

# Illinois Real Estate Letter

## *The Cost Approach: Appraisal Gone Wrong?*

*Roger E. Cannaday and Peter F. Colwell*

Students in the primary grades are sometimes challenged with computational puzzles such as the following:

*Double your current age. Then multiply that value by the following quantity: one score less than the year of Columbus's first voyage times the number that constitutes a gross. To this total, add the product of the temperature (Fahrenheit) at which water freezes times twice your age. Divide the resulting number by the temperature (Fahrenheit) at which water boils. Finally, divide by the number of pounds in a ton. The resulting number should be your age!*

Although such formulas may possess a magical aura, alert youngsters understand that the specified action in each step of the progression serves to reverse the impact of some other step. In fact, we can design a puzzle that omits specified 144s or 212s, and instead leaves the reader unconstrained in entering relevant values:

*Double your current age, and then subtract your mother's age. From that total, subtract the number of years by which your father's age exceeds your mother's. Then add the number of years by which your father's age exceeds your age. Once again, the result should be your age!*

Of course, the specific ages of the parents do not matter. In either of the two conundrums illustrated, we start with the

reader's age and obtain the reader's age as the final result. Our point in offering these examples is to demonstrate that it is possible to manipulate a number by going through a series of mathematical operations, be they seemingly sensible or seemingly silly, and ultimately to obtain the original number.

Anyone who has completed one year of high school algebra is able to concoct an unlimited number of benign brain-teasers in which the final result is assured to relate to the value initially offered. It is unfortunate that a similar procedure has, in some instances, been employed by real estate appraisers. These practitioners apparently have feared the embarrassment that they would face if their market value estimates under the cost approach deviated substantially from their estimates derived through direct capitalization under the income approach.

### **The Need for Independence**

Over time, real estate appraisal theorists and practitioners have adopted the use of three approaches to property valuation: the income, sales comparison, and cost approaches. The logic underlying the use of multiple approaches is that different types of information (relating to various factors that might motivate buyer or

### *U of I Profs Assist State*

A team of professors from the Department of Finance at the University of Illinois has been working with the Office of the Attorney General of the State of Illinois on a project involving state guarantees on loans secured by two large hotels. Attorney General James Ryan asked the faculty members to determine whether the value of the State's claims exceeds the \$10 million offered by the hotels' owners in a proposed settlement.

Because the State's interest is essentially that of a senior mortgagee, both the hotels' owners and the State have faced concerns regarding the property values relative to the balances owed under the loan agreements. The owners had offered to settle by paying considerably less than the amounts nominally owed, and Illinois State Treasurer Judy Barr Topinka had been evaluating whether the State might do well to accept in light of low market value estimates that had been presented in recent appraisals by an independent appraisal firm.

Based on their finding that some technical problems were present in the appraisals and their estimation of significantly higher market values than were indicated in the appraisals, the faculty members recommended that the State decline the settlement that had been offered. The Attorney General has accepted the team's recommendation.

Those serving on the team were Professors William Bryan, Charles Calomiris, Roger Cannaday, Peter Colwell, Virginia France, Narasimhan Jegadeesh, Charles Linke, Jay Ritter, and Philip Rushing.

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seller actions) can be used in computing a series of value estimates. Thus the appraiser should gain confidence in a reconciliation of the three approaches to value if the various individual estimates are close to each other, and should lose confidence to the extent that the various estimates are more diffuse. We must recognize, however, that this logic is sound only if each of the approaches exhibits a sufficient degree of independence from the other two.

By way of analogy, a family would be more confident about visiting a well-known vacation spot if promotional brochures, motor club booklets, and acquaintances who recently visited the location agreed in their individual evaluations that the destination was one

approach section was so "slick," in the closeness of its estimated value to the estimate produced under direct capitalization in the income approach, that we decided to examine that section in more detail. Our findings were sufficiently interesting, albeit troubling, that we decided to share them with the *Illinois Real Estate Letter* readership. A useful way to illustrate the appraiser's actions is to offer a conundrum similar to the brain-teasers discussed earlier:

*Add your estimate of land value to the physically depreciated building value, thereby obtaining the "physically depreciated total value." Multiply this amount by the overall capitalization rate to compute the "market-required net income" (income the owner would receive if the property had no unattrac-*

*Some appraisers apparently fear the embarrassment that they would face if their market value estimates under the cost approach deviated substantially from their estimates derived through direct capitalization under the income approach.*

not to be missed. Of course, it would serve little purpose to consult a friend who had no personal knowledge of the vacation site, but merely parroted passages contained in the promotional or motor club literature.

In a similar manner, suppose that an appraiser followed a procedure guaranteeing that two of the three valuation approaches would always produce the same value estimate. The appraiser might feel that he benefited from such a procedure in that his reports would look terrific; he would seem to have reached precisely the same estimate through two separate analyses. It should be evident, however, that in striving to prevent his results from seeming inconsistent, such an appraiser would attain merely the appearance of consistency. His clients would actually be worse off, because of the misleading nature of the estimates' apparent agreement.

**A Recent Case**

We recently had occasion to review the report submitted by an appraisal firm in connection with its valuation of a large income-producing property. The cost

*ive functional or locational features). Then subtract stabilized net income from the market-required net income to obtain the income deficiency (income not received because of functional and locational obsolescence). Divide income deficiency by the capitalization rate to find the capitalized income deficiency, which equals the total of functional and locational obsolescence. Add physical deterioration to obtain an estimate of total accrued depreciation. Subtract this accrued depreciation total from reproduction cost new to determine an estimate of the depreciated improvements value. Finally, add improvements value to land value to obtain a total value estimate under the cost approach.*

This seemingly coherent, if somewhat convoluted, set of computations is described in the following algebraic statement:

$$V_c = R - \left( P + \frac{(L + R - P)r - I}{r} \right) + L$$

where

$V_c$  = value estimate from cost approach,  
 $R$  = reproduction cost new,  
 $P$  = physical deterioration,  
 $r$  = the capitalization rate,  
 $I$  = stabilized net income, and  
 $L$  = land value.

It may not be readily apparent that this implementation of the cost approach reflects the same type of reasoning that we observe when the student computes his age by performing manipulations on his age. Yet as occurs in those computational puzzles, the appraiser starts with, and ends with, the same number: the value estimate generated by direct capitalization. The report's references to reproduction cost new, physical deterioration, and land value, which endow the activity with an aura of independence from income-based value estimates, are simply distractions; they add nothing of substance to this methodology. To see that this result holds, consider the following appraisal-oriented variation on the computational puzzle theme:

addition of each of these magnitudes is exactly offset by its later subtraction within the same equation. The cost approach is typically viewed as presenting value information that is reasonably independent from the information generated through the two other approaches. Yet there is no unique, independent information that an analyst can glean from completing the cost approach as applied in the appraisal report that we reviewed.

### An Illustrative Example

A numerical example can help us in illustrating the described misapplication of the cost approach. Consider a case in which stabilized net income had been estimated at \$1,000,000 and a market-

value estimate under direct capitalization of  $\$1,000,000 \div .125 = \$8,000,000$ .

Note that \$8,000,000 is precisely the value estimate generated under the cost approach as applied in Table 1. This example demonstrates the manner in which the cost approach can be completely dependent on figures utilized in the income approach. The left-hand column of numbers corresponds to the basic steps in the cost approach. First, the total loss in improvements value due to physical, functional, and locational causes (the \$8,000,000 total of the middle-column figures) is subtracted from reproduction cost new (\$15 million) in determining an improvements value of \$7,000,000. Adding the \$1,000,000 land value yields an \$8,000,000 value estimate for the property as improved. An examination of Table 1 shows that, under this technique, the appraiser determines required income for the income approach, and then utilizes that income figure in measuring obsolescence for use in the cost approach.

