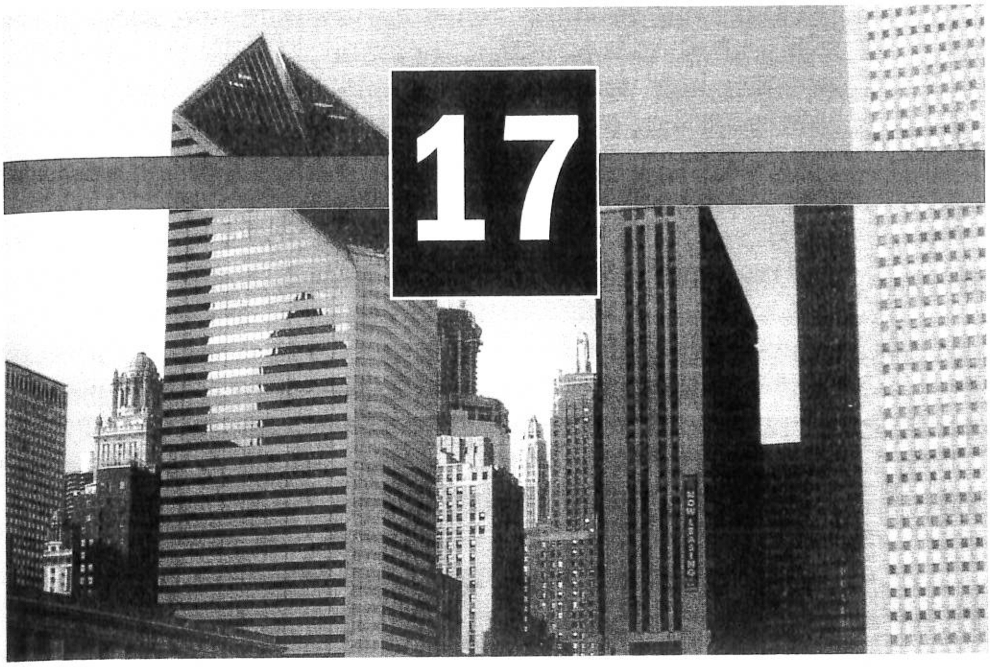


# 17 The Cost Approach

It is important to note that the cost approach is a theoretical breakdown of the property into land and building components. It is theoretical because market participants sell rights, not land and buildings. The breakdown into land and building components is important because it creates many issues that would not be relevant in the other approaches where the land is not separated from the buildings. For example, the allocation of external obsolescence is an issue for the cost approach, but not for the income capitalization and sales comparison approaches.

Like the sales comparison and income capitalization approaches, the cost approach to value is based on market comparisons. In the cost approach, the appraiser analyzes the cost of the subject improvements by comparison to the cost to develop similar improvements as evidenced by the cost of construction of substitute properties with the same utility as the subject property. The estimate of development cost is adjusted for market-extracted losses in value caused by the age, condition, and utility of the subject improvements or for locational problems. Next, the land value is added based on comparison with comparable land sales. The sum of the value of the land and the improvements is adjusted for the rights included with the subject based on market comparisons. The cost approach reflects market thinking because market participants relate value to cost. Buyers tend

> In the cost approach, a property is valued based on a comparison with the cost to build a new or substitute property. The cost estimate is adjusted for the depreciation evident in the existing property.

to judge the value of an existing structure not only by considering the prices and rents of similar buildings, but also by comparing the cost to create a new building with optimal physical condition and functional utility. Moreover, buyers adjust the prices they are willing to pay by estimating the costs to bring an existing structure up to the physical condition and functional utility they desire.

To apply the cost approach, an appraiser estimates the market's perception of the difference between the property improvements being appraised and a newly constructed building with optimal utility (i.e., the ideal improvement). In its classic form, the cost approach produces an opinion of the value of the fee simple interest in the real estate. If the purpose of the appraisal is to estimate the value of an interest other than fee simple, an adjustment may be required. For example, a property rights adjustment could be made as a lump-sum adjustment at the end of the cost approach. This would be particularly important when the interest appraised is the leased fee encumbered by a long-term lease.

In applying the cost approach, an appraiser must distinguish between two cost bases–reproduction cost and replacement cost–and use one of the two consistently throughout the analysis. The market and physical condition of the appraised property usually suggest whether an exact replica of the subject property (reproduction cost) or a substitute property of similar size and use (replacement cost) would be the basis of a more suitable comparison.

