

Illinois Real Estate Letter

The Price of Zoning Revisited: Zoning Issues Raised by the Telecommunications Act of 1996 Carol C. McDonough

The Telecommunications Act of 1996¹ contains provisions that may affect a municipality's ability to implement zoning regulations. This article briefly summarizes the history and purpose of zoning regulations, discusses the challenge to local zoning posed by the Telecommunications Act (along with recent activities at the state level and in the federal courts), and offers an approach by which municipalities can optimize their role in the process of locating sites for telecommunication towers.

Traditions of Local Control

For the better part of a century, land use control has been largely a local governmental function in our country. The first comprehensive zoning ordinance in the United States was adopted in New York City in 1916, and other municipalities soon followed. The zoning enabling acts of many states are based on the federal Standard Zoning Enabling Act of 1926. In the 1926 landmark decision *Euclid v. Ambler Realty Co.*, the US Supreme Court rejected arguments that zoning laws were an unconstitutional deprivation of property without due process, and subsequently many state courts upheld the concept of zoning. The Court's decision, involving a land owner in suburban

Cleveland, is noteworthy because it reinforced the earlier notion of a hierarchy of land uses – with single-family residential use at the top of the hierarchy – to be protected. From an economic standpoint, municipal zoning regulations are meant to mitigate the *negative externalities* that a real estate owner's use of his property might impose on other members of the community.

Challenges to Local Zoning

Municipalities' longstanding and broad power to oversee land use has been called into question as legislative enactments and judicial rulings have pushed local zoners' wishes aside in favor of improved wireless phone service. One example is Congress's 1996 passage of the Telecommunications Act, which opens doors for a federal agency to overrule local officials on siting telecommunication towers. The Act (which has no impact on most zoning functions) empowers the Federal Communications Commission (FCC) to preempt local officials' decisions on the placement, construction, and modification of personal wireless service facilities. The FCC is given express regulatory power over wireless facilities' radio frequency emissions when concerns arise over possible environmental impacts.

The 1996 Act was passed following the somewhat recent development of the personal communication services (PCS) mode of wireless communication (PCS is a type of *digital* service). The development of PCS, which offers better sound quality and better security than the older cellular systems, has brought with it an increased need for tower sites on which transmitters can be placed. PCS is located at a higher frequency range, requiring towers that are closer together than the older cellular towers were. The improved technology is also likely to necessitate more towers through increased customer demand. It is estimated that, in high demand areas, PCS transmitters will have to be situated about a mile apart.

The typical municipal zoning ordinance requires a PCS provider to obtain a variance or a special permit in order to construct a cellular tower. A *variance* is required when the proposed tower would be built in a zoning district that prohibits such structures; receipt of a variance usually requires proof of hardship owing to the topography of other nearby sites. A *special permit* is required when a cell tower is a permitted use of the proposed locus; the permit indicates that the locality has found the proposed tower not to be unreasonably detrimental. Of course, under the 1996 Act the FCC can second-guess a local decision to deny approval. The FCC seems willing to require acceptance of towers that local officials reject, though the evidence to date is limited.

The federal judiciary also has shown a willingness to substitute its views for the wishes of local regulators, although it

Inside This Issue...

<i>The Value of Zoning</i>	4
<i>Price Impacts of Incompatible Land Uses</i>	8
<i>The Greatest Real Estate Movies of All Time</i>	9
<i>Deals Illustrated</i>	16

Winter 1999 – Volume 13, Number 1

Illinois Real Estate Letter is published by the Office of Real Estate Research at the University of Illinois at Urbana-Champaign
<http://www.cba.uiuc.edu/orer/orer.htm>

Copyright 1999; Subscriptions \$16 per year

Editor: Peter F. Colwell, University of Illinois at Urbana-Champaign
 e-mail: pcolwell@uiuc.edu

Associate Editor: Joseph W. Trefzger, Illinois State University
 e-mail: jwtrefz@ilstu.edu

Assistant Director: Carolyn A. Dehring
 e-mail: orer@uiuc.edu

Media Specialist: Shelley A. Campbell
 e-mail: scampbe1@uiuc.edu

Secretary: Shirley J. Wells

Address correspondence to:
Office of Real Estate Research
 304-D David Kinley Hall
 1407 W. Gregory Drive
 Urbana, IL 61801
 Phone: (217) 244-0951
 FAX: (217) 244-9867
 e-Mail: orer@uiuc.edu

ORER Advisory Committee

Gary L. Clayton
 Executive Vice President, Illinois Association of Realtors®

Peter F. Colwell
 Director of Real Estate Research, ORER Professor of Real Estate, and Professor of Finance, University of Illinois at Urbana-Champaign

Connie Conway
 Vice President, Koenig & Strey, Inc.