The reader may question whether the numbers shown have been carefully selected to produce the authors' desired outcome, and whether some other set of numbers would produce a different value estimate under this application of the cost

*References to reproduction cost new, physical deterioration, and land value, which endow the activity with an aura of independence from income-based estimates, are simply distractions that add nothing of substance to this methodology.*

*Begin with the value estimate from direct capitalization. Subtract the physically depreciated value and the physical depreciation. Add the reproduction cost new and the land value. Voila! The result is the value estimate from direct capitalization.*

We can derive an algebraic representation of this situation by slightly simplifying the formula presented earlier:

$$V_c = V_{dc} - (L + R - P) - P + R + L$$

where  $V_{dc}$  is the value as computed under the direct capitalization technique within the income approach ( $V_{dc} = I \div r$ ) and  $V_c$  is value as allegedly computed under the cost approach. We stress *allegedly* because the value estimate produced under this particular implementation of the cost approach *must* equal the estimate generated through direct capitalization (stabilized net income divided by an overall capitalization rate); note that the value of each term in parentheses is subsequently cancelled through the offsetting addition or subtraction of an equivalent amount. Such seemingly independent numbers as the reproduction cost, the physical deterioration, and the land value become totally irrelevant if the

derived direct capitalization rate was estimated to be 12.5%. The appraiser would divide stabilized net income by the direct capitalization rate to produce a

**Table 1**

A Numerical Example of the Cost Approach Gone Wrong		
\$15,000,000		Reproduction cost new
	\$4,000,000	Physical deterioration
	\$11,000,000	Physically depreciated building value
	+\$1,000,000	Land value
	\$12,000,000	Physically depreciated total value
	x .125	Capitalization rate
	\$1,500,000	Market required net income
	-\$1,000,000	(Stabilized net income)
	\$500,000	Income deficiency*
	+ .125	Capitalization rate
	\$4,000,000	Functional & locational obsolescence
-\$8,000,000		(Accrued depreciation)
\$7,000,000		Depreciated Improvements Value
+\$1,000,000		Land Value
<u>\$8,000,000</u>		Value by Cost Approach

\* Income not received because of functional and locational obsolescence. The capitalized income deficiency equals functional plus locational obsolescence.

approach. The answer is that we have not "cooked" any figures; holding the capitalization rate and stabilized net income constant (or allowing them to vary such that their ratio is constant) while allowing the other amounts to vary, the appraiser will always obtain the same answer when applying the cost approach in this manner. For example, in Table 2 we offer a case in which the value as estimated under direct capitalization is the same as that shown in Table 1, yet the magnitudes of reproduction cost, physical deterioration, and land value differ markedly from the corresponding Table 1 figures. Because this set of computations similarly requires the circular logic of using the property's estimated income in deriving figures essential to the cost approach, the same \$8,000,000 indicated value results.

### Conclusions and Caveats

The described method for implementing the cost approach involves creating an identity; value as estimated under the cost approach turns out to be identically equal to value as estimated under direct capitalization in the income approach because of the steps that the appraiser follows under the technique described. Because this cost approach application

adds no information to the appraisal process, there is no reason whatsoever for an appraiser to include it in an appraisal report. In fact, its inclusion is harmful, in that it can lead the report's reader to believe that independently-derived cost information provides added support for the income-based valuation analysis.

We do not mean to suggest that the cost approach itself is without merit; we take no exception to the appraisal literature's suggestion that in some situations the cost approach may yield a more reliable value estimate than do either of the other approaches. Indeed, the cost approach can be particularly useful in establishing a ceiling to value when unusual improvements are present. The authors of this discussion wish, in

of physical deterioration, functional obsolescence, and locational obsolescence for use in an independently derived value estimate based on the cost of producing specified improvements. Furthermore, we concede that there is an element of interdependence in the use of the various approaches to valuation; note, for example, that the land value estimate utilized in the cost approach springs from sales comparison methodology. Indeed, a basic tenet of appraisal theory is that the market value should at once reflect both income potential and the price of buying or building a substitute. Each approach implicitly relates to the others.

Our complaint is with the type of implementation described in the preceding text and illustrated in Tables 1 and 2,

*Because of the steps that the appraiser follows, value as estimated under this cost approach application turns out to be identically equal to value as estimated under direct capitalization in the income approach.*

fact, to further the legitimate use of the cost approach. Each of us has written earlier articles designed to help readers better understand the measurement

in which inputs to the cost approach arise so directly from the income approach that there is no independence in the resulting value estimates. Let us hope that such misuses of the cost approach become nothing more than forgotten footnotes in the history of real estate appraisal. ■

**Table 2**

Another Numerical Example of the Cost Approach Gone Wrong	
\$20,000,000	
\$2,000,000	Reproduction cost new
\$18,000,000	Physical deterioration
+ \$1,500,000	Physically depreciated building value
\$19,500,000	Land value
x .125	Physically depreciated total value
\$2,437,500	Capitalization rate
- \$1,000,000	Market required net income
\$1,437,500	(Stabilized net income)
÷ .125	Income deficiency*
\$11,500,000	Capitalization rate
- \$13,500,000	Functional & locational obsolescence
\$6,500,000	(Accrued depreciation)
+ \$1,500,000	Depreciated Improvements Value
\$8,000,000	Land Value
	Value by Cost Approach
	* Income not received because of functional and locational obsolescence. The capitalized income deficiency equals functional plus locational obsolescence.

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# Valuing a Cash Flow Mortgage

Charles W. Calomiris

In the typical mortgage lending arrangement for an income-producing property, the agreement calls for the loan to be serviced through periodic payments that do not vary with the borrower's financial situation. After such a loan has been granted, however, a financially strapped borrower may, at some point, find it necessary to renegotiate the agreement to achieve a more flexible payment plan. If the flexibility sought by the borrower involves tying payments to the cash flow generated by the mortgaged property, the lender and borrower may negotiate a workout arrangement that includes a *cash flow mortgage* to help the borrower stave off default. Under such a plan, if the cash flow generated by the property is less than the fixed payment owed under the original loan terms, then the borrower simply pays to the lender the *cash flow available*; the remainder of the fixed payment accrues as unpaid interest.

*Cash flow available* is defined as net operating income minus some special expenses. Special expenses, which are identified and defined within the loan contract, are outlays that arise because of the peculiarities of the agreement; they would not become issues for consideration if the loan arrangement were more typical. Examples of such expenses would be building improvements, trustee fees (if a trust were initially involved but would become inoperative after a foreclosure), and payments made to service an otherwise lower-priority loan. In a cash flow mortgage arrangement, default and foreclosure occur prior to the note's maturity if principal owed, plus accrued interest, exceed a specified total prior to a specified date. All remaining unpaid principal, plus all accrued interest, is due at the maturity date if default has not occurred earlier.

## A Simple Analogy

To understand the method of loan valuation described in this article, assume that default and foreclosure will occur, with virtual certainty, at some future date (for example, in 1999). In this case, the value of the note should be very close to the

current value of a fee simple interest in the property (with some adjustments, as discussed below). This situation can best be explained through a stock market metaphor. Suppose that you were offered the right to collect all cash dividends payable to a company's shareholders for five years, and the right to take possession of the shares at the end of year 5. What would that offer be worth? Obviously, the value of this two-stage offer would be the same as the value of owning the shares outright today. After all, an outright owner would collect dividends until some specified future date, and

nying a cash flow mortgage to subtract from the market value of the property the present value of approved special expenses, and of other costs (such as the borrower's costs of reporting to the lender) that would not exist if the property were immediately put in the hands of a new owner.

## A Numerical Example

If we assume that no funds from the property are applied in a manner inconsistent with the lender's interest, then the only categories of special expenses that should be deducted from revenues in the deter-

*The value of the right to collect a property's income stream for five years, and then to take possession of the property through foreclosure, should essentially equal the property's current market value.*

would then (continue to) own the shares. The value of the two-stage offer should not depend on the level of dividends that the corporation is expected to pay in the interim period, because any funds retained (and therefore not paid as dividends) should increase the value of the shares accordingly (unless such retained earnings were to be used for purposes not approved by the shareholders). In a similar manner, the value of the right to collect a property's income stream for five years, and then to take possession (through foreclosure), should essentially equal the property's value.

This stock market metaphor must be qualified in some respects, however, before we can apply it to the valuation of a cash flow mortgage. Although the holder of a cash flow mortgage note realizes returns that *relate* to the property's income, the note holder typically does not receive the same net income that an outright owner of a property would receive in the period prior to the assumed default, because of provisions of the loan agreement. As a result, it is necessary for the analyst who calculates the value of the note accompa-

mination of cash flow available are outlays that would not be faced by a new owner but that are explicitly permitted under the contract (such as debt payments to third parties, or trustee fees). For example, building (capital) improvements should increase the property value accordingly, and thus should not be included in the special expenses to be deducted.