The appraiser estimates the cost to construct the existing structure and site improvements (including direct costs, indirect costs, and an appropriate entrepreneurial profit or incentive) using one of three traditional techniques:

1. Comparative-unit method
2. Unit-in-place method
3. Quantity survey method

The appraiser then deducts all depreciation in the property improvements from the cost of the new structure as of the effective appraisal date. The amount of depreciation present is estimated using one or more of three fundamental methods:

1. Market extraction method
2. Economic age-life method
3. Breakdown method

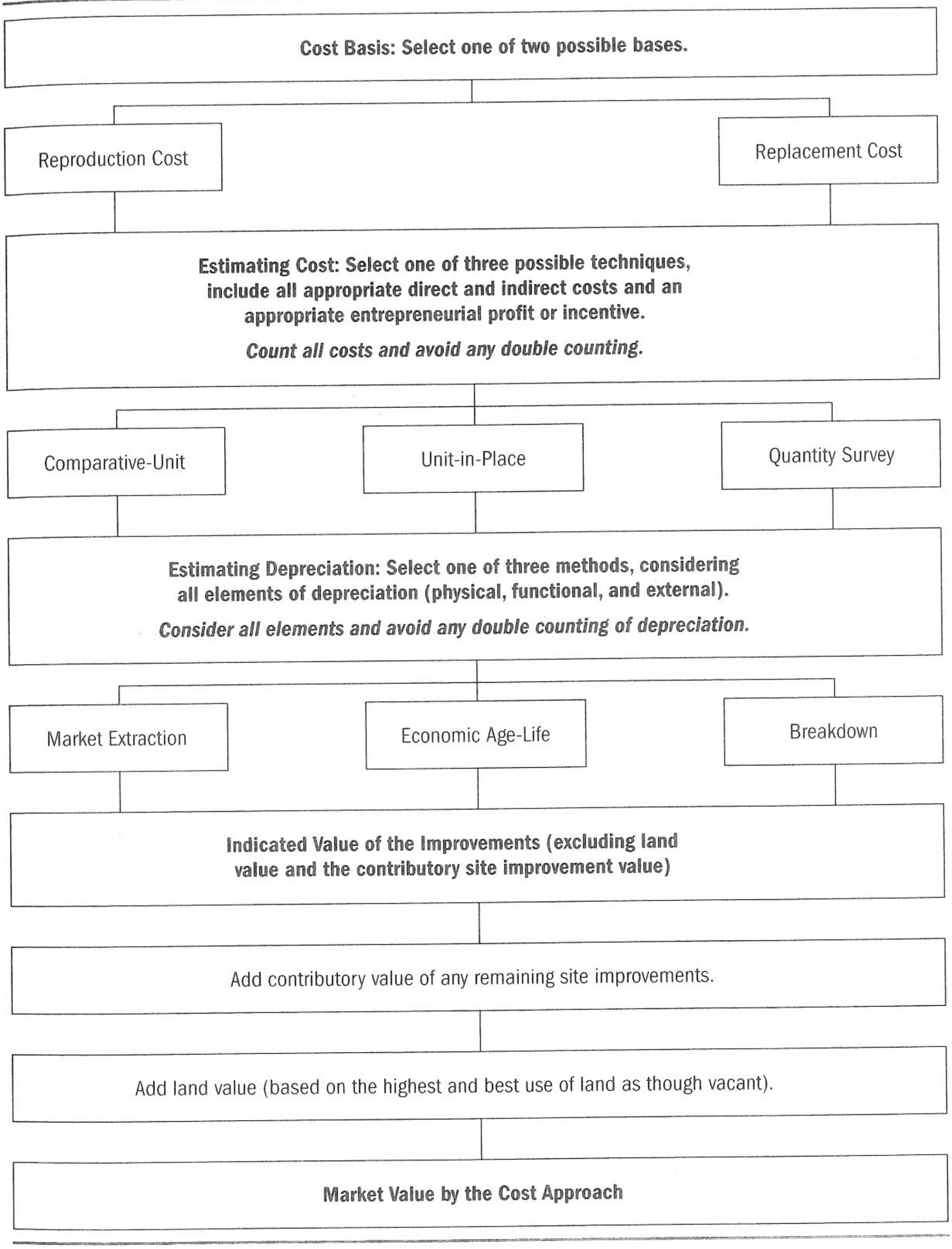
When the value of the land is added to the cost of the improvements less depreciation, the result is the value of the fee simple interest in the real estate.

This chapter provides an outline of the cost approach (see Figure 17.1) and explains the

**cost approach**

A set of procedures through which a value indication is derived for the fee simple interest in a property by estimating the current cost to construct a reproduction of (or replacement for) the existing structure, including an entrepreneurial incentive; deducting depreciation from the total cost; and adding the estimated land value. Adjustments may then be made to the indicated fee simple value of the subject property to reflect the value of the property interest being appraised.

**Figure 17.1** Classic Cost Approach Analysis



fundamental appraisal concepts that support this approach to value. Chapters 18 and 19 discuss the specifics of cost and depreciation estimates–i.e., the essential techniques applied to render a convincing opinion of value using the cost approach.

## Relation to Appraisal Principles

### Substitution

The principle of substitution is basic to the cost approach. This principle affirms that a knowledgeable buyer would pay no more for a property than the cost to acquire a similar site and construct improvements of equivalent desirability and utility without undue delay. In the cost approach, existing properties can be seen as substitutes for the property being appraised, and their value is also measured relative to the value of a new, optimal property. In short, the cost of property improvements on the effective date of the appraisal plus the accompanying site value provides a measure against which prices for similar improved properties may be judged.

### Supply and Demand

Shifts in supply and demand cause prices to increase or decrease. As a result, a single property may have different values over time. If costs do not shift in proportion to price changes, the construction of buildings will be more or less profitable and the value of existing buildings will increase or decrease commensurately. If costs of production increase faster than values, new construction will be less profitable or may not be financially feasible. In other words, the incentive for developers to build is directly tied to supply and demand.

