

The Elusive Definitions of *NOI* and *OAR*

The working definition of net operating income and the method by which it is developed are imprecise. The results of a recent survey of investors coupled with a review of appraisal literature indicates that there are in common practice multiple methods of calculating *NOI*. The differences are principally related to how one handles reserves for replacements, tenant improvements, and leasing commissions. Because *NOI* is a part of the formula for an overall capitalization rate, there must also be multiple methods of calculating a capitalization rate. Appraisers should be aware of the possible different meanings of these very important terms to ensure consistency in their usage.

An article that appeared in a popular industry publication indicated that real estate investment professionals commonly use three distinct methods of calculating net operating income (*NOI*).¹ It revealed inconsistencies in deducting reserves for replacements (including tenant improvements) and leasing commissions in this important calculation. Interestingly enough, current appraisal literature validates multiple methods of calculating *NOI*. Because *NOI* is part of the formula for an overall capitalization rate (*OAR*), it follows that there must be multiple valid methods of arriving at capitalization rates.

Though little heralded, the article is of immense usefulness because it points out very clearly that these two important terms, which many appraisers consider to have very precise and universal meanings, are—in both common practice and formal ap-

praisal doctrine—actually rather vague and imprecise. As a result, for appraisers there is significant danger when comparable sales data is exchanged or income streams are capitalized without ensuring consistent use of definitions.

The survey-based article indicated that the investors who were polled used a variety of methods to calculate *NOI*. Most use the following three methods:

- Method 1—*NOI* after capital replacement reserve deduction but before *TIs* and leasing commissions. (*TIs* are tenant improvements made to a property in preparation of a new tenant. It is also known as buildout and fit-up.)
- Method 2—*NOI* before capital replacement reserve deduction, *TIs*, and leasing commissions.

1. Peter F. Korpacz & Assoc., Inc., *Korpacz Real Estate Investor Survey* (Third Quarter 1995): 5.

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- Method 3—Cash flow after capital replacement reserve deduction, *TIs*, and leasing commissions.

According to the survey, 30% of the investors in the national suburban office market preferred method 1; 40% preferred method 2; 10%, method 3; and 13%, other methods. (All numbers were rounded.)

Further, the article states that under even the best of circumstances, there is a 60% chance that an appraiser and the person providing comparable sales will have different definitions of *NOI*, and the chances could be as high as 90%. The potential for misunderstanding is exacerbated by the fact that investors in different parts of the country have definite preferences, particularly as regards office building valuation. For example, 9.1% of the investors surveyed in Los Angeles prefer method 2 compared with 55.6% of investors in New York City.

Since the publication of that article, this author has been conducting an informal poll of investors, appraisers, and real estate brokers in the New England market. The results of the poll clearly confirm that, both among real estate investment professionals and within the broader real estate community at large, is a definite variation in the perceived meaning of *NOI*. Many individuals, including some appraisers, may not be aware of these variations and the errors they can cause in estimating appraised values.

APPRAISAL INSTITUTE DEFINITIONS

No precise definition for *NOI* exists even within the appraisal community. For instance, the definition in *The Dictionary of Real Estate Appraisal* is vague about the inclusion of reserves for replacement:

Net operating income (*NOI*). The actual or anticipated net income that remains after all operating expenses are deducted from effective gross income, but before mortgage debt service and book depreciation; may be calculated before or after deducting replacement reserves.²

Official appraisal doctrine, therefore, is consistent with the multiplicity of definitions or methods of calculating *NOI* in the real estate investment community and, at least with

respect to reserves for replacements. What about *TIs* and leasing commissions?

Actually, *TIs* fall within the set of building components for which replacement reserves are appropriate, as indicated by a definition of replacement allowance in *The Appraisal of Real Estate*:

A replacement allowance provides for the periodic replacement of building components that wear out more rapidly than the building itself and must be replaced periodically during the building's useful life. These components may include:

- Roof covering
- Carpeting
- Kitchen, bath, and laundry equipment
- Compressors, elevators, and boilers
- Specific structural items and equipment that have limited economic life expectancies
- Interior improvements (i.e., *TIs*) to tenant space that are made periodically by the landlord, usually at lease renewal
- Sidewalks
- Driveways
- Parking areas
- Exterior painting³

Therefore, if reserves for replacements include *TIs*, then the doctrine for calculating *NOI* is also vague about deducting reserves for *TIs* from income.

Leasing commissions are very clearly defined as variable expenses but with the following caveat:

Leasing commissions are paid to agents for negotiating and securing property leases. When these commissions are spread over the term of a lease or lease renewal, they are included in the operating statement...However, initial leasing commissions, which may be extensive in a new shopping center or other large development, are usually treated as part of the capital expenditure for developing the project. These initial leasing expenditures are not included as periodic expenses.⁴

Although this definition does not imply any flexibility in the deduction of leasing commissions, the survey indicates that common practice varies in this regard. On the other hand, given that leasing commissions tend to go hand in hand with *TIs*, it would seem that if there were flexibility in deducting *TIs* before arriving at *NOI*, there would

2. Appraisal Institute, *The Dictionary of Real Estate Appraisal*, 3d ed. (Chicago, Illinois: Appraisal Institute, 1993), 243.