Suppose that the allowable special expenses are \$200,000 per year. If the current market value of the underlying real estate is \$9 million, then the special expense deduction brings the note value under this cash flow mortgage down to \$9 million *minus* the present value of an annuity of \$200,000 per year until default occurs. If default is expected to take place in three years, if special expenses constitute a riskless annual stream, and if the risk-free interest rate is 10%, then that value would be \$8,502,630 (computed as \$9,000,000 minus the \$497,370 present value of \$200,000 per year for three years at a 10% discount rate).

## Complexities of the Contract

Other adjustments may be necessary as well, to the extent that costs other than

the normal operating expenses and permitted special expenses are incurred as the result of the mortgage contract. Such additional costs could fall under any of four categories: deferred maintenance, deterioration in the value of the secured real estate, legal and accounting fees, and bankruptcy costs. Although the magnitude of any such cost would depend on the specific circumstances, some general guidelines should apply.

For example, deferred maintenance and deterioration in the value of the secured asset are potentially important problems, and they are not necessarily distinct from one another. Consider that deferred maintenance could lead to a decline in the borrower's income, as tenants would pay less rent for the use of

circumstances that would surround an attempted foreclosure. If the contract leaves little room for argument as to when the lender can declare the borrower to be in default, then the attendant legal and accounting costs should be minor. However, if ambiguities in the agreement might provide the borrower with plausible arguments for not ceding possession after failing to pay specified sums, then protracted legal action is a possibility, and the costs of anticipated litigation should be taken into account.

Yet just as there are *costs* associated with anticipated foreclosure, there may be special *benefits* to the lender from the borrower's contractual default. For example, payments from third-party guarantors via letters of credit and surety

*Just as there are costs associated with anticipated foreclosure, there may be special benefits to the lender if payments from third-party guarantors place money immediately into the lender's hands.*

poorly maintained facilities; the resulting decline in cash flow available would reduce the lender's current receipts under the cash flow note. Yet unlike capital improvements, which would reduce cash flow currently available while increasing the property's value (as did retained earnings in our corporate stock example), the maintenance-induced decline in cash flow would be responsible for a *reduction* in the property's value. (A decline resulting from deferred maintenance in anticipation of foreclosure should, however, be easily reversed when the lender takes possession and resumes appropriate managerial effort in caring for the facilities.) The lender may be protected from such losses to some extent if a third party monitors managerial actions effectively, as occurs under a typical fast-food franchise agreement or shopping center lease. The typical cash flow mortgage loan contract will require the franchise or lease to be in place, with the absence thereof to be viewed as a contractual default allowing the lender to foreclose immediately.

The magnitude of the legal and accounting costs would depend on the

bonds (if permitted under applicable state law) place money immediately into the lender's hands. The potential value of such receipts should also be included in the valuation of the mortgage note.

Suppose that the net amount of the expected additional costs and benefits associated with the default and foreclosure is a negative \$1,000,000, to be received in three years. Subtracting its present value (\$751,315 if the discount rate is 10%) from the \$8,502,630 value computed above yields a value for the mortgagee's claims of \$7,751,315.

### A Few Final Points

Why is the method developed above superior to simply computing the present value of all the cash payments that should accrue to the lender prior to default, plus the present value of the amount for which the property could be expected to be sold at the time of default? First, the method presented has fewer speculative elements. Note that cash flow available does not represent the lender's total potential benefit; for example, contributions to a capital reserve account would increase the value of the lender's residual claim.

This method also obviates the need to estimate volatility in the cash flows, instead allowing the direct use of real estate values in appraising the note. Special expenses should be relatively predictable, and legal or other additional expenses (which are harder to estimate) would have to be considered separately under either valuation method.

What would happen to the value of the note if default and foreclosure were to occur sooner than had been predicted, as the result of some violation of the contract? Early default would increase the note's value, because deductions for special and additional expenses would be lower than had been anticipated (since these outlays would occur for fewer periods), while the present value of such benefits as third-party guarantees would be higher (since these amounts would be received sooner). Therefore, as anticipated default becomes more imminent, the note's value increasingly approaches the value of the underlying real estate. ■

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## Where's the Ozone Problem???

Edward C. Krug

*The development of the Sun Belt in the U.S. was facilitated by air conditioning systems driven by chlorofluorocarbons, or CFCs. Anti-CFC regulations now hold the troubling potential to reduce future development in warm-climate areas worldwide. ILLINOIS REAL ESTATE LETTER asked Ed Krug, a conservative scholar and defender of mankind's right to develop the earth's natural resources, to provide a scientist's perspective on the CFC situation. The following article outlines Krug's view of the recurring "ozone scare," which has many implications for the U.S. and world economies.*

*Being wrong does not create serious problems for those who hold the core belief that human activity is inherently bad; these individuals tend not to be bothered by little things like having their science shot out from under them.*

The idea that human activity perturbs the earth's "vital" ultraviolet (UV) radiation balance has been with us for at least 30 years — as long as any human effect on the upper atmosphere could be imagined. Back in 1963, the concern was that hydrogen gas ( $H_2$ ) released by rockets above the stratosphere could erase stratospheric ozone by blocking out ultra-high energy UV radiation, which creates the ozone shield. A *Scientific American* article published in that year warned that "The addition of a mere 25,000 tons of hydrogen could filter out much of the sun's ultraviolet radiation."<sup>1</sup>

By the late 1960s another worry had emerged; this time it was the idea, as offered by *Science* magazine, that the ozone shield would be corroded by water vapor emitted by a fleet of supersonic transports (SSTs).<sup>2</sup> It was subsequently found that the water scare did not hold water.<sup>3</sup> Yet this fact did not create serious problems for those who hold the core belief that human activity is inherently bad; these individuals tend not to be bothered by little things like having their science shot out from under them. The preconceived conclusion that SSTs are

"bad" was retained, but the bogey man became oxides of nitrogen ( $NO_x$ ) rather than water vapor.<sup>4</sup> While it is now theorized that  $NO_x$  in fact *protects* stratospheric ozone from depletion,<sup>5</sup> the  $NO_x$  ozone scare finished off any chance for building a fleet of SSTs.<sup>6</sup>

### Targeting Chemicals

After killing the SST, those wielding the ozone shield used it to hunt down even bigger game: the world's chemical industry. In 1974 we were told that a class of chlorine-bearing organic compounds (chlorofluorocarbons, or CFCs)

was going to kill us by destroying the ozone shield in the upper stratosphere.<sup>7</sup> *Nature* stated that chlorine released from CFCs destroys ozone in the upper stratosphere; "...the  $ClO$  [chlorine monoxide] compounds are most effective in destroying ozone above 30 km."<sup>8</sup> Like its  $NO_x$  predecessor, the CFC-based ozone depletion theory had every appearance of being supported by scientific evidence, from its claim of "scientific consensus" to its scientific-appearing complexity. Yet when serious analysts finally began looking at stratospheric ozone depletion by satellite in the mid-1980s, they found that ozone destruction occurred not in the upper stratosphere, where it had been predicted, but rather in the lower stratosphere.<sup>9</sup> Also, the chlorine values were lower, and rates of ozone depletion were more rapid, than had been predicted by the CFC theory.<sup>10</sup>

Yet the fact that the CFC-based destruction theory could not predict ozone's location, chemistry, or depletion rate did not matter. The conclusion that CFCs destroy ozone was retained, with yet another straw man fabricated to support CFC dogma: photocatalytic

destruction of ozone on ultra-cold ice particles.<sup>11</sup> Yet it soon became apparent that the ozone phenomenon did not fit this theory, either. While the ice particle theory predicts that ozone depletion must occur around "a 1- to 2-kilometer thick layer centered at an altitude of 17 kilometers,"<sup>12</sup> ozone depletion also occurs appreciably below and above the ice clouds.<sup>13</sup> So, like its predecessors, the latest ozone theory has been disproved. But, because no excuse has yet been fabricated for blaming man for what is going on, the offending real world data that invalidate the standing theory are simply ignored. "Scientific consensus" continues to endorse this latest in a long line of disproved theories. It is unfortunate for the ozone depletion theorists that reality does not conform itself to consensus. Reality shows that the ozone scare is dogma masquerading as science.