### Contribution

The principle of contribution, which holds that the value of an individual component of a property is measured in terms of how much it contributes to the value of the property as a whole, is integral to the application of the cost approach. The various methods of estimating building costs are based on the contributions of the various components of a property. Conversely, the principle of contribution implies that the value of a component may be measured as the amount its absence would detract from the value of the property as a whole. From this perspective, the estimation of depreciation can be seen as an application of the principle of contribution.

In the application of the cost approach, the amount each component contributes to the value of the property as a whole is measured in relation to the highest and best use of the property. For example, if the highest and best use of the property is for the conversion of the existing improvements to an alternative use, items that must be changed for the property to achieve its highest and best use would suffer from some form of depreciation.

In the cost approach, the effect on value of a deficiency or superadequacy is addressed in the estimate of a form of depreciation known as *functional obsolescence.* The deficiency or superadequacy can be identified by comparing the existing improvements with the ideal improvement and then treated by making a deduction from the cost of the improvements. As the improvements depreciate, the site often contributes a higher percentage of total property value. As the ratio of site value to total property value approaches 100%, it becomes more likely that the improvements will be demolished and the property redeveloped to a new highest and best use.

### Externalities

The construction cost and market value of a property may be affected differently by conditions that are external to the property. Externalities such as inflation or natural disasters may increase material and labor costs without a corresponding increase in market values. Real estate values do not always run parallel with other economic trends. On the other hand, an external event such as the completion of a sewer line may increase the value of a property but have no impact on its cost. Gains or losses in value caused by externalities may accrue to the land, the site, the building, or the property as a whole. Rising construction costs can significantly affect the market value of new construction and, in turn, the demand for and market value of older, substitute properties.

In the cost approach a loss in building value due to external causes is attributed to external obsolescence. Externalities can be temporary and may work in positive and negative directions over the life of a building improvement.

### Highest and Best Use

In the first series of tests of highest and best use, the appraiser analyzes the site as though vacant and available to be developed to its highest and best use and identifies an ideal improvement or course of development. If the site is improved, the appraiser performs a second highest and best use analysis comparing the existing improvements to the ideal. Thus, a parcel of land may have one highest and best use as though vacant, and the existing combination of the site and improvements may have a different highest and best use as improved. Existing improvements have a value equal to the amount they contribute to the site, or they may penalize the property value if they have outlived their usefulness. This penalty is often measured by the cost to remove the obsolete improvements from the site.

Existing improvements are rarely identical to the ideal improvements, unless they are new construction, and even then they may be an overimprovement or underimprovement by comparison with the ideal. For example, a new building that is poorly designed for the market is worth less than its cost because of the functional obsolescence in its design, which is discussed in more detail later in this chapter. An accurate and detailed analysis of highest and best use is critical to the cost approach because the comparison of the existing improvement and the ideal improvement identifies any forms of depreciation that are present in the building.

### Stabilization

The value of a property indicated by the cost approach is a fee simple value. For properties that are leased, the cost approach assumes stabilized occupancy and income. An appraiser considers the holding costs that accrue during the leasing phase of property development along with other indirect costs such as leasing commissions, marketing costs, and rent concessions. Tenant finish costs may also be necessary to achieve stabilized occupancy and, if so, they must be added as a direct cost. Also, a property with rents that are higher or lower than market rents may be stabilized in terms of occupancy, but the value developed by the cost approach may still require an adjustment.

## Applicability and Limitations

In any market, the value of a building can be related to its cost. The cost approach is particularly important when a lack of market activity limits the usefulness of the sales comparison approach and when the property to be appraised–e.g., a one-unit residence–is not amenable to valuation by the income capitalization approach. Because cost and market value are usually more closely related when properties are new, the cost approach is important in estimating the market value of new or relatively new construction. The approach is especially persuasive when land value is well supported and the improvements are new or suffer only minor depreciation and, therefore, approximate the ideal improvement that is the highest and best use of the land as though vacant. The cost approach can also be applied to older properties given adequate data to measure depreciation.

The cost approach may be used to develop an opinion of market value (or some other value such as use value or fair value, if the appraisal assignment requires) and is frequently applied to proposed construction, special-purpose or specialty properties, and other properties that are not frequently exchanged in the market such as public buildings. Buyers of these properties often measure the price they will pay for an existing building against the cost to build minus depreciation or against the cost to purchase an existing structure and make any necessary modifications. If comparable sales are not available, they cannot be analyzed to develop an opinion of the market value of such properties. Therefore, current market indications of depreciated cost or the costs to acquire and refurbish an existing building are the best reflections of market thinking and, thus, of market value (or use value or fair value).

When the physical characteristics of comparable properties differ significantly, the relative values of these characteristics can sometimes be identified more precisely

> The cost approach is most applicable in valuing new or proposed construction when the improvements represent the highest and best use of the land and land value is well supported.