David C. Eades
 Managing General Partner, Regency Associates

William E. Long
 President and Chief Executive Officer, LaSalle Home Mortgage Corporation

Greg R. Oldham
 Director of Commerce Research and IBE Distinguished Professor of Business Administration, University of Illinois at Urbana-Champaign

Gerald N. Perlow
 President, Property Valuation Services
 Past President, Illinois Assn. of Realtors®

Eli Sidwell, Jr.
 Director of Real Estate, Office of Banks and Real Estate, State of Illinois

Arlen R. Speckman
 President, Speckman Realty
 Past President, Illinois Assn. of Realtors®

Donald J. Ursin
 Retired President, Coldwell-Banker Residential Real Estate Services
 Past President, Illinois Assn. of Realtors®

has not completely gutted local control. For example, in *Sprint Spectrum, L.P. v. City of Medina* (1996), a federal district court upheld Medina, WA's six-month tower moratorium as an appropriate use of the city's authority to determine a telecommunications policy, and procedures for processing applications. However, in *Illinois RSA No.3 v. County of Peoria* (1997), another federal district court overturned a county's decision denying a plaintiff's request for a cellular tower, ruling that adequate reasons for the denial were not given. Stating that the mere existence of opposition is insufficient to support denial, the court directed that the permit be issued, without even remanding to the county for further decision making.

Even the states may be inclined to overrule local officials when wireless phone service is the issue. In Massachusetts, municipalities' zoning authority has been diluted by the Massachusetts Department of Telecommunications and Energy's designation of wireless service providers as public service utilities. This designation exempts the providers from Ch. 40A, the state's basic zoning regulation, thereby limiting local authority to deny permission for tower construction.

Paying the Freight

In general, opportunities for relief from zoning restrictions – through receiving a variance or permit, or the overriding actions of a court or a legislative body – can have unexpected side effects.² The recipient of zoning relief obtains windfall *economic rent* (a return in excess of that called for by the accompanying risks), because he is able to put his property to a use that had previously been prohibited or controlled. At the same time, despite the fact that a use is not to be approved if it would be unreasonably detrimental to the neighborhood or municipality, negative externalities may be suffered by abutters, and by others in close proximity to the locus on which local, state, or federal relief has been granted.

In the Summer 1991 issue of this publication,³ David Mills suggested that, because of such externalities, resource use would be enhanced if zoning rights were bought and sold, rather than given away. The development of PCS and the attendant need for towers creates a forum

in which the sale of zoning rights can be revisited. In fact, the FCC employs a similar process for issuing licenses to operate PCS systems within the fifty-one major trading areas (MTAs), and the 493 basic trading areas (BTAs), within which PCS systems are marketed. Since demand by potential PCS providers typically exceeds the limited supply of licenses that the FCC issues in a particular MTA or BTA, the FCC auctions off the licensing rights.

It should be pointed out that the federal government is not hypocritical in providing relief from local restrictions; it also makes its own land available to wireless service providers. The 1996 Act specifies that a federal department or agency must make property under its control available for the placement of the new telecommunication services when doing so does not directly conflict with the department's mission. Yet even then, reasonable fees may be charged to PCS providers. (The Act also requires the FCC to provide technical support to states, to encourage them to use property under their jurisdictions for PCS purposes.)

By taking a cue from federal fee-collection efforts, and selling zoning permits for PCS transmitters, municipalities would gain revenues to offset, at least partially, the cost imposed on municipal residents by any associated negative externalities. Residents would benefit from the sale of zoning permits, in that revenues so generated would fund increased municipal services and/or allow for reduced taxes. Such a plan contains the acknowledgment that perceived aesthetic or health problems can be associated with towers and transmitters, and that residents should be compensated for those negative effects. The price of a permit should be based on the magnitude of the negative externalities, not on the PCS provider's expected profit. The greater the perceived visual or health derogation, the higher the amount that should be charged for a permit. (It is assumed that the PCS provider owns, or has leased, the land on which the tower is to be built.)

Measuring the Damages

How can the magnitude of the negative externalities – aesthetic and health issues – associated with towers be estimated? The aesthetics debate is not easily

resolved: beauty is in the beholder's eye, and some might argue that towers in fact *enhance*, rather than detract from, the municipal panorama's appearance. The health debate might be almost as difficult; with cell towers still in their infancy, it is far too soon to develop reliable scientific information on health effects.

