Modernizing Appraisal Theory and Standards

By Norm Miller, PhD University of San Diego and Collateral Analytics at www.collateralanalytics.com

Contact: Nmiller@sandiego.edu

1. Introduction

Students of appraisal have been taught there are three primary methods of valuation, and that we start the process of appraisal by defining the value sought after learning the purpose of the appraisal. The later part of that statement remains true, but today, there are more than three primary methods of valuation and many sub-methods that could fit under each of the primary methods. After thinking about appraisal for more than forty years and watching what the industry produces and utilizes, it is time to update what we teach students of valuation.

Why has appraisal methodology changed? For the same reasons it evolved in the past. Our definitions of value have not changed much and usually we are seeking “most probable price” but what has changed is data availability, data archiving and the ability to integrate data mining into valuation. You need not be an expert in statistics to utilize modern approaches, but you must at least understand statistics and be able to utilize basic tools for trend analysis and index production. You might be tired of “big data” as a term for why things have changed, but using more of the information available in the market is at the heart of all changes to modern methodology.

1. What are the modern methods all appraisers should learn?
2. The **Market Approach** to value, aka the sales approach, aka the grid approach remains a core tool. In traditional format, this method requires a minimum of three comparable properties (comps), but in reality, several comps should be used, if they are available. Using several comps requires more work, especially in adjusting each comp towards the subject property, but that is what professionals should do.
3. **Hedonic regression** approaches can be considered a sub-method of the market comparison approach, even though it is computer driven to solve for an equation that minimizes error in prediction. Here it is considered a separate method, which like the time adjusted price method below, requires much more data than the market approach to value.
4. The **Time Adjusted Price** method uses the prior sale of the subject property and updates it using a time trend price index. The assumption is that the past sale price was equilibrium and that the subject property value has changed in line with the submarket of properties within which it competes. This index adjustment considers implicitly wear and tear and obsolescence in the per property set upon which the update index is calculated. This method can be very accurate and should become one of the new primary methods of valuation. It was not possible prior to the modern era of big archived data.
5. The **Cost Approach** to value remains useful in rare cases. This method has rarely applied to a subject property except as an upper limit to value, unless the property was fairly new. This method requires an enormous amount of effort to gather accurate data on costs and enormously subjective guestimates on various forms of depreciation, making this method the least favorite of any appraiser and one that many of us in the industry admit privately to fudging, to get it in line with the other more reliable methods. We should make this method optional and only applicable under circumstances where the property is fairly new and at highest and best use, and/or there are no other methods possible.
6. The **Income Approach** to value, which includes traditional capitalization derived from market comps, self-generated capitalization rates via the Ellwood method in an Akerson format, and also DCF, discounted cash flow analysis at market based required rates of return, if we are seeking market value rather than investment value. Simpler mortgage equity methods are not appropriate and require unrealistic assumptions in order to counter balance the omitted trend information. At the same time, the Ellwood method does not apply well unless compounding is included in the net operating income (NOI) trend and the NOI adjusted to a level annuity prior to capitalization.

Each of these methods is compared on a grid in the Table below:

The Pros and Cons of the Five Modern Methods of Appraisal

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| --- | --- | --- | --- |
| **Method** | **Pro** | **Con** | **Data Requirement** |
| Market Comparison | Can be used on most appraisals.  Appraisers understand this method. | Adjusting comps towards the subject property requires large data sets and “experience” is really guess work as matched pairs rarely exist. Often, one does not know the condition of the property comps. | Ideally regressions are run to find regression coefficients for adjustments, but care must be taken not to double count the same feature. Percentage adjustments may also be considered using log regressions, but some statistical skill is needed to avoid over lapping adjustments. |
| Hedonic Regression | Can be used on most appraisals if data is readily available and stored by property attribute. | Requires an in depth understanding of regression techniques and caveats in miss-applying the approach. | Large sets of data are required, preferably more than 30 potential comps are included in the data base analyzed. This requires going back further in time or wider in geographic distance from the subject property. |
| Time Adjusted Price | Can be used on most properties as long as the prior sale is not too distant in time. You merely update the subject property to the date of valuation. | If the prior sale was a distress sale or non-market, then this approach does not apply. | Price indexes can be calculated using price/per square foot trends for a defined submarket, or from a quality adjusted hedonic price trend. Simple median prices will not work unless all property is the same size and quality. |
| Cost Approach | Can be used when no other method or data is available. Appropriate when the property is nearly new. | Very subjective and difficult approach. Cost does not necessarily equal value. Requires some expertise of building techniques and an analysis of functional obsolescence. | Need cost new estimates and depreciation estimates, both of which are hard to estimate if the property is not new. This requires general contractor input from the local market, otherwise cost guides are used which are crude estimates. |
| Income Approaches |  |  |  |
| Overall Market Cap Rate from Comps | Can be used on most income producing property. | Getting accurate cap rate estimates is challenging as brokers on both sides of a transaction tweak estimates using different forward-looking time periods and making different operating expense estimates. | At least three good comps are required, preferably more, but this method can produce an accurate valuation. |
| Self-Derived Cap Rate using Akerson Format of Ellwood | Can be used even without good comps on any income property. | Requires an adjustment of the NOI to a level annuity over the normal holding period, and an understanding of this more advanced weighted cost of capital approach. Most appraisers do not understand the math, which is not a problem unless the appraisal ends up in court. | The key to application is realistic required rates of return, realistic financing assumptions and realistic market estimates on future NOI. Requires a fair amount of market research and staying in touch with investment brokers that provide input on assumptions. |
| Discounted Cash Flow Analysis | Can be used even without good comps on any income property. Parallels the method above, if that method is done correctly. | Often the detailed data required is not available. Defining the option value from value-add improvements or new uses adds challenges to this approach. | Requires data on leases and lease terms, all operating expenses and market-based rent estimates for future renewals, financing terms and required rates of return, plus net resale value estimates. |

1. Conclusions

Appraisal is still an art, and not a formal scientific process, requiring lots of judgement, but it is definitely a field requiring more use of larger data bases and statistically derived factors that feed into most appraisal methods. The training of our next generation of appraisers requires more time spent on manipulating data sets, filtering data, statistical methods of analysis as well as financial analysis to make appropriate time value of money adjustments from all sources of real estate returns that affect value. Fees have not kept pace with these new demands on appraisers, and this suggests more appraisers will work to automate and streamline whatever they can within the appraisal process. Certainly, residential appraisal has given way to this automation trend. Commercial appraisal remains somewhat protected as long as the property involved is complicated, but even commercial appraisal requires some application of new tools and methods that can be intimidating without continuing efforts to remain state of the art. Automating the data collection process and preliminary analysis is essential for appraisers that want to remain competitive. Hybrid automated models, where humans apply judgement and tweak computer generated results are what future appraisers must do in order to remain competitive.