3. Appraisal Institute, *The Appraisal of Real Estate*, 11th ed. (Chicago, Illinois: Appraisal Institute, 1996), 495.

4. *Ibid.*, 492.

be similar flexibility with regard to leasing commissions.

It appears that the multiplicity of methods of calculating *NOI* is generally consistent with appraisal doctrine. It follows that it is valid appraisal practice to calculate *NOI* either before or after deductions for replacement reserves, including *TIs* and leasing commissions. In other words, given the same income and expense data, it is possible to arrive at multiple "valid" *NOIs* for a given property. Something has to be wrong because multiple valid *NOIs* would seem to lead to multiple valid indicated values. In fact, they do not.

THE OFFICIAL DEFINITION OF OAR AND ITS IMPLICATIONS

The Dictionary of Real Estate Appraisal gives the definition for overall capitalization rate as:

Overall capitalization rate (R_o). An income rate for a total real property interest that reflects the relationship between a single year's net operating income expectancy and the total property price or value; used to convert operating income into an indication of overall property value ($R_o = I_o/V_o$).⁵

The equation in this definition can be restated as:

$$\text{Overall capitalization rate} = \frac{\text{Net operating income}}{\text{Sale price or value}}$$

and transposed to:

$$\text{Value} = \frac{\text{Net operating income}}{\text{Overall capitalization rate}}$$

Herein lies a problem. Because *NOI* is part of the formula for calculating *OAR*, any obscurities in the calculation of *NOI* would lead directly to vagueness in the resulting indicated value. Certainly the formula used to arrive at value is rigid, explicit, and precise (*NOI* divided by the capitalization rate), so that if there are multiple valid *NOIs*, there would be multiple valid indicated values.

To solve this problem, one should consider that for every different method of calculating *NOI* is a corresponding capitalization rate. In other words, any given property can have multiple valid capitalization rates,

each corresponding to one of the multiple valid methods used to arrive at *NOI*.

Example

Different methods of calculating *NOI* can lead to different capitalization rates derived from a given building sale, as in this example. The representative income and expenses for a suburban office building are shown as follows:

Potential rent	\$21.00
Vacancy allowance (\$21.00 × 8%)	- 1.68
Stabilized rent	\$19.32
Total operating expenses	6.56
Fixed expenses	+ 2.51
Total operating and fixed	9.07
NOI (method 2)	\$10.25
Reserve for replacements	0.25
NOI (method 1)	\$10.00
Leasing costs	2.12
NOI (method 3)	\$7.88

If this building sold for \$95 per rentable square foot, the capitalization rates derived using method 1 would be 10.53%; using method 2, 10.79%; and using method 3, 8.29%.

An appraiser can get back to the actual selling price (\$95.00 per square foot) by dividing any of the three *NOIs* by its related cap rate (e.g., using method 2 figures, \$10.25 ÷ 10.79%).⁶ But it is not possible to get the same result by dividing the *NOI* found using method 3 by the cap rate found using method 1. Similarly, in actual practice, an appraiser will not arrive at a meaningful appraised value if an income figure derived using method 3 is capitalized by a cap rate derived using method 2.

This example graphically highlights the most important point of this article: that with three commonly used valid *NOIs* and three different related valid *OARs*, it is critical that the income developed by one method is used with a cap rate derived by that same method. Consistency of definitions between *NOI* and cap rate is crucial.

VARYING IMPACTS BETWEEN PROPERTY TYPES

Using the different definitions or methods of calculating *NOI* for different property

5. *The Dictionary of Real Estate Appraisal*, 255.

6. For more on this issue, see *The Appraisal of Real Estate*, 516.

types will have varying effects on the results, depending on the amount of reserves for replacements and leasing costs common for that property type. Further, they may also vary from building to building within property types. For example, some office buildings are temporarily divided into office suites and experience only modest tenant improvement costs, while space in others tends to be gutted and then rebuilt for each new tenant.

For office properties requiring significant periodic tenant improvements, the effect can be significant. For most overbuilt office markets in the early 1990s, the *NOI* after reserves, stabilized tenant improvement costs, and leasing commissions (*NOI*3) could be as little as one half the *NOI* before allowance for such costs (*NOI*2). This would mean the capitalization rates derived using method 3 could be as little as one half of those calculated under method 2.