### Modern Day Inquisitors

Individuals of reason can take some comfort in the long and distinguished criticism of dogmatic arguments. Sources of this criticism range from Biblical warnings against hypocrisy ("How dare you say to your brother, 'Please let me take that speck out of your eye' when you have a log in your own eye? You hypocrite!")<sup>14</sup> to observations by modern scientists. For example, even before the CFC scare was fabricated, J.E. Lovelock showed that natural organic chlorine and bromine gas production is at least thirty times as great as today's peak global CFC production, and that natural inputs of organic chlorine and bromine into the stratosphere predominate over CFCs.<sup>15</sup> But reasoned arguments fail with the unreasonable. While real science is intellectually alive and fragile — the core skepticism of the scientific method allows a single factual bullet to kill a scientific theory — ozone dogma has the durability of a zombie because it never was intellectually alive.

More specifically, the advocates of a politically-correct scientific theory direct our attention to observations that appear to support their views (e.g., to the casual

observer, stars look as though they circle the earth). They also suppress any observations (e.g., the moons of Jupiter), along with any lines of reasoning and research, with the potential to invalidate their views (recall the actions of those who attacked Copernicus and Galileo). The ozone scare has all of the above elements: reported observations have been made to appear to support the theory (stratospheric ozone is decreasing as stratospheric chlorine is increasing),<sup>16</sup> while the data have been cleansed of invalidating observations, and analysts who offer scientifically-based opposing views are condemned as immoral.

History shows that the Inquisitors occasionally stumble onto a valuable bonus: any mistake made by a skeptic

facts is that enormous amounts of sea salt are converted into chlorine gas in dry atmosphere. The second is that this chlorine gas, along with ozone-poor air, is lofted by dry atmosphere into the stratosphere on a global scale and in ever-increasing amounts.

The impact of the first fact is that atmospheric processes convert sodium chloride sea salt ( $NaCl$ ) into chlorine gas ( $HCl$ ). This salt to chlorine gas conversion has been known since the 1930s as the Cauer Effect. Regardless of the pros and cons of arguments on whether sodium ( $Na$ ) is present in stratospheric aerosols, the Cauer Effect blows apart the "because we don't observe sodium, sea salt does not contribute chlorine gas to the stratosphere" argument since the

chlorine put into the atmosphere each year are ten times as high: approximately ten billion tons of salt, containing six billion tons of chlorine.<sup>21</sup>

## Salting the Data?

Thus the data from scientists who study atmospheric sea salt tell us that the *CFC* critics' estimate of natural atmospheric chlorine is not far too high; it is far too low! Increasing recognition of in-atmosphere processing of sea salt has caused the estimates of the amount of sea salt put into the atmosphere to rise from one billion tons per year to ten billion tons per year. Older estimates were based on an assumption that 100% of sea salt over oceans fell to earth in raindrops.<sup>22</sup> But estimates of the atmospheric sea salt cycle grew immensely as the assumed percentage of salt deposited in rain over oceans was reduced from 100% to 10%, and then down to 5%.<sup>23</sup> Conversely, the assumed proportion of sea salt cycled over the oceans in dry or gaseous form grew to 95% of the total. The estimate of sea salt cycled in dry form over dry land and converted to dry gas has remained unchanged from its early level of 67%.<sup>24</sup>

As estimates of salt drying shot upward, so did estimates of the amount of *HCl* produced; these estimates now range as high as 400 million tons of *HCl* per year.<sup>25</sup> Note that only about 1 million tons of *CFC* chlorine are produced per year, and only about 1% of atmospheric *CFCs* are said to be broken down to *HCl* each year.<sup>26</sup> Thus we see that sea salt produces approximately one thousand times as much *HCl* as *CFC* zealots say is produced from total atmospheric *CFCs*. Careful scientific analysis has shown that 95% of this chlorine over oceans — and 67% over land — is not scrubbed out by rain. The massive drying of chloride salt in dry atmosphere creates hundreds of millions of tons of dry *HCl* gas!

Rain does not scrub all *HCl* from global atmospheric circulation, which is driven by massive injection of surface tropospheric air into the stratosphere. There is no magical "glass ceiling" that breaks only for the rare spectacularly explosive volcanic eruption, a fact of which ozone zealots apparently are aware. For example, the February 14, 1992 issue of *Science* published an

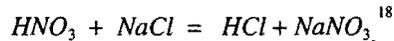
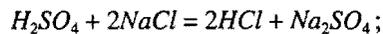
*We now are in the position to see that ozone enthusiasts have provided fragmented information, and thereby have blinded us to the overall picture.*

can be exploited to discredit skepticism. And skepticism, the core of the scientific method, is the dogma killer. Indeed, as noted in *Science* magazine,<sup>17</sup> such an error has been discovered and exploited. Critics say that *CFCs* are too heavy to get up into the stratosphere, while also asserting that much heavier sea salt particles do get into the stratosphere. The Inquisitors have successfully used this mistake (along with the critics' inability to explain why rains do not wash all natural chlorine gas out of the atmosphere) to discredit scientific skepticism regarding *CFC* ozone depletion.

## A Missing Piece of Earth Science: Nature's Chlorine "Hurricane"

We can go to the scientific literature for some elucidation. In one fell swoop, we are not only able to illustrate all four facets of the strategy behind scientific oppression; we can also reconcile the inconsistency described above by showing how the reported trends in ozone and chlorine are explained by the earth's strengthening natural chlorine hurricane. Two important facts have been missing from the ozone debate. The first of these

Cauer Effect naturally separates chlorine (*Cl*) from sodium in sea salt by converting *Cl* to *HCl* gas, as shown in these chemical formulas:



In other words, when *NaCl* mixes with a less volatile acid, it becomes *HCl* in gaseous form. This conversion occurs in dry atmosphere (it is not an "acid rain" issue) and without the presence of *CFCs*.

It turns out that *HCl* created from sea salt is precisely the type of chlorine to which chlorofluorocarbons must be converted if they are theoretically to destroy ozone. Indeed, *HCl* is the needed chlorine precursor theorized for ozone destruction, as stated in arguments used against Dr. Dixie Lee Ray and other critics.<sup>19</sup> The ozone Inquisitors also have screeched that two researchers greatly overestimated the amount of chlorine entering the atmosphere naturally at 650 million tons per year<sup>20</sup> (600 million tons of this chlorine is present in 1 billion tons of sea salt). Yet the summary of more recent research on amounts of sea salt

interview of J.G. Anderson, the head scientist of NASA's infamous 1992 ozone scare. *Science* reported: "If Anderson's guess is right, it would mean that, like the polar regions, the tropics can be a center for intensified production of chlorine monoxide...That isn't so far-fetched, notes Anderson, when you consider that because of the cooling effect of the exceptionally strong updrafts in the tropics, the lower stratosphere there is the second coldest region on earth (the coldest being the stratosphere over the poles)."<sup>27</sup> Yet Dr. Anderson and like-minded colleagues can not have it both ways. If adiabatic cooling by massive injection of lower atmosphere air is what makes the tropical stratosphere so cold, we can not say that the only way that nature's chlorine can make it into the stratosphere is from the rare humongous volcanic eruption.

What Dr. Anderson was talking about in *Science* is called Hadley circulation — atmospheric science textbook material. The injection of massive amounts of surface air into the stratosphere is also why the tropical stratosphere is relatively ozone-poor; after all, this stratospheric air recently arrived from the earth's surface.<sup>28</sup> As the injected air travels poleward in the stratosphere, it ages and gains ozone from high-energy UV radiation. As it travels, stratospheric air gradually sinks. Eventually, this ozone-enriched air reenters the lower atmosphere (troposphere).<sup>29</sup> This cycled air — troposphere to stratosphere, then back to troposphere — is destined to be recycled: sucked up into the stratosphere and cycled again and again and again. There is no "glass ceiling."

## Blowin' In the Wind

Furthermore, the global atmospheric circulation has been picking up for decades: winds over the oceans have been getting progressively stronger. For example, "We also show from the observations that, in the period 1950-1981, there has been a trend towards increasing trade winds over much of the Pacific Ocean. A similar trend has also been observed in Atlantic Ocean data."<sup>30</sup> It is not surprising that Hadley circulation of air into the stratosphere has also been intensifying for decades, and "Strengthened Hadley Cell

circulation...enhances the transport of ozone-poor air into the low stratosphere ...[transport of] manufactured halocarbons and naturally occurring (ocean derived) chlorine and bromine compounds, is increased."<sup>31</sup> We must also consider that as stratospheric ozone is said to be decreasing, tropospheric ozone is also said to be increasing.<sup>32</sup>

At this point we are in the position to see that ozone enthusiasts have provided fragmented information, and thereby have in effect blinded us to the overall picture. And we are worse off than the blind men who studied the elephant, because we have not simply been blinded; in fact, some of what we were told to touch was not elephant at all. With our figurative blindfolds now off, we can

*We are told that pollution causes two trends: man-made "ozone-depleting chemicals" are blamed for a stratospheric ozone decrease while man-made "ozone-producing chemicals" are blamed for a tropospheric ozone increase.*

see that the popular CFC theory does not fit with real world observations. We also see that we were kept in the dark about nature's chlorine hurricane.