Moreover, issues of aesthetics and health intertwine when tower opponents argue that towers reduce property values. Indeed, opponents might disguise concerns about aesthetics as health concerns, because the latter appear less frivolous. Yet whether the dangers are imagined or real, opponents' concerns have delayed tower approval by many local planning boards, and several lawsuits have been brought by residents against municipali-

ties that have approved the construction of towers. Concern over cell towers has led to the formation of organizations such as the Cellular Tower Coalition (CTC), which advocates increased local control over tower siting, monitors relevant legislation, and maintains a Web site for the dissemination of information.

ties that have approved the construction of towers. Concern over cell towers has led to the formation of organizations such as the Cellular Tower Coalition (CTC), which advocates increased local control over tower siting, monitors relevant legislation, and maintains a Web site for the dissemination of information.

The Rental Alternative

Because the PCS operator seeking access to a site can possibly obtain it by pursuing federal, state, or judicial remedies, a seemingly sensible approach for a municipality is simply to make the desired rights available at an appropriate price. As noted earlier, the municipal sale of zoning rights for cellular tower construction would enable a community, and thus its residents, to be compensated for the negative externalities that may derive from cell towers' existence. Yet while

The municipal sale of zoning rights for tower construction would enable a community, and thus its residents, to be compensated for the negative externalities that may derive from cell towers' existence.

selling zoning rights is the most efficient economic solution, the outright sale of regulatory approval raises legal questions.

Still, a city or town might achieve a similar economic outcome, while avoiding legal confrontations, by *leasing* space owned by the municipality to PCS operators for the construction of towers. The centralized locations of publicly owned buildings could prove ideal for the siting of wireless transmitters. Municipally-owned access strips adjacent to streets and highways would be other possible sites for the placement of cell towers.

Several localities have already considered "renting" out municipal space for cellular towers. Prince Georges County, MD plans to charge rent to telecommunications firms for putting towers on public land. In Illinois, the Warrenville village council approved a permit to allow a cellular transmitter on the local water tower, in exchange for benefits to the village, although nearby Naperville rejected plans to install cellular antennae on a local post office and the Municipal Center, and North Barrington home owners actually sued local planning officials for approving a cellular tower at the Village Hall.

Taking the Initiative

Residents concerned about PCS towers for reasons of aesthetics, health, or property values may oppose tower siting on public land under any circumstances, viewing the receipt of money as inappropriate collaboration with PCS providers. However, because the Telecommunications Act of 1996 precludes the blanket denial of permission to build cell towers, and because courts and state legislatures have also supported the industry, it would seem to be in residents' best interests to participate actively in the process. In fact, by offering to lease municipal land for tower siting, a locality would be able to gain some control over the process, along with some revenue. The rent would compensate citizens, at least in part, for any negative externalities created by the wireless systems. Moreover, if operators had to price their services to reflect the negative externality costs currently borne by others, the allocation of societal resources to this burgeoning industry would be reduced to a more efficient level. ■

Dr. McDonough is a Professor of Economics at the University of Massachusetts-Lowell. She also serves as Clerk of the Andover, MA Zoning Board of Appeals.

Notes

1. The Telecommunications Act of 1996, Sec. 704. Facilities Siting; Radio Frequency Emission Stds.
2. Colwell, Peter F., "Tender Mercies: Efficient and Equitable Land Use Change," *Real Estate Economics* 25(4), Winter 1997, pp. 525-537.
3. Mills, David E., "The Price of Zoning," *Illinois Real Estate Letter* 5(3), Summer 1991, pp. 1-4.
4. Colwell, Peter F., "Power Lines & Land Value," *J. of Real Est. Rsch.* 5(1), Spring 1990, pp. 117-127.
5. Gregory, Robin and Detlof von Winterfeldt, "The Effects of Electromagnetic Fields from Transmission Lines on Public Fears & Property Values," *J. of Environmental Mgt.* 48, 1996, pp. 201-214.
6. *Ibid.*
7. *Ibid.*

Author Viewpoints

The viewpoints expressed by authors of ILLINOIS REAL ESTATE LETTER articles (or by authors of other materials distributed or funded by ORER) do not necessarily reflect the views of the University of Illinois, the Advisory Committee of the Office of Real Estate Research, or the editorial staff of the ILLINOIS REAL ESTATE LETTER. Even when ORER provides direct funding for the analysis of an issue, the researcher is free to report findings that conflict with the views of the above-named groups or institutions. Anyone whose views differ from those expressed in any ORER publication is encouraged to send comments or suggestions to Editor, ILLINOIS REAL ESTATE LETTER at the address shown with editorial information on page 2.