Generally, the impact will be somewhat less for warehouses and other industrial properties for which owners are generally not required to do significant tenant improvements, although there will usually still be some required reserve for building components and leasing commissions (except in a long-term absolute net lease). The effect should also be relatively less among residential properties and retail properties, in which generally the tenant is responsible for *TIs*.

CALCULATING *NOI* BY THE TEXTBOOK

While the definition of *NOI* in *The Dictionary of Real Estate Appraisal* may be somewhat vague, *The Appraisal of Real Estate* seems to favor the following method:⁷

Total potential gross income	\$XXXX
Vacancy and collection loss	- XXXX
Effective gross income	\$XXXX
Operating expenses	
Fixed	\$XXXX
Variable	XXXX
Replacement allowance	XXXX
Total operating expenses	-\$XXXX
Net operating income	\$XXXX

7. *Ibid.*, 487.

8. Although in multi-tenant buildings with staggered leases, tenant improvements, and leasing commissions may be relatively constant from year to year, in other buildings with one dominant tenant, *TIs* and leasing commissions may be very large for one year and then nominal for a number of years. In both cases, it is generally appropriate to use average or "stabilized" figures for these expenses in arriving at the *NOI* to be capitalized.

While the textbook refers to other valid calculations of appropriate income figures to capitalize, one can conclude that, based on the foregoing analysis and other things being equal, an appraiser's preferred method of calculating *NOI* that is to be capitalized could be stated as: *net income after consideration of all fixed and variable expenses (including stabilized⁸ leasing commissions) and reserves for replacements (including stabilized allowances for tenant improvements)*. In effect, this is method 3, or *NOI* 3.

JUSTIFICATIONS AND MERITS FOR THE DIFFERENT APPROACHES

One supposed justification for not deducting allowances for tenant improvements and leasing commissions from income before arriving at *NOI* is that, under accounting rules, their costs usually have to be capitalized and therefore should not be expensed. But this is an oversimplification. The reality is that the vast majority of investors amortize the costs of short-lived building components, including tenant improvements and leasing commissions, over the lives of their respective leases. They do not depreciate them over the remaining life to the building. For appraisal purposes, the critical issue relates to the projected life of the investment. If the life of the item is projected to be as long as or longer than that of the building itself, then it will never have to be replaced or redone and there would be no need for a reserve for replacement. On the other hand, if it has a shorter life than that of the building, it will have to be replaced and replacement reserves are appropriate. Most tenant improvements and leases have lives shorter than the lives of the buildings to which they relate; therefore, stabilized allowances for their being incurred again periodically should be deducted from income before arriving at the *NOI* to be capitalized.

The principal justification for considering reserves for replacements and leasing commissions (i.e., using the *NOI* 3) is that doing so leads to a more accurate measurement of yield. For example, in some Boston office buildings, owners tend to redo all the

An appraiser's preferred method of calculating NOI that is to be capitalized could be stated as "net income after consideration of all fixed and variable expenses and reserves for replacements."

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common areas frequently and on turnover, gut and totally refit all tenant spaces to give the tenant exactly what is needed or wanted. But, in turn, these owners command high rents. Other owners tend to cater more to economy-minded tenants who demand less frequent common area rehab and less tenant fit-up and, in turn, lower rents. Whereas the net returns to investors in the two types of buildings may be the same, given that all other things are equal, only method 3 will actually show them to be the same. Meanwhile, methods 1 and 2 will indicate that the building that does frequent replacements and charges higher rents will have higher relative returns.

In reality, one practical reason that the brokerage and investment communities use *NOIs* calculated without deductions for reserves and leasing commissions is that doing so is pleasing to sellers and buyers. It seems that everyone knows these costs are real but by excluding them a broker can show his seller that he is presenting a property to the market in the best light, that is, with the highest income, and the buyer can report of the high cap rates on the properties he buys. Of course all sophisticated buyers, sellers, and lenders recognize these costs in their analyses, and when yesterday's seller becomes today's buyer, it's amazing how fast he or she brings up releasing costs to deflate the seller's *NOI* in his argument for a lower price. (The uncertainty of definitions surrounding capitalization rates may be an indirect justification for favoring discounted cash flow analysis as a primary income approach. Even though a capitalization rate must generally be used to arrive at a residual value at the end of the projected holding period, its weight in the overall process is vastly reduced.)

A more significant reason that appraisers do not use *NOI 3* is that accurate data for expected reserves for replacements in particular is hard to come by. After all, the brokers do not tend to have it available, owners do not like to give it out, and it is often not shown in financial statements. Another reason is that actual tenant improvement costs and leasing commissions can vary significantly from year to year. When vacancies are high, owners will often offer exceptional lease packages and commissions, but when they are low, the "deals" are not as good. Further, if appraisers do manage to get reserves for replacement estimates for some comparable sales and not

for others and plan to use *NOI 3*, they have to develop reserves for replacement estimates for some buildings themselves. In such cases, there is probably little or no benefit in appraisal accuracy and there may be some loss of appraisal objectivity.