In addition, we are now in a better position to examine the legs, body, tail, tusks, and ears of the critter. The rate of air transfer between the stratosphere and troposphere is increasing along with a reported increase in tropospheric ozone and a reported decrease in stratospheric ozone. Nevertheless, all we seem to hear is that pollution causes both of these reported ozone trends: one set of man-made "ozone-depleting chemicals" is blamed for a stratospheric ozone decrease while another set of man-made "ozone-producing chemicals" gets the blame for a tropospheric ozone increase. We can see that enhanced convection of surface air into the stratosphere necessarily increases input of chlorine-rich, ozone-poor air into the stratosphere results from the earth's truly massive natural chlorine "hurricane." Yet all that we hear from the environmental chic clique is that man-made chemicals are responsible for the reported trends of increasing stratospheric chlorine and decreasing ozone.

## Clever Zealots

In summary, we have been cleverly manipulated. By careful acts of omission and commission, the ozone zealots have fed us only those "facts" and theories that inexorably lead to the conclusion that CFC erosion of stratospheric ozone threatens to sterilize all life on planet earth. Indeed, advocates of an ozone-based doomsday theory have created science fiction so realistic that *Star Wars* creator George Lucas should be envious. Unfortunately, unlike fantasy movies, the ozone scare is not designed to entertain us. Like the old self-serving cosmology against which Copernicus and Galileo stood, this "science" is the self-serving dogma of social engineers. Specifically, the ozone scare has succeeded in lending

an air of legitimacy to Greenthink's core pessimism regarding humanity and the movement's self-serving desire to deconstruct the traditional people-empowering (tyrant-restraining) institutions of modern Western Civilization. As has occurred since ancient times, the tyrants claim to be mankind's benefactors.<sup>33</sup> Serious scientists, along with informed individuals in government, the professional community, and academic institutions, must work together to resist this new form of tyranny against our prosperity and our democratic traditions. ■

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*Advocates of an ozone-based doomsday theory have created science fiction so realistic that STAR WARS creator George Lucas should be envious.*

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16. Unfortunately, as the litany of "scientifically-supported" Green crises fails to materialize, the result of science advocacy has been the documented loss of public faith in science. Sadly, bipartisan polls show that the institutions needed by the public to make informed decisions are now largely disabled by environmental advocacy: see Krug. *Journal of Hydrology* 128 (1991): 1 - 27. Furthermore, we are forced to continue our questionable view of establishment "data" because we continue to be fed questionable "data." For example, on page 9 of the January 2, 1995 issue of *Chemical & Engineering News*, "Satellite Data Confirm CFC Link to Ozone Hole." NASA claims that its latest remote sensing data show virtually no chlorine gas (hydrochloric acid, HCl) in the lower atmosphere. NASA concludes that these data prove that chlorine comes from the breakdown of CFCs in the stratosphere and not from natural sources lower down. But numerous published peer-reviewed studies have actually sampled the air in the lower atmosphere and have measured, time and again, hundreds of millions of tons of HCl (thousands of times the amount said to be released by CFCs) where NASA says there is essentially none. Therefore, even the bulk of the so-called obvious supporting observations said to support environmental theories must be taken with a grain of salt.
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## Environment Debate Continues

While Ed Krug has been a consistent proponent of reason and restraint in the environmental debates, his voice is not the only one that opposes the severe regulation championed by some advocates of environmental protection. A recent news release from the Washington, D.C. based Environmental Policy Task Force bemoans the proposed ban on the use of chlorofluorocarbons (CFCs). The Task Force maintains that the association between the ozone layer and ultraviolet radiation relates to UV-B rays, not to the UV-A rays that have been linked with the serious skin cancer known as malignant melanoma. The release further holds that any possible CFC impact on the ozone layer can not yet be known because accurate ozone measurements have been collected only since the late 1970s. Such natural phenomena as changing weather patterns, volcanic activity, and solar cycles can also affect the production of ozone. In fact, European scientists observed depleted ozone as early as the 1940s, long before CFCs were widely used. Furthermore, according to the release, new ozone is continuously created.

The popular press has also reported added support for Krug's view, as expressed in an earlier *Illinois Real Estate Letter* issue ("Global Warming: Could We Be So Lucky?" Summer/Fall 1993), that global warming, if it were to occur, would be tremendously beneficial to mankind. A recent *Business Week* article tells of the results of U.S. Department of Agriculture research on carbon dioxide, a compound created by fossil fuel combustion and believed by some scientists to promote global warming. The government researchers applied pure carbon dioxide gas onto large outdoor Arizona test plots, and the result was a substantial increase in yields of wheat and cotton crops, along with a reduction in water used in wheat production. In addition, the U.S.D.A. scientists have theorized that the crops' absorption of carbon dioxide can serve to reduce the impact that the gas might otherwise have in raising the earth's temperature.

## *Real Estate Values and Historic Designation*

*Paul K. Asabere and Forrest E. Huffman*

Both the federal government and local jurisdictions across the country exercise regulatory powers over older properties through historic preservation laws. This article focuses on the growth of federal historic preservation legislation, and on the impact that historic preservation ordinances exert on real estate values.

### **A Brief History of Historic Designation**

The preservation movement in the United States began as a private effort in the mid-1800s. During that period, individuals and organizations, members of which typically were women from affluent families, sometimes sought to prevent new construction on sites containing monuments that would otherwise have been demolished. Only rarely did these efforts attract national attention, as when the Mount Vernon Ladies' Association undertook their successful effort to save George Washington's home.

People think of the historic preservation movement as a fairly recent phenomenon because the federal government did not become widely involved in preserving and rehabilitating historic property until the mid-1970s. Yet federal preservation efforts had begun on a smaller scale much earlier, with attempts to preserve land as National Parks under the 1906 Antiquities Act. These efforts expanded in 1924, when the National Park Service was created and given responsibility to oversee federal parks and other properties.<sup>1</sup> They further grew in 1935, when the Historic Sites, Buildings, and Antiquities Act gave Congress its first statutory power over historic improvements not located on federal lands.

### **The Taxman Giveth**

Prior to 1976, however, federal laws had provided no *incentives* for the preservation or rehabilitation of deteriorated historic buildings. The various programs offering tax benefits for preservation began with the Tax Reform Act of 1976. The Act amended depreciation schedules to allow for the writeoff over five years (rather than the standard 25 – 30 years) of costs relating to rehabilitating historic

properties. As an alternative, the building owner was permitted to depreciate the structure plus rehabilitation costs on an accelerated basis (150% or 200% declining balance, rather than straight line or 125% declining balance). The Act also encouraged rehabilitation by ending incentives that had served to encourage the demolition of older (and therefore, in some cases, historic) buildings.

On the heels of the 1976 tax legislation came the Revenue Act of 1978, which created a rehabilitation tax credit equal to 10% of rehabilitation costs for older commercial and industrial buildings. As an alternative to claiming the tax credit, an owner could utilize the 60-month amortization schedules from the 1976 Act on the depreciable basis of a qualifying property.

By 1981, though, only the rehabilitation credit remained as a federal incentive for rehabilitating historic property. The Economic Recovery Tax Act (ERTA) of 1981 established a 3-tiered investment tax credit (ITC) system for old and historic buildings. The credit ranged from 15% for 30-year old buildings to 20% for those more than 49 years old, and a 25% credit was allowed for any structure certified as "historic" by the Secretary of the Interior. ERTA also established stringent requirements for rehabilitation approval.

### **The Taxman Taketh Away**

These ITCs were offset somewhat by the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982, which required the reduction of the building's depreciable basis by 100% of any investment credit taken for most older buildings and 50% for historic buildings. New alternative minimum tax requirements also curtailed the tax reduction possibilities available through historic renovation.