> Depending on the purpose of the appraisal assignment, the cost approach can be used to develop an opinion of the market value or use value of special-purpose properties and properties that are not frequently exchanged in the market.

with the cost approach than with sales comparison. Because the cost approach starts with the cost to construct a replica or a substitute property with optimal physical and functional utility, it can help an appraiser determine accurate adjustments for physical differences in comparable sale properties. If, for example, an appraiser must make an adjustment for inadequate elevators in a comparable property, the cost to cure the deficiency can be used as a basis for this adjustment. Thus, the cost approach provides the appraiser with data to use both in estimating depreciation and in deriving an adjustment to apply in the sales comparison approach.

The cost approach is especially useful when building additions or renovations are being considered, which is a key issue in highest and best use analysis. The approach can be used to estimate whether the cost of an improvement, including an entrepreneurial incentive, will be recovered through an increased income stream or in the anticipated sale price. This analysis can help identify and prevent the construction of overimprovements.

Because the cost approach requires that land and improvements must be valued separately, it is also useful in appraisals for insurance purposes, when uninsurable items must be segregated from insurable items. In valuation for financial reporting (i.e., accounting purposes), the cost approach is applied to estimate depreciation for income tax purposes. In cases where site value tends to make up a considerable portion of overall property value (such as agricultural properties or high-exposure commercial outparcels), the cost approach can take on greater significance because it is the only approach requiring a separate conclusion of site value.

Finally, an estimate of probable building and development costs is an essential component of feasibility studies, which test the investment assumptions on which land use plans are based. A proposed development is considered financially feasible when market value exceeds total building and development costs plus a reasonable, market-supported estimate of entrepreneurial incentive (i.e., the anticipated profit necessary for an entrepreneur to proceed with the project).

If the cost approach yields a higher value than the sales comparison or income capitalization approaches, it may be an indication that the development is not economically feasible. If the cost approach yields a higher value for an existing building, then the appraiser may need to take a closer look at one or more of the inputs–land value, current cost, depreciation, or entrepreneurial incentive. In an improving market, the actual profit may be higher than market-derived estimates of entrepreneurial incentive, resulting in a lower value by the cost approach. For older properties or properties in fluctuating markets, an inaccurate estimate of the remaining economic life could result in depreciation being understated, resulting in a higher value by the cost approach. When a higher or lower value is produced in the cost approach, it usually is compared against the results of one or more of the other approaches and explained in reconciliation.

When improvements are considerably older or do not represent the highest and best use of the land as though vacant, the physical deterioration, functional obsolescence, and external obsolescence may be more difficult to estimate. Furthermore, relevant comparable data may be lacking or the data available may be too diverse to indicate an appropriate estimate of entrepreneurial profit (i.e., the profit actually earned from a completed project). These conditions may render the cost approach less reliable.

One of the weaknesses of the cost approach from an investment perspective is the assumption that newly constructed improvements are immediately available on the date of the appraisal. An investor looking at options for an immediate purchase may consider the months or years required to develop and construct a new property to be an undue and unacceptable delay. From the perspective of that investor, the cost approach would have no relevance.

Appraisers must remember that the cost approach results in an indication of the value of the fee simple interest in a property. To value real estate held in leased fee or property subject to other partial interests, appraisers must make adjustments to reflect the specific real property rights being appraised such as a leased fee interest.

## Procedure

After gathering all relevant information and analyzing data for the market area, site, and improvements, an appraiser follows a series of steps to derive a value indication by the cost approach. The appraiser will

1. Estimate the value of the site as though vacant and available to be developed to its highest and best use.
2. Determine which cost basis is most applicable to the assignment: reproduction cost or replacement cost.
3. Estimate the direct (hard) and indirect (soft) costs of the improvements as of the effective appraisal date.
4. Estimate an appropriate entrepreneurial profit or incentive from analysis of the market.
5. Add the estimated direct costs, indirect costs, and entrepreneurial profit or incentive to arrive at the total cost of the improvements.
6. Estimate the amount of depreciation in the structure and, if necessary, allocate it among the three major categories:
   - Physical deterioration
   - Functional obsolescence
   - External obsolescence
7. Deduct estimated depreciation from the total cost of the improvements to derive an estimate of their depreciated cost.
8. Estimate the contributory value of any site improvements that have not already been considered. (Site improvements are often appraised at their contributory value–i.e., directly on a depreci-

ated-cost basis–but may be included in the overall cost calculated in Step 2 and depreciated if necessary.)

9. Add site value to the total depreciated cost of all the improvements to develop the market value of the property.
10. Adjust the value conclusion if any personal property (e.g., furniture, fixtures, and equipment) or intangible assets are included in the appraisal assignment. If necessary, this value, which reflects the value of the fee simple interest, may be adjusted for the property interest being appraised to arrive at the indicated value of the specified interest in the property.

### Site Value

In the cost approach, the estimated market value of the site is added to the depreciated cost of the improvements. The value of the site depends on its highest and best use. Site value can be estimated using various techniques, which are discussed in Chapter 16. Appraisers must remember that the site value estimates produced with these techniques reflect the value of the fee simple interest. If a land lease is involved and it is not at market terms, this could have a positive or negative effect on value.