Each of the methods for developing *NOI* can be the most appropriate, depending on the appraisal assignment. An appraiser can avoid being misled by these definition issues and can ensure that appraisal values are meaningful by following these tips:

1. Whenever possible, obtain specific income and expense data for sale properties and personally develop capitalization rates used in all appraisals. Often developing a good working relationship with a commercial real estate broker can lead to a very healthy exchange of data and market information.
2. When gathering cap rate and sales data from others, be sure you understand their definitions of *NOI* and *OAR*.
3. Be certain that the cap rate employed to capitalize a given *NOI* was derived in a method consistent with the development of that *NOI*.
4. For clarity, clearly define what is meant by *NOI* and *OAR* in every appraisal.

USE OF SURVEY RESULTS

It should always be an appraiser's goal to develop capitalization rates from market sales for every appraisal. However, if for some reason that is not possible and published rates are to be used directly in the appraisal process or if they are to be quoted as evidence of the reasonableness of market-derived rates, the rates in the published survey should be analyzed carefully and probably adjusted.

An important issue to be addressed in the analysis is that the published rates may be hybrids or blended rates. The blended rates are not directly usable in reference to the *NOI* developed by any one of the three methods referenced. Remember that published surveys are designed as general-purpose tools and are not intended to provide appraisers with ready-made capitalization rates. In fact, in many cases the surveys are developed primarily to indicate trends in yields and investor expectations. For these purposes, it is appropriate to use blended rates derived from respondents using differ-

ent methods (as long as the proportions of the mix of methods used by the respondents stays the same from one period to the next.

This point should be clear from the example already given in which, depending on the method used, there were three indicated *OARs*: 10.79%, 10.53%, and 8.29%. In the same time frame for which these three *OARs* were calculated, the investor survey indicated average free-and-clear office building equity cap rates of 9.6% out of a range of reported rates from 8.0% to 12.0%. All these cap rates can be listed as:

High end of investor survey's range	12.00%
Derived using method 2	10.79%
Derived using method 1	10.53%
Average investor survey's rate	9.60%
Derived using method 3	8.29%
Low end of investor survey's range	8.00%

Note that none of the derived rates is very close to the "average" rate reported by the investor survey. Rather, they bracket the survey's average rate and all fall within the reported range of reported rates. There is a limit to the mathematical harmony of these numbers. For example, the averages of these three derived rates (which are based on the example using average Building Owners and Managers Association income and expenses) weighted for their reported frequency of use should, but do not, equal the 9.6% average rate reported by the investor survey.

Two general guidelines for using cap rates from surveys should be heeded:

1. Do not use survey results directly if there is a choice and, wherever possible, develop capitalization rates from recent market sales for which reliable income and expense data are available.
2. If survey results are to be used to confirm or test the reasonableness of rates derived from market sales, a blended average rate from a survey should be adjusted up for use with *NOIs* developed by methods 1 and 2 and down for the *NOI* developed by method 3.

BAND-OF-INVESTMENT APPROACH

This article assumes that the capitalization rates appraisers used were extracted from

market sales, the income and expenses of which have been made available. In these cases, it is possible to develop at least three *NOI/OAR* pairs. But what about cap rates developed by the band-of-investment approach in which an overall capitalization rate is derived by taking a weighted average of a mortgage debt service constant at market terms and an equity capitalization rate (defined as the ratio of pre-tax equity cash flow to equity investment)? Which *NOI* should be capitalized? The answers to these questions are the same as for the *NOI/OAR* cases. In all situations the appraiser must understand the definitions for the given terms used by the person showing the data and must be careful to ensure consistency between how the cap rate data is developed and how the resulting cap rate is employed. Specifically, the appraiser must be particularly careful to understand which of the methods of developing *NOI* was used in developing an equity capitalization rate. The band-of-investment approach should be used sparingly and with extreme caution.⁹

CONCLUSION

This article demonstrates that because *NOI* and *OAR* do not have precise or universal meanings among real estate professionals, not even appraisers, great care must be taken to ensure that these terms are used consistently. Second, for every way of calculating *NOI*, there is a corollary and related way of developing *OAR*. Therefore, appraisers must also use great care to ensure that there is consistency between developing *NOI* for a property being appraised and developing *OAR* at which it will be capitalized. Further, appraisers are advised to develop their own capitalization rates from sales of properties having detailed income and expense data, and should be extremely cautious about relying on data from investor surveys, particularly if those investors use a blend of methods to calculate *NOI*.

Certainly the practice of defining these important terms every time one talks to another appraiser, broker, seller, or buyer is laborious and time consuming, but the increase in appraisal accuracy and confidence that can result should be more than sufficient reward for the extra effort.

9. *The Appraisal of Real Estate*, 519.