The Value of Zoning

Peter F. Colwell and Carolyn A. Dehring

Zoning is a control device under which local government attempts to separate land uses that it views as incompatible. In its usual form, zoning has two legitimate uses: correcting for the market's failure to allocate land in efficient quantities, and correcting for the market's failure to produce an efficient spatial distribution of uses. In the absence of zoning, the market reduces total community benefits below what they otherwise could be by overallocating land to "lower" uses that produce negative externalities, which flow to "higher" uses. In theory, zoning can achieve an efficient allocation of land use in the presence of externalities.

Some Characteristics of Zoning

When zoning is cumulative, or hierarchical, all land uses are placed somewhere in a hierarchy. So called higher uses (residential) are allowed to locate in lower use zones (industrial), but not vice versa. This form of zoning is based on the belief that negative externalities flow primarily in one direction, from lower to higher land uses. Negative externalities, or external diseconomies, are costs that flow outside of market transactions. Noise, air pollution, congestion, water pollution, and visual pollution, as well as blocked or otherwise altered natural light, are examples of negative externalities that lower (industrial) uses might impose on higher use (residential) land. Thus, with cumulative zoning, each zone that produces negative externalities can injure the uses in all higher zones and, in turn, can be injured by negative externalities produced in the lower zones. A resulting problem is that, in the presence of externalities that flow primarily in one direction, the market's allocation of land to various uses will be inefficient.

Notice that the hierarchy of land uses specified with a cumulative zoning ordinance relates only to the direction of the flow of negative externalities; a higher use in this context does not necessarily bear any relationship to the term higher in the context of discussing highest and best use. A cumulative zoning ordinance will generally have

low density, single family detached housing as the highest use in the hierarchy. It is then common to progress to greater density single family and then multifamily uses. Commercial categories (typically office and retail) come next, followed by industrial (factory and warehouse), with both classified in categories ranging from light to heavy.

With regard to the impact of zoning on land values, there is some disagreement about the relative importance of scale effects and boundary effects. Scale effects concern the impact of the quantity of lower-use land on values in the higher use areas. Boundary effects concern the impact that higher use areas suffer from their proximity to lower use areas. Scale effects suggest that the quantity of land in the lower use affects higher uses equally throughout the relevant area; boundary effects suggest that the impact is limited spatially to a boundary strip. If negative externalities do not travel very far, then boundary effects are the more important determinant of efficient land use.

In the literature on externalities, variables such as the percentage of land in an identified area (perhaps a census tract) allocated to some lower use is sometimes found to be insignificant as a cause of variations among the area's land values. Alternatively, land value studies that focus on proximity to externality sources generally find value effects. One factor that seems to be especially significant is whether a property is in sight of the externality source. Of course, scale effects are largely irrelevant as a rationale for zoning, because the incompatible land use issue does not relate to scale. For this reason, and because studies based on actual data show boundary effects to be more important than scale effects, this article focuses on boundary effects.

A Model With Two Land Uses

Consider a tract of land separated into two zones: residential and commercial. Commercial uses, which are lower in the zoning hierarchy, are assumed to produce negative externalities that can injure residential uses. A residential use is

assumed to be injured if it lies within a narrow strip next to the lower use zone. Users demand residential and commercial land because of the role that real estate fills as an input into production processes. For example, users are willing and able to pay for land because of its contribution to the production of valued residential or commercial services.

Generally, the amount that a user is willing to pay for a unit (think of an acre) of land declines as the quantity of land allocated to that particular use increases. The demand for land to be put to a given use can be represented by a downward sloping curve, such as that shown in Figure 1. However, as we are concerned with the interaction of two land markets (residential and commercial), we utilize a graphical technique that allows for the analysis of both markets simultaneously.

Figure 2a depicts this same downward sloping demand, along with other characteristics of the market. For example, the quantity of land available for residential or commercial use is shown as Q , measured along the horizontal axis. Note also that the demand for residential land is now represented with two curves: one for land on the interior of the residential area and one for land on the boundary with commercial uses. Because there is less demand for land burdened with negative externalities created by an adjacent lower use, the demand curve for residential land on the boundary is shown below that for land in the residential interior (at any given price, residential users have less desire for land on the boundary).