### Reproduction Cost versus Replacement Cost

The cost to construct an improvement on the effective appraisal date may be developed as the estimated reproduction cost or replacement cost of the improvement. The theoretical base (and classic starting point) for the cost approach is reproduction cost, but replacement cost is commonly used because it may be easier to obtain and can reduce the complexity of depreciation analysis. An important distinction must be made between the terms:

- Reproduction cost is the estimated cost to construct, as of the effective appraisal date, an exact duplicate or replica of the building being appraised, insofar as possible, using the same materials, construction standards, design, layout, and quality of workmanship and embodying all the deficiencies, superadequacies, and obsolescence of the subject improvements.
- Replacement cost is the estimated cost to construct, as of the effective appraisal date, a substitute for the building being appraised using contemporary materials, standards, design, and layout. When this cost basis is used, some existing obsolescence in the property may be cured. Replacement cost may be the only alternative if reproduction cost cannot be estimated.

**replacement cost**
The estimated cost to construct, at current prices as of the effective appraisal date, a substitute for the building being appraised using modern materials and current standards, design, and layout.

**reproduction cost**
The estimated cost to construct, at current prices as of the effective date of the appraisal, an exact duplicate or replica of the building being appraised, using the same materials, construction standards, design, layout, and quality of workmanship and embodying all the deficiencies, superadequacies, and obsolescence of the subject building.

Cost may be estimated on two different bases—replacement cost or reproduction cost. Specific types of obsolescence would be precluded by using a replacement cost estimate.

The decision to use reproduction cost or replacement cost is often dictated by the age of the structure, its uniqueness, and any difference between its intended use at the time of construction and its current highest and best use. In theory, the use of either reproduction cost or replacement cost should yield the same indication of value after proper application, but in practice both cost estimates and depreciation estimates may be different. If reproduction cost or replacement cost is used inconsistently, double counting of items of depreciation and other errors can be introduced into the analysis. The cost basis selected for a particular appraisal must be clearly identified in the report to avoid misunderstanding and must be consistently applied throughout the cost approach to avoid errors in calculating an estimate of value.

The use of replacement cost can eliminate the need to measure many, but not all, forms of functional obsolescence such as superadequacies and poor design. Replacement structures usually cost less than identical structures (i.e., reproductions) because they are constructed with materials and techniques that are more readily available and less expensive in the current market. Also, correcting deficiencies may result in lower costs. Thus, a replacement cost figure is usually lower and may provide a better indication of the existing structure's contribution to value. A replacement structure typically does not suffer functional obsolescence resulting from superadequacies. However, if functional problems persist in the hypothetical replacement structure, an amount must be deducted from the replacement cost. Estimating replacement cost generally simplifies the procedure for measuring depreciation in components of superadequate construction. An example of functional obsolescence would be the absence of a desirable feature such as air-conditioning in an existing improvement in a market where this feature is standard. This form of obsolescence would be corrected in a replacement building.

Estimating reproduction cost can be complicated because the improvements may include materials that are now unavailable and construction standards may have changed. Nevertheless, reproduction cost usually provides a basis for measuring depreciation from all causes when such measurement is necessary.

## Cost Estimates

To develop cost estimates for the total building, appraisers must consider direct (hard) and indirect (soft) costs. Both types of cost are essential to a reliable cost estimate. (The traditional data sources and appraisal techniques used to estimate building costs are discussed in Chapter 18.)

Direct construction costs include the costs of material and labor as well as the contractor's profit required to construct the improvement on the effective appraisal date. The overhead and profit of the general contractor and various subcontractors are usually part of the construction contract and therefore represent direct costs that should always be included in the cost estimate. In more complex projects, where multiple contractors, construction staging, or other complications are involved, a management fee may be required. Indirect costs are expenditures or allowances that are necessary for construction but are not typically part of the construction contract. Because the entrepreneur provides the inspiration, drive, and coordination necessary to the overall project, the cost approach should include an appropriate entrepreneurial profit or incentive, which will be discussed later in this chapter.

**direct costs**

Expenditures for the labor and materials used in the construction of improvements; also called *hard costs.*

**indirect costs**

Expenditures or allowances for items other than labor and materials that are necessary for construction but are not typically part of the construction contract. Indirect costs may include administrative costs; professional fees; financing costs and the interest paid on construction loans; taxes and the builder's or developer's all-risk insurance during construction; and marketing, sales, and lease-up costs incurred to achieve occupancy or sale. Also called *soft costs.*

Because the quality of materials and labor greatly influences costs, the appraiser should be familiar with the costs of the materials used in the subject property. A building can cost substantially more than is typical if items such as walls and windows are overinsulated or thicker slabs are used to accommodate greater floor loads. Many newer structures contain elements that may not be found in older buildings with which they compete. At one time the market may have considered features such as Internet connectivity, networking and telecommunications capabilities, and adequate, reliable power in "smart" office buildings to be high-tech overimprovements. Such features may not have contributed as much value as they cost then, but as demand for these building materials and features continues to increase so does their contribution to value.

