

Advisory Opinion 9 and Contingent Valuation

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This edition of “Environment and the Appraiser” addresses the relationship between the advice and guidance in Advisory Opinion 9, “The Appraisal of Real Property That May Be Impacted by Environmental Contamination,” of the USPAP Advisory Opinions, and the potential use of a controversial technique known as contingent valuation. As will be discussed, contingent valuation was originally developed to value what economists refer to as public goods for which there is no observable market. Early applications of this technique focused on measuring natural resource damages. Most appraisers, on the other hand, focus on real property, or private goods for which there is an observable market in which buyers and sellers interact and establish selling prices. Actual market data in the form of sale prices then forms the basis for the estimation of market value by appraisers. Contingent valuation (CV) attempts to recreate how a market would react to such factors as environmental contamination in establishing sale prices. As this column will discuss, this approach is not a suitable substitute for actual market data with observable transactions.

Advisory Opinion 9

Advisory Opinion 9 (AO-9), published with the Uniform Standards of Professional Appraisal Practice (USPAP), addresses the valuation issues that must be considered when appraising a property with potential impacts from environmental contamination. According to AO-9,

The appraiser must recognize that the value of an interest in impacted or contaminated real estate may not be measurable simply by deducting the remediation

or compliance cost estimate from the opinion of value as if unaffected (unimpaired value). Rather, *cost*, *use* and *risk* effects can potentially impact the value of contaminated property.¹

Cost effects reflect any costs necessary to remediate a contaminated property, and these are typically estimated by someone other than the appraiser. *Use effects* include any impacts on site utility or highest and best use. *Risk effects* represent “the market’s perception of increased environmental risk and uncertainty”² and are typically the most challenging to quantify.

A negative effect on property value due to the market’s perception of increased environmental risk and uncertainty is also referred to as environmental stigma. Although perceptions may lead to risk effects or stigma for a specific property, AO-9 explicitly states, “The analysis of the effects of increased environmental risk and uncertainty on property value (environmental stigma) must be based on market data, rather than unsupported opinion or judgment.”³ An appraiser should not simply assume the presence of risk effects or stigma, but instead must look to data from actual market transactions to measure any impacts on property value.

A recent article by Lipscomb et al. suggests that USPAP allows for the application of contingent valuation methodology (CVM) to measure the market’s perception of increased risk due to environmental contamination.⁴ However, there is nothing in USPAP condoning the use of CVM in any property valuation assignment. AO-9 specifically states that although specialized valuation methods are usually required when analyzing the effects of environmental contamination, “these methods

1. Appraisal Standards Board, Advisory Opinion 9, “The Appraisal of Real Property That May Be Impacted by Environmental Contamination,” *USPAP Advisory Opinions*, 2012–2013 ed. (Washington, DC: The Appraisal Foundation, 2012), A-20, Lines 165–168.

2. *Ibid.*, A-20, Lines 176–178.

3. *Ibid.*, Lines 176–178.

4. Clifford A. Lipscomb et al., “Contingent Valuation and Real Estate Damage Estimation,” *Journal of Real Estate Literature* 19, no. 2 (2011): 283–306, see especially 299–300.

to the valuation approaches in USPAP.⁵ The valuation approaches in USPAP include the sales comparison approach, income approach, and cost approach, and CVM falls outside of the realm of these three approaches to value generally recognized in the appraisal profession. In addition, AO-9 states the analysis of the effects of environmental stigma on property value must not be based on “unsupported opinion or judgment.”⁶ This would include unsupported opinions expressed by the appraiser, as well as unsupported opinions of others (including survey respondents) that are relied upon by the appraiser.