Figure 1

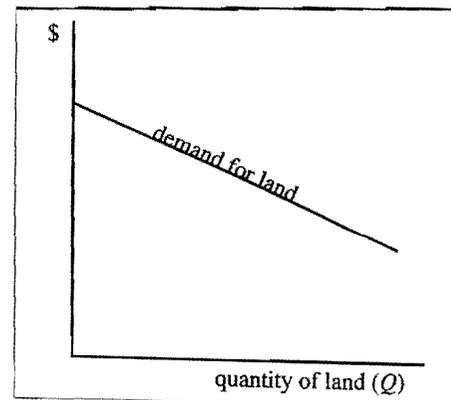


Figure 2a

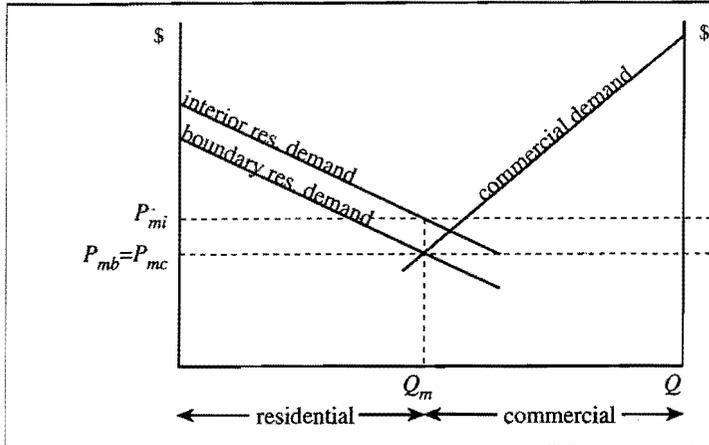
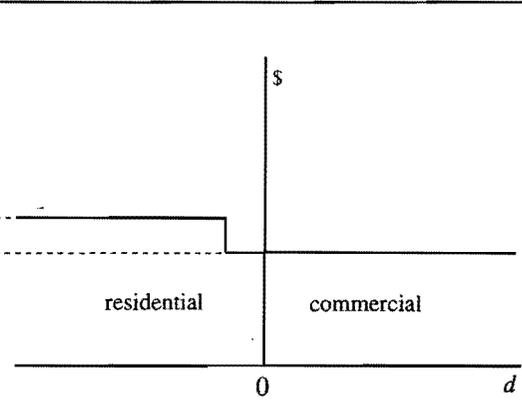


Figure 2b



The vertical distance between these two curves is the *capitalized cost*, per unit of land, of the negative externality (the stream of future financial costs associated with the externality, discounted to a present value). Notice that the demand for commercial land is added to Figure 2a almost as a mirror image of residential demand. While the quantity of land allocated to residential uses is read from left to right in the figure, the quantity of land allocated to commercial uses is read from right to left. With this presentation of demand curves, the quantity of land allocated to one use is simply the amount that has not been allocated to the other.

Equilibrium Allocation: The Market

If left to its own devices, the market allocates land so that the price per unit at the boundary is equal in the two zones (*i.e.*, so that residential land affected by the externality sells for the same price as commercial land). The intersection of the demand for residential land on the boundary and the demand for commercial

land occurs at Q_m . At this allocation, the price of residential land on the boundary, P_{mb} , just equals the price of commercial land, P_{mc} . The price of residential land on the interior, P_{mi} , is higher by the amount of the capitalized negative externality.

Figure 2b presents a less complicated picture of land pricing for the two uses. The vertical line represents the boundary between residential and commercial zones, with distance d from this boundary shown along the horizontal axis. Interior residential prices are higher than those on the boundary by the capitalized amount of negative externalities spilling over from commercial uses. Though the width of this boundary area is determined by technical factors (*e.g.*, how far into the residential area the negative impact of commercial use can be seen), the boundary's total area depends on the spatial distribution of residential and commercial land. The market's allocation, which equates prices at the boundary, is an *equilibrium* allocation; that is, there is no market pressure for land use to change.

An Aside: Positive Externalities

Thus far we have implicitly assumed that commercial users are indifferent to being near residential uses. In other words, residential land produces neither *negative* nor *positive externalities* for adjacent commercial users. If positive externalities prevailed, then land pricing would be similar to that presented in Figure 3. Each use has two demand curves, with interior commercial demand shown as *lower* than demand on the boundary by the capitalized value of *positive externalities* spilling over from the residential use. Thus, the price on the boundary is lower than for interior residential land, but higher than for interior commercial land.

Optimal Allocation

An optimal zoning policy would maximize the sum of land value and *consumer surplus*: all of society's benefits associated with land use. A policy that equates the interior prices of all land use zones (*i.e.*, holding other value determinants constant) will achieve this optimality.