The competitive situation in the local market can also affect cost estimates. Actual contractor bids based on the same set of specifications can vary substantially. A contractor who is working at capacity is inclined to make a high bid, while one who needs the work is likely to submit a lower figure. The items cited in the right-hand column of Table 17.1 reflect typical indirect costs incurred in a balanced market. In markets that are out of balance, higher costs may result from a prolonged absorption period–e.g., additional marketing or carrying costs, tenant improvements, leasing commissions, and administrative expenses. The increase in costs can contribute to external obsolescence.

Some indirect costs, such as architectural fees and property taxes, are generally related to the size and cost of the project. These are often estimated as a percentage of direct costs. Other costs, such as leasing and sales commissions, are related to the type of property or market practice. Still others, such as fees for appraisals and environmental studies, are a function of the time required to accomplish the task. The indirect costs of carrying an investment during and after construction are a combination of all of the above. Although total indirect costs are sometimes estimated as a percentage of direct costs, more detailed

**Table 17.1** Direct Costs and Indirect Costs

| Direct Costs | Indirect Costs |
|---|---|
| · Building permits<br>· Materials, products, and equipment<br>· Labor used in construction<br>· Equipment used in construction<br>· Security during construction<br>· Contractor's shack and temporary fencing<br>· Material storage facilities<br>· Power line installation and utility costs<br>· Contractor's profit and overhead, including job supervision; coordination and management (when appropriate); worker's compensation; and fire, liability, and unemployment insurance<br>· Performance bonds | · Architectural and engineering fees for plans, plan checks, surveys to establish building lines and grades, and environmental studies<br>· Appraisal, consulting, accounting, and legal fees<br>· The cost of carrying the investment in land and contract payments during construction*<br>· All-risk insurance expense and ad valorem taxes during construction<br>· The cost of carrying the investment in the property after construction is complete but before stabilization is achieved<br>· Supplemental capital investment in tenant improvements and leasing commissions<br>· Marketing costs, sales commissions, and any applicable holding costs to achieve stabilized occupancy in a normal market<br>· Administrative expenses of the developer |

* If construction financing is required, the points, fees or service charges, and interest on construction loans are indirect costs.

studies of these costs are recommended. When using a cost estimating service, it is important to know which costs are included in the cost estimates and which need to be added by the appraiser.

## Entrepreneurial Incentive and Entrepreneurial Profit

Entrepreneurs (developers, contractors, investors, and others) compete against each other in the real estate marketplace, and any building project will include an economic reward (above and beyond direct and indirect costs) sufficient to induce an entrepreneur to incur the risk associated with that project in that market. For a new building that is the highest and best use of the site, the difference between the market value and the total cost of development (i.e., the sum of site value and direct and indirect costs) is the profit (or loss) realized:

$$\begin{array}{rl} & \text{Market Value} \\ - & \underline{\text{Total Cost of Development}} \\ & \text{Profit (or Loss)} \end{array}$$

Whether or not a profit is actually realized depends on how well the entrepreneur has analyzed the market demand for the property, selected the site, and constructed the improvements. In the case of income-producing properties, the profit realized will also depend on the entrepreneur's ability to obtain the proper tenant mix and negotiate leases.

The term *entrepreneurial incentive* refers to the amount an entrepreneur expects or wants to receive as compensation for providing coordination and expertise and assuming the risks associated with the development of a project. In contrast, *entrepreneurial profit* refers to the difference between the total cost of development and marketing and the market value of a property *after* completion and achievement of stabilized occupancy and income.[1] In short, incentive is anticipated while profit is earned.

**entrepreneurial incentive**

A market-derived figure that represents the amount an entrepreneur expects to receive for his or her contribution to a project and risk.

**entrepreneurial profit**

A market-derived figure that represents the amount an entrepreneur receives for his or her contribution to a project and risk; the difference between the total cost of a property (cost of development) and its market value (property value after completion), which represents the entrepreneur's compensation for the risk and expertise associated with development.

As a market-derived figure, an estimate of entrepreneurial profit or entrepreneurial incentive is only as reliable and precise as the available market data warrants. Nevertheless, an estimate of profit is a fundamental component of total cost, and most market areas have a typical or appropriate range of profit that can be determined through market research, usually through interviews with developers and other market participants about anticipated, acceptable, and actual levels of profit achieved in the market. The range of profit will vary for different types of structures and with the nature or scale of a given project. The entrepreneurial incentive for a proposed development may be higher where creative concepts, greater risk, or unique opportunities have market acceptance. Less risky, more standard competitive projects may merit a lower measure of profit. For example, the first speculative high-rise office park in a suburban market is likely to require greater entrepreneurial incentive than a new residential subdivision development in a community with demonstrable population growth.

The stage of development and the different levels of risk and expertise that may be required at different stages can affect the amount of profit earned. For example, an entrepreneur can start earning a reward from

**Contributions of the Entrepreneur, Developer, and Contractor**

In analyzing the components of reward and compensation received (or anticipated) by an entrepreneur, the appraiser may choose to further distinguish between the concepts of project profit, entrepreneurial profit, developer's profit, and contractor's profit:

- *Project profit* is the total amount of reward for entrepreneurial coordination and risk.
- *Entrepreneurial profit* refers to the portion of project profit attributable to the efforts of the entrepreneur, distinct from the efforts of the developer, if one is present. In projects in which the entrepreneur and the developer are one and the same, the entrepreneurial profit is equivalent to total project profit.
- *Developer's profit* represents compensation for the time, energy, and expertise of an individual other than the original entrepreneur—usually, in large projects, the person responsible for managing the overall development process.
- *Contractor's profit* (including subcontractors' fees) is essentially a portion of the project's overhead and is not usually reflected in the entrepreneurial reward.