Further reductions in incentives were seen with passage of the Tax Reform Act of 1986 (TRA). One provision of this legislation was a reduction in ITCs to 10% and 20% for old and historic structures, respectively. Even greater impact came from a new method of classifying income and an accompanying

reduction in investors' ability to offset taxable income with losses realized on real estate investments. TRA created three classes of income: active, portfolio, and passive. Losses realized on rental real estate were classified as passive, and therefore could be used only to offset taxable gains from other passive investments; such losses could no longer offset salary ("active") income or other investment ("portfolio") income.

An exception does allow the rental property owner who actively participates in management to deduct up to \$25,000 per year of passive losses in excess of passive income. At the 28% maximum tax rate that applied when TRA was passed, a passive investor therefore could have received a tax benefit of no more than \$7,000 per year (maximum rates now are higher). Because of the annual limitations, any excess negative taxable income must be carried forward to offset positive taxable incomes in subsequent years. As a result, some tax benefits, including ITCs, can be realized only at a future date when the property is sold.

The elimination of favorable treatment of capital gains further reduced the value of tax benefits previously enjoyed by real estate owners who preserved their properties. Combined with longer depreciation schedules, the benefits of rehabilitation ITCs were greatly reduced for many investors who might have considered buying historic properties. On the positive side, TRA created an ITC for the rehabilitation of low income housing; this credit can be used in combination with the ITC for historic rehabilitation.

What impact do the various tax enactments of the past two decades seem to have had on historic properties? Between 1976 and 1994 nearly \$17 billion was invested in nearly 26,000 rehabilitation projects. However, the number of historic properties rehabilitated annually has declined substantially since the early 1980s. In fiscal year 1984, the National Park Service approved 3,214 projects accounting for \$2.1 billion in investment. Following the 1986 legislation, however, investment fell precipi-

tously. In 1994, only 524 projects, worth \$483 million, were approved. This serious decline in rehabilitation activity suggests that the availability of ITC benefits might have a major impact on rehabilitation and preservation efforts.<sup>2</sup> The constantly-changing nature of federal laws on historic preservation incentives, combined with their conflicting results, indicates that the federal government has yet to precisely define its preservation goals, that it does not know how best to achieve its goals, or both.

## Value Impacts

A key issue is whether historic preservation laws have an impact on property values. While there have been several attempts to ascertain the impact of federal historic designation on property values and real estate markets,<sup>3</sup> it is difficult to draw solid conclusions. One reason is that the study areas encompass a variety of local real estate markets, so results derived in a particular study might not be applicable to other geographic areas. Furthermore, local historic preservation ordinances (discussed below) can differ considerably from one jurisdiction to another, so the interplay between federal and local laws is not uniform. In addition, the administration of federal laws at times requires judicial interpretation, and because the areas involved in these studies were located in different federal court districts, accepted practices in some areas might be subject to question in others. Still, despite the uncertainty, some conclusions are beginning to emerge.

First, although conventional wisdom would suggest, at worst, no impact and, at best, a positive impact associated with the ITC incentives, the effect of federal historic designation on investment properties appears mixed, with impacts appearing negative in some studies and positive in others. Second, federal historic preservation legislation appears to yield positive results for residential properties, probably because of neighborhood stabilizing effects (owner-occupied residential property is not eligible for federal ITCs). Studies attempting to isolate the impact of historic designation by local authorities appear to have provided more definitive results. Some observations regarding local areas are worth discussing.

## Local Historic Designation

When local officials select an area for historic preservation district status, they are likely to utilize a combination of restrictions and incentives in achieving compliance. Restrictive ordinances establish procedures for the designation and treatment of locally certified historic property. It is common for local commissions or other authorities to reserve the right to review and/or approve all permits for the construction, repair, alteration, or demolition of designated properties. Incentives serve to reward owners whose maintenance or rehabilitation efforts comply with historical standards.

Such incentives can be included in local zoning codes via ordinances that allow for lot mergers, the transfer of

allows the owner of a certified historic property to apply for a 15-year freeze on assessment increases. North Carolina allows a locally designated historic property to be taxed based on half its market value; the tax savings is recaptured if the property is "decertified." Tennessee allows a total exemption from property taxes for 15 years if the historic structure is totally rehabilitated under established guidelines. In return for this exemption, the owner must agree not to demolish or significantly alter the structure during the exemption period. While Pennsylvania law generally prohibits tax relief, a 1971 act permits localities to offer exemptions from tax during various periods, and further allows exemptions for a percentage of rehabilitation expen-

*The value impact of local regulations, which involve specific combinations of incentives and restrictions, can be negative when restrictive ordinances place substantial limitations on owners' rights.*

development rights (TDRs), or bonuses. Mergers permit the joining of adjacent lots under separate ownership for the purpose of clustering development, thus potentially preserving a historic property. TDRs permit the sale of unused development potential, thereby letting a site's owner recoup part of the opportunity cost associated with historic designation by selling his development rights to another property owner who wishes to develop more intensively than would otherwise be permitted. Localities can also combine flexibility ("bonuses") regarding floor areas, based on special design features, with such specific public goals as deeper setbacks and larger open areas.

Historic preservation can also be encouraged at the local level through the use of rehabilitation grants and low interest rate loans, or through property tax abatement. Real estate tax constitutes one of the largest expenses for the typical property. Local areas can create tax relief programs by freezing assessments on historic properties, or by exempting rehabilitated improvements from tax.

Programs vary considerably, often based on state laws. Oregon, for example,

ditures on properties in deteriorated neighborhoods, with special exemptions for non-residential improvements in blighted areas. The city of Philadelphia, with some of the oldest structures in the nation, also makes moderate use of these exemptions, although they are not restricted to historic rehabilitations.

## Two Philadelphia Cases

Philadelphia is unique in that its original historic preservation regulations, passed in 1955, did not allow for the creation of historic *districts*. (Such districts were not authorized until a revision of the historic ordinances was undertaken in 1985.) As a result, more than 50,000 *individual buildings* are designated "historic" by the city. After the 1985 revisions, the city's historic ordinances were struck down in a surprising move by the Pennsylvania Supreme Court when the city attempted to regulate the interior of a local movie theater. (After considerable public debate and outcry in the ensuing years, the Court reversed its original decision in 1993.)

A recent study<sup>4</sup> of local historic designation's adverse impact on Philadelphia apartment buildings offers evidence

that historic designation can be associated with lower values. This study found price discounts of about 24% relative to values of non-designated apartment properties for the sample analyzed. The results support the view that a severe regulatory framework can produce adverse impacts on investment property values.

Another recent study,<sup>5</sup> based on data relating to facade easements<sup>6</sup> for Philadelphia condominium buildings, found this type of easement to be associated with a value discount of approximately 30%. However, the city's facade easement program is one of the most stringent in the country in terms of restoration requirements, maintenance obligations imposed on owners, and monitoring for compliance. Yet as we have noted regarding local historic designations in general, it is expected that less (more) stringent programs would be associated with smaller (greater) value discounts relative to unaffected parcels.

## Conclusions

Though results from studies that attempt to quantify the impacts of federal historic designation are somewhat mixed, the impact of local designation appears more certain. Specifically, the impact of local ordinances, which depends on specific combinations of incentives and restrictions, can be negative when restrictive ordinances place substantial limitations on owners' rights. Local incentives in the form of property tax abatements, grants, loans, and other bonuses may be critical in making local historic preservation palatable to property owners.

Policy makers and preservationists must exercise care in their efforts to preserve historic property. The costs incurred, especially those associated with stringent restrictions on alteration and development, can cause net losses in the amount of local property tax collected. Preferable are incentives that encourage the rehabilitation and use of historically significant properties. The budgetary impacts on local authorities can be quite pronounced, as the static conditions inherent in historic preservation regulation can limit the values of individual properties and also reduce the potential for local economic growth and development that otherwise would occur. ■

## Notes

1. The Antiquities Act (P.L. 59-209, 34 Stat. 225) created several national park sites and provided for protection of historic structures on federal land. Ten years later, the National Park Service was given authority to administer all historic structures in National Parks. Today, the Park Service remains the federal government's primary administrator for federally certified historic properties.
2. See, for instance, U.S. Department of the Interior, *Tax Incentives for Rehabilitating Historic Buildings: Fiscal Year 1994 Analysis*, February 1994; and R. Guenther, "Historic Rehabilitations Drop Despite Continued Tax Credit," *The Wall Street Journal*, June 3, 1987: 1. Alternative minimum tax requirements may also have contributed to a reduction in the use of the tax credit.
3. Studies include those by Lockard and Hines (1983), Benson and Klein (1988), Asabere et al. (1989), Ford (1989), Nelson and Talley (1991), and Asabere and Huffman (1991).
4. See Asabere, Huffman, and Mehdian (1994).
5. See Asabere and Huffman (1994).
6. Historic facade easements are grants or donations by owners of historic property that preserve the outside fabric of historic buildings. In return for this encumbrance of his rights, the owner receives a federal income tax deduction theoretically equal to the value of rights lost. Subsequent buyers are faced with the restrictions imposed by the facade easement, but do not receive tax advantages. It is expected that buildings subject to prior grants of such easements will sell at discounts relative to the values of unencumbered properties. However, as noted above with regard to local historic designations in general, the exact impact would be a function of the stringency of the program.