Figure 3a

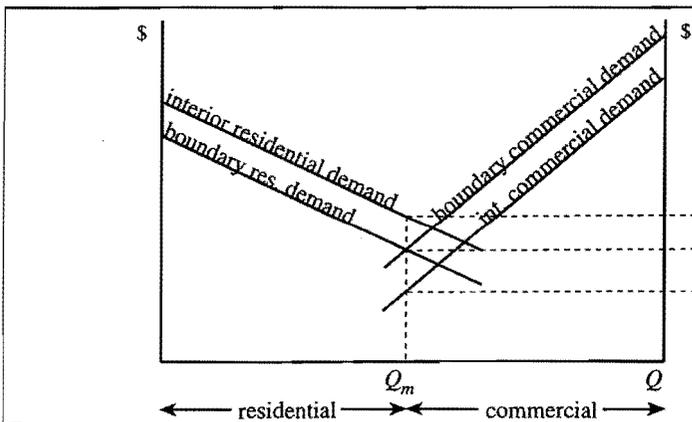


Figure 3b

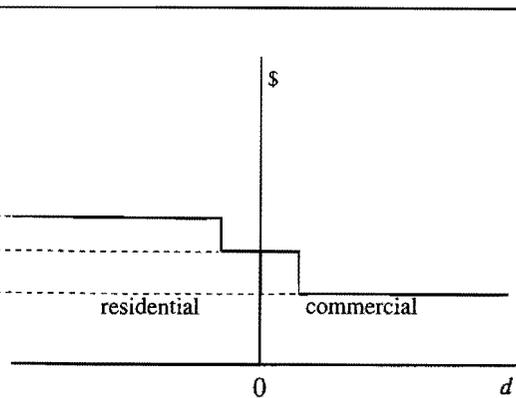


Figure 4a

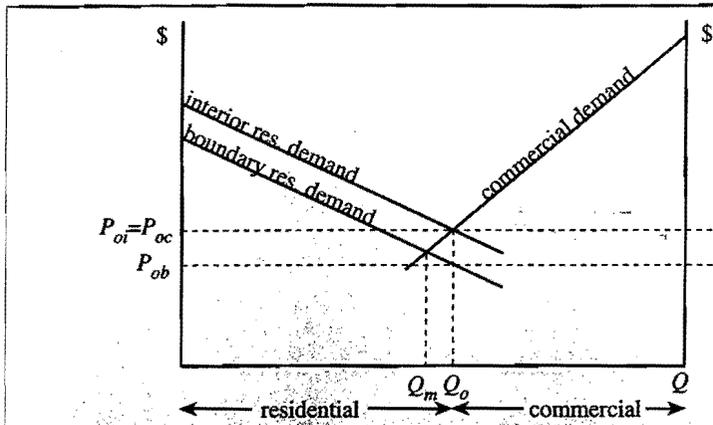
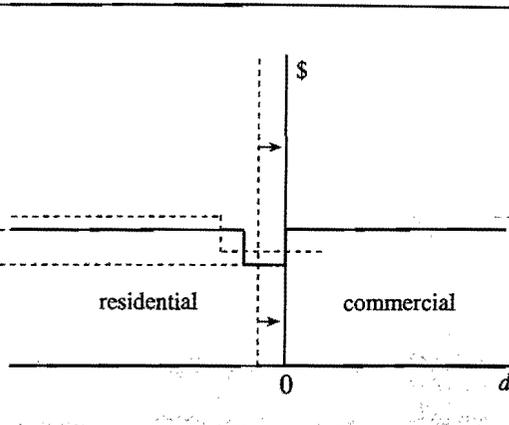


Figure 4b



The zoning policy that brings about an optimal allocation of land use is presented in Figure 4a. The optimal allocation, shown as Q_o , is the allocation that equates the price for residential land in the interior, P_{oi} , with the price of commercial land, P_{oc} . The price of residential land on the boundary is less than this amount by the capitalized value of the negative externalities.

Zoning that equates prices in the interiors of zones allocates more land to the higher use than does the market allocation. This situation is evident in Figure 4a (which can be compared to Figure 2a). With optimal zoning, the boundary shifts toward the right, effectively increasing the area available for residential and constraining commercial use. Thus, optimal zoning constrains the amount of land available to lower uses, in turn causing price for the lower use to rise and price for the higher use to fall.

Figure 5 reveals the difference in benefits between the market's allocation of land and that brought about by optimal zoning. The market allocation is illustrat-

ed in Figure 5a. Residential land value, which is the per-unit price of residential land in the interior multiplied by the quantity of residential land, is represented by the striped region to the left of Q_m . Commercial land value is the striped region to the right of Q_m . Consumer surplus (what users are willing to pay over and above the price) for each land use consists of the solid shaded triangular areas under the respective demand curves.

Recall that on the boundary, the price of residential land is lower than in the residential interior by the negative externalities' capitalized value. In Figure 5a, the amount by which residential land value would be greater in the absence of boundary effects is represented by the dark solid rectangle. The rectangle's area equals the area of the boundary times the difference in per-unit prices for the residential interior and the boundary. Of particular importance is the small unshaded triangle, whose area represents a *deadweight loss* (a potential benefit that no one realizes because of inefficiency). Thus, if there are negative externalities,

boundary effects reduce combined benefits from residential and commercial use.