The measure of project profit used in cost approach calculations usually includes both a developer's profit and an entrepreneurial profit. The profit a contractor receives is often already reflected in the fee a contractor charges and would therefore be included in the direct costs.

1. Historically, *entrepreneurial profit* has been the more common term in general usage and serves as a broader term in the discussion of the cost approach. In this text, the term *entrepreneurial incentive*, which is a more recent addition to the appraisal lexicon, is used specifically in reference to a situation that calls for a forecast of the reward an entrepreneur expects to receive at the completion of a real estate development.

the start of the project. This reward can increase as land is acquired, plans are drawn up, permits are approved, financing is secured, contracts are signed, construction is completed, and units are sold off or leased. It can be difficult to estimate exactly how much profit would be earned at each stage of construction, although interim values that reflect financing costs and taxes during the construction and leasing phases may be required by lenders.

In practice, separating the value impact of the entrepreneurial coordination from other market influences can be difficult. To ensure the reasonableness of an estimate of entrepreneurial incentive or entrepreneurial profit, appraisers should carefully examine the source of additional property value over and above the total cost of development and the effects of supply and demand for properties of that type in the subject market area. For example, some appraisers point out that the value associated with the amenities of a property may be such that the sale price of the property could significantly exceed the sum of the costs of the land, building, and marketing (e.g., in an overheated seller's market where sale prices are inflated).

Some appraisers also observe that entrepreneurial incentive often represents an intangible asset in build-to-suit, owner-occupied properties. The owner-occupant may consider any additional operating profit due to the property's efficient design to be an incentive. However, the entrepreneurial profit might only be realized years after the property is built when it sells to a similar owner-occupant at a premium because the property is suitable and immediately available, unlike new construction or conversion of a different property. In this case, entrepreneurial profit is likely to become obscured over time by changing market conditions. For certain types of specialized owner-occupied improvements, such as public buildings, no entrepreneurial profit may ever be recorded because the owner neither anticipates nor wants a profit.

The way in which comparable properties have been developed affects the availability of data. Appraisers are sometimes able to calculate entrepreneurial profit from comparable costs for speculatively built properties such as condominiums and multifamily developments. In the value estimate of a speculatively built property, entrepreneurial profit represents a return to the entrepreneur for the skills employed and the risks incurred, although the actual return may differ from the anticipated return. In large-scale developments, however, the issue is complicated because the entrepreneurial profit may not reflect the proportionate contributions of the improved site and the improvement to the overall property value. Developers of tract subdivisions, for example, often realize most of their profit on the value of the houses built on the finished lots, not necessarily the value of the lots.

Data on entrepreneurial profit for custom-built properties may not be available if the property owner who contracted the actual builders was acting as the developer. The prices of upscale, custom-built properties often reflect the attractiveness of these amenity-laden properties as well as the high costs of the materials used. Thus, the breakdown of costs for custom-built properties may not be comparable to the breakdown for speculatively built properties, which further complicates the task of estimating a rate of entrepreneurial profit. Theoretically, however, the value of custom-built properties should also reflect an entrepreneurial profit.

The appraiser must also scrutinize the cost data on which the value estimate is based to determine whether or not an allowance for entrepreneurial profit has already been made. If this is not done, the entrepreneurial profit could be included twice. Data derived from sales of comparable sites often includes a profit for the land developer. Cost-estimating services quote direct costs (e.g., contractor's profit) and indirect costs (e.g., sales costs), but they may or may not provide estimates of entrepreneurial profit. Because different sources of data reflect costs in different ways, the appraiser should identify where the entrepreneurial profit is considered in the estimate–i.e., whether it is an item already included in the sum of total cost and land value or a stand-alone item added to the sum of total cost and land value.

## Depreciation

Depreciation[2] is the difference between the contributory value of an improvement and its cost at the time of appraisal:

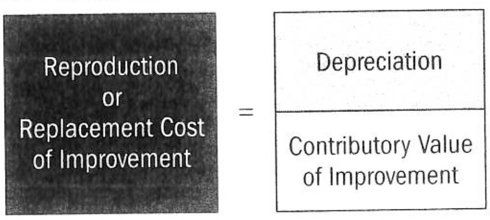
|   | |
|---|---|
|   | Reproduction or Replacement Cost of Improvement |
| – | Contributory Value of Improvement |
|   | Depreciation |

By estimating the depreciation incurred by an improvement and deducting this estimate from the improvement's reproduction or replacement cost, an appraiser can conclude the depreciated cost of the improvement. This depreciated cost approximates the improvement's contribution to the property's market value as illustrated in Figure 17.2. (Techniques for estimating depreciation are discussed in Chapter 19.)

