitalize the subject property's excess operating cost. Based on the variables set forth in this example, the adjustment for functional obsolescence would be \$250,000 (i.e., the \$25,000 in annual excess operating costs divided by the 10 percent direct capitalization rate).

It is noteworthy that the value of the warehouse would be implicitly lower by the same amount

(\$250,000) if the income approach was applied in the same situation.

In the application of the income approach, given the same direct capitalization rate and RUL, the taxpayer property would be valued at \$250,000 less (the excess annual operating cost of \$25,000 capitalized by the 10 percent direct capitalization rate) than an otherwise comparable facility that does not suffer from the instance of functional obsolescence.

In both of the previous examples, the amount of functional obsolescence was quantified at \$250,000. In order to illustrate an example of incurable obsolescence, let's assume that it would cost an additional \$300,000 to tear down and reconstruct a wall in the facility to decrease the area to the optimal capacity of 7,500 square feet.

The functional obsolescence would then be incurable. This is because the \$300,000 capital cost to correct the excess capacity exceeds the potential operating cost savings.

The \$250,000 amount of functional obsolescence would be the appropriate reduction to the taxpayer property cost indication in a cost approach valuation.

If the cost to decrease the square footage of the subject industrial facility to 7,500 square feet was only \$200,000, the obsolescence would be defined as curable.

ISSUES IN ACCOUNTING FOR FUNCTIONAL OBSOLESCENCE IN THE COST APPROACH

Although the identification and quantification of the different types of obsolescence is an important procedure in any cost approach valuation, the classification of property-specific instances of obsolescence as one type or the other is less important.

The important aspect of accounting for obsolescence in the application of the cost approach is not classifying the specific instances of obsolescence, but taking care not to:

1. underestimate the amount of obsolescence because the instance does not fit any definition of obsolescence perfectly, or
2. overestimate the amount of obsolescence because of double counting of the same property-specific feature as different types of obsolescence.

How the occurrences of obsolescence are classified is not that important to the final value conclusion.

The valuation analyst should take care not to count the same obsolescence feature twice. If a related data source is used to quantify two allegedly different instances of obsolescence, the level of total obsolescence may be overstated.

For example, the valuation analyst may account for functional obsolescence by overstating operating costs to account for the inadequate or superadequate property feature. The valuation analyst may then erroneously capitalize lower than planned operating profit (resulting from the same feature) and call it external obsolescence. In this scenario, the valuation analyst would be accounting for the same obsolete property feature twice.

In analyzing the identified instances of property obsolescence to ensure that none are being double counted, the valuation analyst may find it helpful to consider the forms of obsolescence in order.

One sequence in which obsolescence may be analyzed is

1. first, physical deterioration,
2. second, functional obsolescence, and
3. last, external obsolescence.

This step by step analysis of the types of obsolescence should help deter the valuation analyst from accounting for the same instance of obsolescence as both functional obsolescence and external obsolescence.

The valuation analyst may also avoid double counting obsolescence by separately explaining and quantifying each occurrence of obsolescence. It may be helpful to analyze all of the factors contributing to the specific occurrences of obsolescence, as opposed to categorizing instances of obsolescence.

By separating each factor influencing the taxpayer property's obsolescence, the valuation analyst will find it easier to explain the analysis to the assessor and other parties relying on the property valuation.

Another issue the valuation analyst should consider when adjusting for multiple instances of obsolescence is the order in which the obsolescence adjustments. For example, let's consider a taxpayer property with a replacement cost new less depreciation (RCNLD) value of \$1,000,000.

The valuation analyst may determine that obsolescence occurrence #1 warrants an adjustment from the RCNLD value of 10 percent while obsolescence occurrence #2 warrants an adjustment from the RCNLD value of \$100,000.

The following example presents two alternative scenarios:

Scenario 1

- RCNLD value
- adjustment for obsolescence occurrence #1
 - adjustment for obsolescence occurrence #2

$$\begin{aligned} & \$1,000,000 \\ & - \underline{10\% \text{ (i.e., } \$100,000)} \\ & = \$900,000 \\ & - \underline{\$100,000} \\ & = \$800,000 \end{aligned}$$

Scenario 2

- RCNLD value
- adjustment for obsolescence occurrence #2
 - adjustment for obsolescence occurrence #1

$$\begin{aligned} & \$1,000,000 \\ & - \underline{\$100,000} \\ & = \$900,000 \\ & - \underline{10\% \text{ (i.e., } \$90,000)} \\ & = \$810,000 \end{aligned}$$

Although the same adjustments are being applied under both scenarios, the concluded value for the taxpayer property under Scenario 2 is \$10,000 greater than the concluded value under Scenario 1.

This situation only occurs when different instances of obsolescence are accounted for in different ways (i.e., a percentage adjustment and an absolute dollar adjustment).

In the situation of a combination of (1) a percentage adjustment and (2) an absolute dollar adjustment, the valuation analyst should

1. deliberately decide the most appropriate application sequence of the various property obsolescence adjustments and
2. explain the reasons for applying the sequence in a certain order in the property valuation report.

CONCLUSION

Functional obsolescence occurs when the functional utility of an industrial or commercial property is impaired. Therefore, in the property tax valuation, the valuation analyst should take special care to account for all components of the industrial or commercial property functional obsolescence.

In the application of the income and market approaches to industrial or commercial property valuation, functional obsolescence is quantified implicitly.

In the income approach, functional obsolescence is reflected in the operating income of the taxpayer property experiencing functional obsolescence.

In the market approach, functional obsolescence is reflected either

1. in the functional obsolescence influencing the sale prices of the comparable properties or
2. in adjustments made by the valuation analyst to account for the differences of more or less functionally obsolete comparable properties.

In the application of the cost approach to industrial or commercial property valuation, functional obsolescence is quantified explicitly. Two methods to account for the explicit value adjustment caused by functional obsolescence are

1. the excess capital cost method and
2. the excess operating cost method.

When multiple occurrences of functional obsolescence are present in the same taxpayer property, the valuation analyst should consider the order in which functional obsolescence adjustments are applied.

The valuation analyst should look at the big picture when identifying and quantifying functional obsolescence. The valuation analyst, the taxing authority, or the property owner/operator may fail to identify instances of functional obsolescence if they do not compare the taxpayer property to

1. the properties owned by the taxpayer's competitors and
2. other properties owned by the taxpayer corporation.

Alternatively, the valuation analyst may overestimate the amount of obsolescence by double counting the same obsolescent feature affecting the taxpayer property.

A comprehensive ad valorem property tax valuation should identify and quantify all elements of functional obsolescence associated with the taxpayer industrial or commercial property.

Scott Miller is an associate in our Portland, Oregon, office. Scott can be reached at (503) 243-7504 or at srmiller@willamette.com.