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- Dr. Asabere is a University of Illinois graduate. Both he and Dr. Huffman serve on the faculty of the Department of Legal and Real Estate Studies at Temple University in Philadelphia.*

## The Compensation Question

Recent federal court rulings indicate that regulation can be a "taking" of private property for the public's benefit, for which the Constitution requires "just compensation." Property rights advocates therefore can argue more persuasively than in the past that a reduction in an owner's property value through historic designation should be reimbursed by the designating agency. *Illinois Real Estate Letter* takes the occasion of the accompanying Asabere/Huffman article to remind readers of the need for such compensation to be efficient.

Proponents of preserving historic properties through uncompensated regulation might state that value effects on the regulated properties are only part of the story. For example, a historic district can create beneficial external effects; these effects might benefit such nearby uses as hotels and restaurants. Such positive externalities may indeed result from restrictions that accompany historic designation, and these effects certainly should be factored into the "benefits" side of the cost/benefit analysis that accompanies the government's decision. Yet the creation of some benefits does not relieve the government of a moral (and, as increasingly seems true, legal) duty to compensate, particularly if benefits received are not directly proportional to costs suffered at the individual level.

Even providing financial payments can fail to adequately compensate some owners whose property rights are compromised through historic designation or other regulatory takings. Under the compensation guidelines currently followed by governmental units, an owner who loses value through the public's acquisition or regulation of his property receives as compensation, at most, an appraiser's estimate of the "market value" that could be received in an arm's-length sale of the specific rights involved. Yet the owner who views his property as unique, perhaps because of sentimental value or specialized improvements, would not willingly sell the rights for their market value; so market value compensation is, in many cases, insufficient reimbursement.

Incentives that induce owners to take action voluntarily assure that any movement of rights is from those who value them less to those who value them more. Thus, while required compensation for regulatory takings imposes a measure of discipline on the public sector, voluntary compliance is better still. (We applaud a recent Oregon law requiring localities wishing to undertake historic preservation to obtain affected owners' voluntary compliance through tax incentives.)

# Campus, Off-Campus Activities Fill Spring for Rho Epsilon

The Rho Epsilon chapter of the Lambda Alpha International Student Association (LAISA) at the University of Illinois experienced a Spring 1995 semester of exciting professional activities, both on-campus and in Chicago. With a total of 50 active student members, the U of I chapter also remains one of the leading collegiate chapters in the country.

### Professional Events

The first professional event of the Spring semester was a visit to campus by **Peter Baksa** on February 15. The University of Illinois graduate, who serves as president of Champaign-based First National Real Estate, Inc., spoke on "Rehabilitation of Distressed Buildings." A second February event featured **Tom Murray**. The Bank One lending officer discussed "Commercial Lending for Real Estate" at a February 22 meeting.

Two professional events were held in March as well. On March 1, U of I alumnus **David Boyce** of Ernst & Young's Chicago office spoke to the chapter on "Appraisals of Commercial Real Estate." A March 8 meeting featured Springfield's **Sam Nichols**; the RE/MAX broker shared from his experiences on "Commercial Brokerage and Development in Springfield."

April was the Spring semester's busiest month. "Real Estate Financial Services" was the discussion topic during an April 12 campus visit by **Brad Rust** of Chicago-based Heller Financial, Inc. April 19 marked the return to campus of **Robert Treleven**, a U of I graduate and former ORER research assistant. The Duff & Phelps analyst spoke on "Real Estate Credit Analysis." CB Commercial's Senior Vice President **Todd Caruso**, who has spoken at numerous Rho Epsilon events, was featured once again on April 26; he discussed "Commercial Brokerage in Chicago" with the chapter.

A field trip was also scheduled during April. Professor **Roger Cannaday**, who has long served as the organization's principal advisor, accompanied a small group of students on a visit to two Chicago organizations on April 21. The group met in the morning with Price

Waterhouse's Real Estate Valuation Services division. University of Illinois graduate **Sean Cannaday** spoke with the visitors on the international accounting/consulting firm's extensive commercial real estate appraisal activity. The afternoon's agenda took the travelers to The Habitat Company's management offices. In addition to touring the company's famed multi-use Presidential Towers, the U of I group met with Habitat vice president **Janice Stewart**, leasing manager **Joanne Moran**, administrative manager **Gary Lundemo**, and maintenance director **Sergio Polo**.

### Real Estate Alumni Luncheon

During the noon hour the students joined 60 Illinois alumni and their guests at the 19th semiannual Chicago luncheon for University graduates working in fields relating to real estate. The luncheon series is organized by the Office of Real Estate Research as a means of bringing alumni together to discuss matters of professional interest and to hear outstanding speakers. The speaker at the Spring 1995 luncheon was **Bruce Abrams**, president of LR Development Company, which specializes in renovating Victorian and other classic buildings in Chicago. The firm recently redeveloped the historic Chandler Apartments and U of I graduate Hugh Hefner's former Playboy Mansion. Mr. Abrams' topic was "Trends in Contemporary Housing Development." Thanks go again to **Gene Stunard** for his assistance in arranging for the use of the Chicago Yacht Club facility, where the luncheons typically are held.

### Chapter Officers

The students who have served as chapter officers during the Spring 1995 semester are: **Sara Armstrong**, a senior from Springfield, president; **Sherie Yearton**, a senior from Wonder Lake, vice president; **Britt Kelly**, a senior from Lake Forest, treasurer; and **Jamie Bukvich**, a senior from Bristol, secretary. Those who have been elected to hold office in the coming Fall semester are: **Susan Pruski**, a senior from Palatine, president; **Mary Jane Potthoff**, a senior from Spring Valley,

vice president; **Brent Shepherd**, a senior from Danville, treasurer; and **Alex Zylberglait**, an MBA student from Los Angeles, California, secretary.

### New Scholarships Awarded

Three University of Illinois students have received prestigious financial awards from off-campus organizations since the prior *Illinois Real Estate Letter* issue was distributed. **Jody Garbisch**, a junior from Rochelle, and Rho Epsilon president-elect **Susan Pruski** were awarded Morgan L. Fitch Scholarships by the Illinois Real Estate Educational Foundation (REEF). This scholarship is awarded each year to one or more U of I students pursuing careers in real estate. The award honors Mr. Fitch, an Illinois graduate who became a prominent Chicago Realtor® and held important leadership positions in state and national Realtor® organizations; funding has been provided through a grant from the Fitch family. Each of the two 1995 - 96 winners has received \$2,000. The Fitch scholarship program is among several administered by REEF, the real estate education arm of the Illinois Association of Realtors®.

Each year since 1985 RREEF Funds has awarded up to \$10,000 in graduate fellowship money to U of I students. This year's recipient is newly-elected Rho Epsilon secretary **Alex Zylberglait**. The RREEF Funds, headquartered in San Francisco, manages \$5.9 billion in pension fund real estate investments for more than 130 corporate, public, and international clients. In addition, RREEF Real Estate Securities Group provides clients with investment opportunities in publicly-traded real estate investment trusts. The firm has 97 property management offices nationwide, along with acquisition offices in San Francisco, Chicago, and New York.

### A Note of Thanks

ORER thanks the many fine professional people whose names are highlighted above for their generous assistance to the students. We also commend the chapter officers and scholarship recipients for their effort and academic excellence. ■

(continued from page 16)

White citizens, who historically have tended to enjoy relative economic benefits, would want to be long in the Goodwill Contract in order to hedge *their* relative income risk. They would thereby make money on the Contract if the index rose (i.e., if minority incomes grew relative to white incomes). Whites who believed that minorities were gaining relative advantages (through affirmative action or merely an improved economy) could speculate in the index by buying more contracts than would be needed to insulate them from expected relative declines in income. Again, individuals with the least optimistic views of their group's fortunes would want to take the most extreme financial positions in the Goodwill Contract.