Depreciation in an improvement can result from three major causes operating separately or in combination:

- Physical deterioration–wear and tear from regular use, the impact of the elements, or damage.
- Functional obsolescence–a flaw in the structure, materials, or design that diminishes the function, utility, and value of the improvement.

**Figure 17.2** Depreciation's Portion of Cost




2. Many of the terms appraisers use are also used by accountants, economists, and other real estate professionals. The term *accrued depreciation*, which appeared in earlier editions of *The Appraisal of Real Estate*, was originally borrowed from accounting practice. In accounting, *accrued depreciation* (or alternatively *accruals for depreciation*) refers to the total depreciation taken on an asset from the time of purchase to the present, which is normally deducted from an asset's account value to derive net book value. While accrued depreciation has long been used in an appraisal context, the simpler and more concise term *depreciation* is equally suitable and has been used throughout this edition. The term *total depreciation* also remains in use by appraisers, although *depreciation* is used without modification in this textbook in most cases to refer to estimates of both the total amount of depreciation that a property suffers from or the amount of depreciation attributable to a particular form of depreciation (i.e., a part of the whole).

Depreciation is the difference between the market value of an improvement and its reproduction or replacement cost at the time of appraisal. The depreciated cost of the improvement can be considered an indication of the improvement's contribution to the property's market value.

- External obsolescence–a temporary or permanent impairment of the utility or salability of an improvement or property due to negative influences outside the property. (External obsolescence may result from adverse market conditions. Because of its fixed location, real estate is subject to external influences that usually cannot be controlled by the property owner, landlord, or tenant.)

The sum of all these components is total depreciation. The market recognizes the occurrence of depreciation and the appraiser interprets how the market perceives the effect of depreciation.

Theoretically, depreciation can begin in the design phase or the moment construction is started, even in a functional building that represents the highest and best use of a site. Improvements are rarely built under ideal circumstances and their construction takes considerable time. During the construction process, physical deterioration can be temporarily halted or even corrected, but physical deterioration tends to persist throughout the life of the improvements. Moreover, as time goes on and a building's features become dated in comparison to new buildings, functional obsolescence sets in. Consider, for example, an industrial building that was built in the early 1970s. The structure's 12-ft. ceilings, which were the market standard then, might be considered totally inadequate now that greater clear heights are the norm. New buildings can have functional obsolescence even before they are constructed, which is usually attributable to a design that does not meet market standards.

In the cost approach, the depreciation attributable to all causes is extracted from the market, or calculated when market extraction is not possible, and deducted from the current cost to arrive at the depreciated cost:

| | |
|---|---|
| | Current Cost |
| – | Total Depreciation Applicable |
| | Depreciated Cost |

**Depreciation in Appraising and Accounting**

The term *depreciation* is used in both accounting and appraisal, so it is important to distinguish between the two usages. *Book depreciation* is an accounting term that refers to the amount of capital recapture written off for an asset on the owner's books for income tax or financial reporting purposes. Under the current Generally Accepted Accounting Principles (GAAP), the term has typically been used in income tax calculations to identify the amount allowed as accruals for the retirement or replacement of an asset under the federal tax laws. Book depreciation may also be estimated using a depreciation schedule set by the Internal Revenue Service. Traditionally, book depreciation has not been market-derived like the depreciation estimates developed by appraisers. Instead, various formula-based techniques (e.g., the straight-line method, units of production method, declining balance method, sum-of-the-years'-digits method) have been used to calculate scheduled depreciation. Financial Accounting Standards No. 157 calls for market-supported depreciation that is broader than depreciation for financial reporting purposes (an allocation of historical cost) or tax purposes (based on specified service lives).

The depreciated cost of the improvements (or their contribution to value) and the site value are added together to provide an indication of the market value of the property:

> The difficulty of estimating depreciation in older properties may diminish the reliability of the cost approach in valuing these properties.

| | |
|---|---|
| | Depreciated Cost |
| + | Site Value |
| | Market Value |

Depreciation is a penalty only insofar as the market recognizes it as causing a loss in value. For some older buildings, the value loss due to apparent depreciation may be offset by a temporary scarcity relative to demand or by an improvement's historical or architectural significance. In these situations, an appraiser should exercise caution not to penalize a property unduly in the cost approach.

As mentioned earlier, an appraiser's use of reproduction cost rather than replacement cost to derive a current cost estimate will affect the estimation of depreciation. Some forms of functional obsolescence are eliminated when replacement cost is used, but other forms remain unaffected. Consider an industrial building with poor access for trucks and with a 28-ft. ceiling height in a market where 24-ft. ceiling heights are the norm. A replacement cost estimate could be based on a building with a 24-ft. ceiling height, while a reproduction cost estimate would be based on a building with a 28-ft. ceiling height. By using replacement cost instead of reproduction cost, the appraiser eliminates the superadequacy attributable to the story height but not the deficiency caused by poor access to the street. Moreover, any additional costs of ownership caused by the superadequacy would not be eliminated in the replacement cost estimate. If the excess story height were the cause of additional heating, cooling, insurance, or property taxes, the superadequacy would also cause additional depreciation. An appraiser using replacement cost would have to consider any excess operating costs associated with the superadequate construction.