History and Use of Contingent Valuation Method (CVM)

The contingent valuation method (CVM) was originally developed in the mid-twentieth century to value natural resources and public goods, which are not exchanged in a market.⁷ Economists and policy makers did not have the benefit of empirical data chronicling sales of national treasures and public amenities, so they instead observed the stated preferences of carefully selected sample groups. CVM was thrust into the academic crucible in the early 1990s after the Exxon Valdez oil spill, when the State of Alaska claimed multibillion-dollar natural resource damages based on a CV survey. In response to growing concern over CVM efficacy, the National Oceanic and Atmospheric Administration (NOAA) produced a report authored by a panel of survey researchers, economists, and psychologists that outlined key pitfalls and defined appropriate use of the method.⁸ Wilson outlines the NOAA’s conclusions, which qualify that CVM can at best be used to find the upper-end of passive-use values; the NOAA panel does not promulgate CVM use to value goods exchanged in private markets.⁹

CVM in Real Property Valuation

In recent years, some appraisers and academics have sought to expand the application of CVM into the arena of real property valuation—for which there is a market—and have proffered CVM as a fourth approach to value. The boundaries of this method have been particularly tested in cases and litigation matters involving real property that may be affected by environmental contamination. Generally, a survey instrument is read to a sample of property owners who are each asked their willingness to pay (WTP) for a contaminated property or willingness to accept (WTA) some environmental impact to their property. Respondent answers are aggregated to provide a diminution range or value attributable to the alleged contamination.¹⁰ A significant portion of the academic body warns that application of CVM to estimate value in private real property markets overextends the capabilities of the method. Wilson asserts,

Among the reasons why the CV methodology is not an appropriate technique, two may be noted as dominant. First, the recognized authorities on CV as well as advocates of the CV method clearly state that this methodology applies only to public and quasi-public goods. Second, the best results obtained will have only qualitative—but not quantitative—value.¹¹

Lipscomb et al. submit that CVM could provide more useful value estimates than could transactions in markets that are not in equilibrium.¹² Wilson counters this argument, stating,

The market is the market. Attempting to place arbitrary conditions on what the market “should have known” is inappropriate and contrary to market valuation theory. It is for this reason that appraisers do not use hypothetical markets in the development of opinions of value. Instead they seek actual sales and confirmation of the circumstances of the sale price, allowing adjustments to be made to the actual sale price.¹³

5. Advisory Opinion 9, A-20, Lines 182–183.

6. Ibid., Lines 177–178.

7. Bill Mundy and David McLean, “Using the Contingent Value Approach for Natural Resource and Environmental Damage Applications,” *The Appraisal Journal* (July 1998): 290–297, 292; and Kristy E. Mathews, “Under the Microscope: Dissection of a Contingent Valuation Survey,” *The Appraisal Journal* (Summer 2008): 259–269, 259.

8. Mathews, 260–261.

9. Albert R. Wilson, “Contingent Valuation: Not an Appropriate Valuation Tool,” *The Appraisal Journal* (Winter 2006): 53–61, 55.

10. Mathews, 260.

11. Wilson, 54.

12. Lipscomb et al., 299.

13. Wilson, 56.

Many experts like Wilson continue to emphasize “the CV technique was neither designed for, nor is it applicable to, the valuation of goods for which there is a market.”¹⁴

CVM Weaknesses

Experts cite a number of weaknesses of CVM that limit its applicability in real property valuation—even in more complex assignments involving environmental contamination and stigma.

First, hypothetical bias stemming from the hypothetical nature of CV surveys is one of critics’ most prominent concerns with CVM. Survey respondents are asked their willingness to accept or willingness to pay for an environmentally contaminated property without any resources at stake and without any incentives to reveal their true preferences. Mathews and Desvougues accentuate this point and posit, “Common sense suggests that people simply will not put forth the same effort in making a choice when the outcome does not affect them. It is basically the difference between window shopping and making actual purchases.”¹⁵ In a subsequent article, Mathews states that CV survey results will be unreliable if respondents’ answers deviate from what their behavior would be in an actual purchase or sale situation with time and money at stake.¹⁶ Market value is predicated upon the notion that parties are not only willing to make an exchange, but that they are actually able to. Because respondents do not have to face the consequences of their answers in a CV survey, stated preferences about what they might pay cannot reliably serve as a proxy for what they actually would pay in real transactions.