### Choose Your Partner

The minority-to-white income ratio is merely an illustration of a more widely applicable principle. Nearly everywhere there are groups sensitive to their relative successes; perceived gender inequality, for example, is particularly galling to some in the U.S., while religion may be the defining basis for hostilities in some other places. Consider that some men believe women to have received preferences in employment, while some women hold the opposing view that the old boys' club is getting stronger. But regardless of the group with which a person identifies, if he or she believes the "grass to be greener on the other side of the fence," then he or she can own a share of the rival group's success simply by buying or selling a Goodwill Contract.

Whether speculating or simply hedging risk, each trader would implicitly take financial positions in the welfare of the rival group. Holding an interest in the

other group's welfare inclines one to think more favorably toward that group. The Goodwill Contract would realign intergroup interests the way that an ESOP or pension fund invested in stocks brings labor to understand capitalists' concerns.

### Getting Started

An essential first step in developing Goodwill Contracts would be creating a credible index, through the frequent estimation of median incomes (or some other measure of a group's relative success). While Bureau of Labor Statistics quarterly data could be helpful in calibrating the index,<sup>3</sup> a weekly or monthly series might be more useful. A market research firm could measure group well-being based on a weekly polling of a large and stable panel of individuals, much as Nielsen compiles television ratings. The index would further have to be sufficiently variable to produce an active futures market (quarterly income data have, in the past, been sufficiently volatile). Finally, it would be necessary to persuade a major financial player (perhaps the innovative Chicago Mercantile Exchange) to facilitate trading in one or more (minority vs. white, men vs. women) contracts.

One impediment to acceptance would be that many potential participants would fear the downside risk of futures trading (holders of futures contracts can, theoretically, lose unlimited amounts). An obvious fix would be to base the arrangement not on futures but on options, for which the buyer's upside possibility is unlimited while the potential loss is limited to the price paid for the option. In the context of the Goodwill Contract, we might expect that the typical household would *buy* options (puts for minorities, calls for whites), whereas sophisticated investors

would speculate by *selling* puts and calls.

Payoffs are shown in Figures 1 and 2. The first figure illustrates the situation for the minority individual who fears that the ratio of minority to white income will fall. If the ratio is greater than  $R_2$ , then the minority income situation is favorable and his option position is worth  $-P$ , the price spent for the option. If the ratio is lower than  $R_2$ , however, his Goodwill option position begins to gain value, becoming positive for ratios below  $R_1$  (as his income situation becomes increasingly unfavorable). Figure 2 shows the white worker's situation; for ratios below  $R_3$  he holds a sufficient income advantage that his option position is worth  $-P$ . For higher ratios, however, the white's income situation becomes increasingly unfavorable but his option position gains value, becoming positive beyond  $R_4$ . In each case, the individual's gain (loss) in relative income can be offset by a loss (gain) on the Goodwill option position.

The beauty of the Goodwill Contract is deep and abiding. Individuals of any group who took extreme ideological positions against another group would be driven by conviction and self-interest to take the most extreme financial positions in the Goodwill Contract. Holding these financial positions would, in turn, generate moderation in their ideology. ■

### Footnotes

1. As with all futures contracts, problems would arise if someone who can modify the outcome were able to trade the contracts. Therefore, we would do well to outlaw trading in Goodwill Contracts by members of the executive, legislative, or judicial branches of government.
2. There are, no doubt, exceptions to this rule. Some minorities' incomes are more highly correlated with the median white than with the median minority income. Similarly, some whites' incomes are highly correlated with the median minority income. Such an individual would hedge by trading as though he or she were a member of the other group.
3. See, for example, *Usual Weekly Earnings of Wage and Salary Workers*, published quarterly by the BLS.

Figure 1

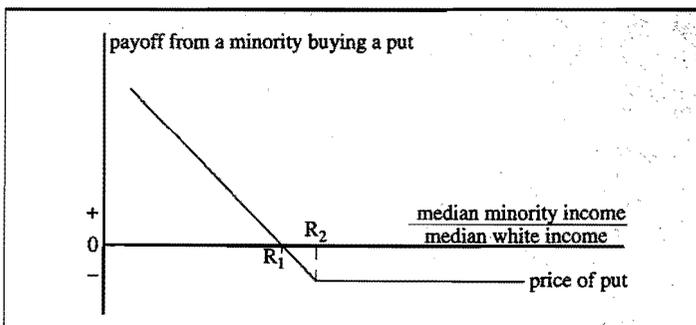
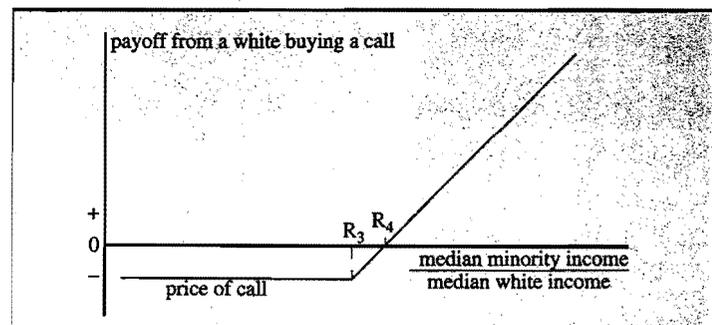


Figure 2



## *Futures and Options in Goodwill*

*Peter F. Colwell*

Social engineers try to defuse intergroup fear and loathing with appeals to understanding, coupled with efforts to integrate public institutions, but the conventional wisdom remains that nothing can be done to change the *hearts and minds* of people. Even economists, who (unlike social engineers) try to solve such social problems as environmental decay or urban congestion through economic incentives, have offered no suggestions to date for changing the way that a person feels toward social groups other than his or her own. There is, however, a simple economic mechanism for addressing human relations problems: grab people by their wallets, and their hearts and minds will follow.

### **Give Self-Interest a Chance**

I propose a market solution to the hatreds and invidious comparisons that too often have characterized intergroup relations in recent years. This solution is a futures contract called the Goodwill Contract. The philosophy underlying this solution is my belief that intergroup animosity springs from perceptions that identifiable others enjoy benefits at the expense of a group with which the observer relates. The contract would be defined in terms of

an index of relative group welfare. For example, in the U.S., it would be useful to examine the ratio of median incomes for one or more minority groups to white median income. If whites gained income relative to minorities, then the index would fall; if minorities experienced relative gains, the index would rise.

The Goodwill Contract would provide a method of *hedging* the risk that income of the individual's group would fall relative to that of another group. For example, minorities are already "long" (i.e., hold ownership positions) in their own incomes. To hedge their income risk, they would want to be "short" in (i.e., to sell) the Goodwill Contract.<sup>1</sup> By going short, sellers of the contract would profit if the index were to fall (if, generally, minority incomes fell relative to those of whites, or did not grow as fast).<sup>2</sup>

A minority person who believed that his or her group's disadvantages were becoming worse might wish to go beyond hedging. Such an individual could *speculate* that the index would fall, by selling more contracts than would be needed simply to offset the expected relative income decline. Thus, minorities with the least optimistic views would be the biggest sellers of Contracts.

*(continued on page 15)*

In "The Cost Approach: Appraisal Gone Wrong?" (page 1), authors Roger Cannaday and Peter Colwell criticize a particular cost approach application in which the estimated value displays no independence from the appraiser's value estimate under income capitalization. "Valuing a Cash Flow Mortgage" (page 5) offers a method, developed by Charles Calomiris, for measuring the value of a note on which renegotiated payments cause the lender's receipts to relate to cash flows generated by the secured real estate. "Where's the Ozone Problem??" (page 7) offers conservative environmentalist Ed Krug's views on the much-discussed "ozone scare" of recent years. Krug describes the history of claims regarding man-made impacts on the earth's ozone layer and reviews the natural processes that swamp any man-made effects. "Real Estate Values and Historic Preservation" (page 11) presents Paul Asabere and Ernest Huffman's analysis of the degree to which federal and local historic preservation laws can affect property values, and encourages governmental units to provide incentives instead of imposing regulations. "Futures and Options in Goodwill" (page 16) offers editor Peter Colwell's prescription for better human relations through financial contracts that give competing groups stakes in each other's well-being.

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