When land is allocated optimally, there are still boundary effects that affect the total benefits from land use. But more land is allocated to residential, such that prices in the interiors of the two zones are equated. This optimal allocation is illustrated in Figure 5b. It is clear that benefits under the optimal allocation exceed those under the market allocation; there is no deadweight loss in Figure 5b.

Yet optimal zoning has a problem as well: unlike the market's allocation of land uses, optimal zoning *does not represent an equilibrium*. That is, if the interior prices are equal, then boundary prices must be unequal, a situation that presents opportunities for *arbitrage*. An individual could buy on the low-price side of the boundary and sell on the high-price side, thereby shifting the boundary to the point where the boundary prices were equal. Therefore, optimal zoning is not equilibrium zoning, because of the tremendous market pressures associated with optimal zoning. The only way to

Figure 5a

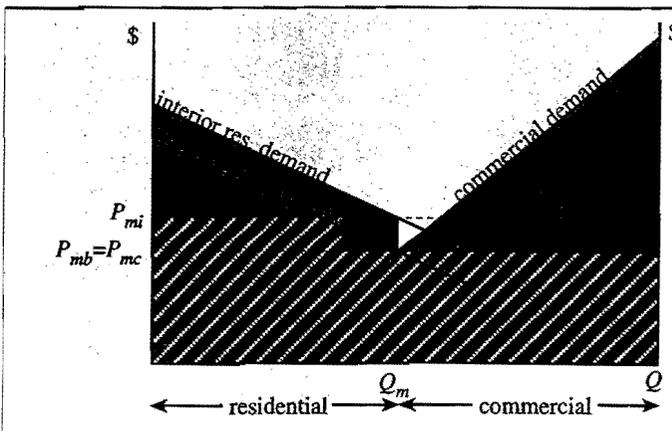


Figure 5b

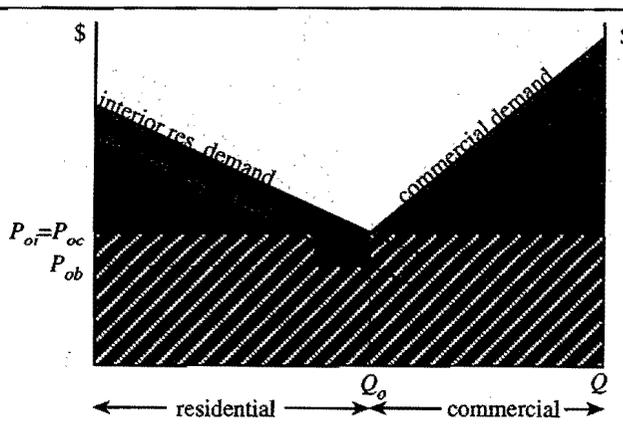
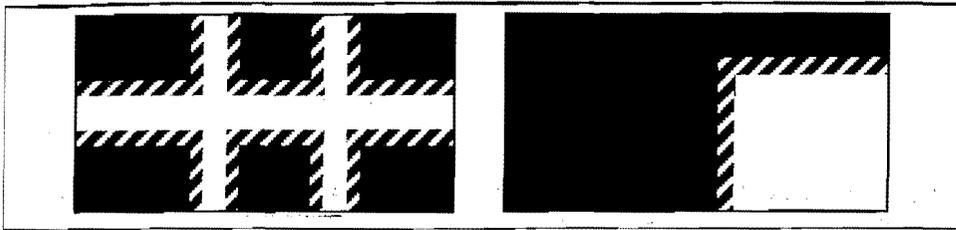


Figure 6



cause optimal zoning to represent an equilibrium is to introduce a price (an *impact fee*) in connection with a zoning change; this fee would be set to equal the price differential at the boundary between land uses (see "Impact Fees: Some Further Ruminations," *Illinois Real Estate Letter*, Winter/Spring 1996). This fee would have to be less than the capital gain associated with the change in land use – except in equilibrium. It would also have to substitute for current zoning processes; it would be totally inappropriate to add this fee on to current requirements.

Spatial Allocation

The discussion of optimal zoning has been concerned, up to this point, with increasing community benefits by allocating the right quantities of land to different uses. However, truly optimal zoning would also involve minimizing the boundary area. The previous section explains how community benefits are reduced by the per-unit price difference between the residential interior and the boundary, multiplied by the size of the boundary area. While government can do nothing productive about the price difference, zoning can minimize the size of the boundary area. In other words, zoning officials should strive to minimize the length of the boundary. Zoning policy

can accomplish this goal by limiting growth of the lower use zone to sites that are contiguous with existing lower use properties, and in other ways.