Second, survey respondents have likely never purchased an environmentally impacted property and may not be familiar with the value impacts or health effects of the various contamination constituents discussed in a CV survey fact sheet.¹⁷ Their potential unfamiliarity with the subject

material combined with the brevity of most CV surveys (10–15 minutes over the phone) presents the risk that respondents will fill in any informational gaps with their own assumptions. These assumptions likely vary between respondents, which results in a collection of data points that cannot be reasonably aggregated because they are based on shifting informational inputs.¹⁸ The abridged fact sheet presented to respondents may not provide the level of necessary market and environmental information that a real purchaser would be exposed to during the lengthy purchase process.¹⁹

Third, CV surveys assume that one variable—the presence or absence of environmental contamination on or near a property—is the sole driver of a purchase decision. In real markets, purchase and sale decisions are not unidimensional. Most buyers weigh a long list of benefits and drawbacks for each potential property under consideration that include neighborhood location and amenities, job proximity, school district quality, construction quality, etc. Creating a market in which prices fluctuate based on one variable and in which sale or purchase decisions take minutes rather than weeks or months oversimplifies the complex buying process.²⁰

Fourth, CV surveys usually fail to consider the multiple parties involved in a sale or purchase decision. Only one side of a sale—the buyer’s WTP or the seller’s WTA—is recorded, when in reality a sale only occurs when both parties negotiate to reach a mutually palatable price.²¹ Others, such as family members, friends, real estate agents, and attorneys, may also influence a sale or purchase decision.²² Thus, the opinions of survey respondents over the phone may not reflect what their opinions would be with additional intermediary influence.

Finally, an additional CVM issue is the marginal bidder problem. There may be a wide range of prices offered to a seller by different buyers; however, the prudent seller in an arm’s-length transaction will

14. *Ibid.*, 60.

15. Kristy E. Mathews and William H. Desvougues, “Stigma Claims and Survey Reliability: Lessons Learned from Natural Resource Damages Litigation,” *Journal of Forensic Economics* 16, no. 1 (2003): 23–36, 29.

16. Mathews, 259–260.

17. Mathews and Desvougues, 27.

18. Mathews, 264.

19. Richard F. Roddewig and James D. Frey, “Testing the Reliability of Contingent Valuation in the Real Estate Marketplace,” *The Appraisal Journal* (Summer 2006): 267–280, 279.

20. *Ibid.*, 279.

21. Mathews, 264.

22. Roddewig and Frey, 279.

always sell at the highest possible price. Conversely, CVM collects all WTP or WTA bids, many of which would not affect the ultimate market price in an actual transaction. Simons, and Simons and Throupe attempt to address this problem by removing unreasonably low bids from the ultimate diminution analysis.²³ Mathews highlights the weakness of this approach:

While eliminating the lowest hypothetical offers from the analysis does make the loss calculations lower than they would be with all of the hypothetical offers included, it does not improve the reliability of the CV-based results for several reasons. The first reason is that this is simply an arbitrary adjustment. Why is taking 50% or 25% of the hypothetical offers appropriate? Why not the best 5% or 10% of the offers? This ad hoc adjustment apparently does not have an empirical or market-specific basis, since no citations to literature or empirical studies are given in support of this marginal bidder approach.²⁴

Survey Errors and Biases

In addition to CVM-specific weakness, general survey errors and biases can affect the quality of CV surveys. Rabianski describes various sampling and non-sampling errors that must be considered in any good survey. Sampling errors exist when the sample does not accurately reflect the population of study. Non-sampling errors occur during data collection and include frame error, measurement or response error, sequence bias, interviewer bias, and non-response bias.²⁵ Proponents of CVM in real property valuation emphasize that these and other CVM weaknesses can be mitigated through careful survey construction. Lipscomb et al. contend that researchers can properly design a CV survey to mimic real-world conditions;²⁶ however, it is not necessary to manufacture a market when one readily exists. The process of peeling away layers of risk and bias to achieve reliable CVM results seems unnecessarily convoluted and, in the end, still not as accurate as analyzing and (if necessary) appropriately adjusting transactional evidence.

The Fourth Approach to Value?

Roddedwig and Frey compared actual property value decreases with CVM-predicted decreases in four different markets and found that CVM overestimated damages in every case.²⁷ Given this high failure rate, CVM cannot be considered a reliable real property valuation method.²⁸ The three generally accepted approaches to value offer appraisers specialized tools with which to tackle the vast array of valuation assignments. The promise of a fourth approach to value naturally seems like a panacea to appraisers challenged with complex assignments like valuing contaminated properties. However, it is crucial to remember that each of the three generally accepted approaches to value utilizes inputs that are based on empirical data. The income approach considers historical income streams and expenses. The cost approach considers current construction costs, depreciation rates, and land costs for similar properties. The sales comparison approach considers historical sales of comparable properties. The common thread among these three approaches is their reliance on actual incomes, costs, and transactions and the expertise of an appraiser who reconciles resulting values. The CVM instead relies on lay opinions of real estate value and amenity/disamenity impacts to that value. As Bell reminds appraisers,

No one views landfills, sewage treatment, plants, jails, airport noise, and soil or groundwater contamination as a positive attribute of a residential property. But that is only part of the story. If market value is going to be affected, then this particular attribute has to be given enough weight in the decision process of buyers and sellers to have a material effect on price.²⁹

The fundamental fact remains that while CVM may highlight certain qualitative buyer or seller preferences, those preferences must play out in the marketplace for there to be any true effect on value. CVM was not designed to value goods for which a market exists, and it is not generally accepted by

23. Robert A. Simons, "Estimating Proximate Property Damage From PCB Contamination in a Rural Market: A Multiple Techniques Approach," *The Appraisal Journal* (October 2002): 388-400, 393; and Robert A. Simons and Ron Throupe, "An Exploratory Review of the Effects of Toxic Mold on Real Estate Values," *The Appraisal Journal* (Spring 2005): 156-166, 159.

24. Mathews, 265.

25. Joseph S. Rabianski, "Primary and Secondary Data: Concepts, Concerns, Errors, and Issues," *The Appraisal Journal* (January 2003): 43-55, 48.

26. Lipscomb et al., 285.

27. Roddedwig and Frey, 270-271.

28. *Ibid.*, 280.

29. Randall Bell, *Real Estate Damages: An Analysis of Detrimental Conditions* (Chicago: Appraisal Institute, 1999), 38, quoted in Mathews, 267.

the real property appraisal community as a fourth approach to value.

Conclusions

While CVM is an interesting technique that may have application in other fields or professions, it is not well suited to the practice and profession of real property valuation. Further, CVM surveys are not a substitute for the actual market data (i.e., sales) that are envisioned in AO-9.³⁰ The nature of the real estate market and the hypothetical bias involved in this technique renders it of limited usefulness to the real property valuation profession. For these and other reasons, CVM has not found its way into the profession's body of knowledge³¹ and has not become generally accepted within the profession despite being proposed for inclusion as early as 1998. While the appraisal profession remains open to new ideas and proposals,³² this method appears to have been considered and not accepted into the mainstream of the profession. Therefore, appraisers are cautioned against using the technique for estimating market value or impacts on market value and are encouraged to measure value and effects on value using the generally accepted techniques of the profession that rely on actual, observable market data.

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30. AO-9 states, "The analysis of the effects of increased environmental risk and uncertainty on property value (environmental stigma) must be based on market data, rather than unsupported opinion or judgment." Lines 176-178.

31. The body of knowledge of the appraisal profession includes the Appraisal Institute's *The Appraisal of Real Estate*, 13th ed.; the approved and peer-reviewed educational materials; and the methods and techniques individuals are required to master in order to become members of the appraisal profession.

32. For example, the use of regression analysis has gained support and now is a generally accepted technique in the profession.