Figure 6 might be viewed as a zoning map. The left side depicts typical spatial distributions of commercial and residential uses, where growth in commercial activity has proceeded in strips along major streets. Dark shaded areas represent residential use, while stripes indicate residential boundary areas. Unshaded area represents the commercial use taking place along the tract's main roads. The problem with this allocation is the large amount of residential land bordering the commercial district. A more socially desirable spatial distribution is depicted on the right side, with the same amount of commercial use restricted to a contiguous area. This allocation reduces boundary effects, thus increasing community benefits by increasing the total value of residential land.

Typical Zoning

The preceding paragraphs examine how the market allocates land uses by equating prices on the boundaries of land use zones, and how optimal zoning would equate prices on the interiors of these zones. However, it is not uncommon for the land prices observed in communities to follow neither of these patterns.

In fact, it is most typical for zoning to result in prices in the interior of the lower zone that *exceed* the price in the interior of the higher zone (people generally *expect* that land zoned commercial should sell for more than land zoned residential). This type of zoning is depicted in Figure 7. How does such a phenomenon come about? Optimal zoning constrains the lower use below the market allocation (to equate interior prices), but typical zoning constrains the lower use even more, to something like Q_t . The dashed vertical line in Figure 7b shows the boundary under optimal zoning; the solid line represents the boundary under more typical zoning. In this scenario, the commercial land price, p_{tc} , is higher than that of interior residential land, p_{ti} , with other factors held constant (an outcome that creates its own pressure for changes in the allocation of land to different uses).

Conclusion

Zoning can correct for the market's inability to allocate land efficiently across different uses. Zoning is optimal when land is allocated to the various uses in quantities that cause the prices on the interiors of land use zones to be equal, and that minimize boundary lengths between zones. However, this optimal zoning does not represent the market equilibrium condition, in that there are market pressures for boundaries to shift. Typically, zoning *overconstrains*, holding lower uses below their optimal quantities and causing prices for land in the interior of a lower use zone to exceed prices in the interior of a higher use zone (and we might note that the administration of zoning imposes its own costs on society). ■

Figure 7a

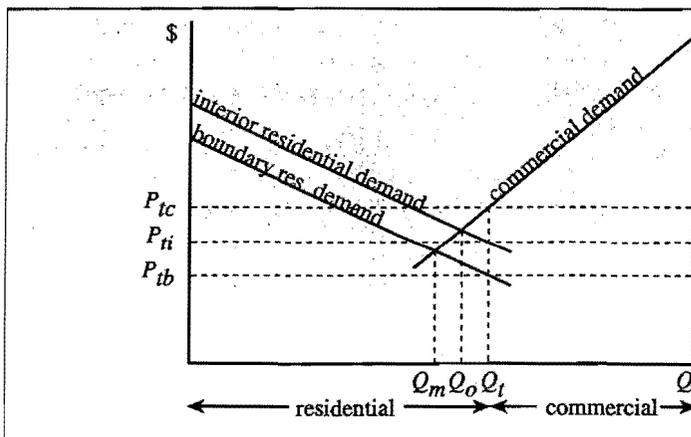
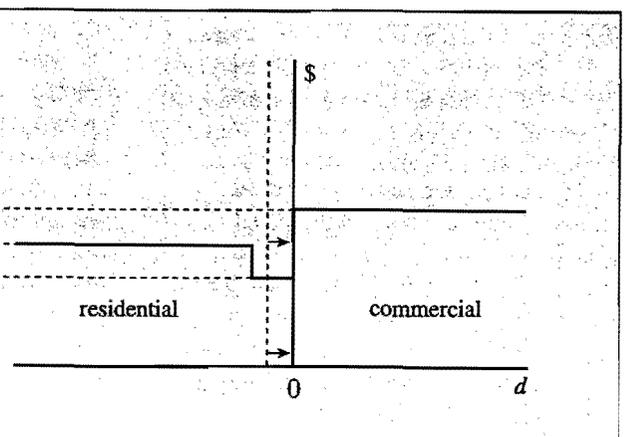


Figure 7b



Price Impacts of Incompatible Land Uses

Paul K. Asabere and Forrest Huffman

Zoning codes are generally thought to enhance real estate owners' *enjoyment* of their land by limiting potentially harmful activities to specified locations. There is a question, however, as to whether this restriction of land uses enhances property *values*. One view holds that there is no theoretical basis for predicting the effect of zoning on the value of real estate. An alternative view is that the hierarchical type of zoning practiced in the US can be predicted to have specific directional impacts on values. In this discussion, we report on a study that provides evidence of the price effects of hierarchical zoning.

is that a carefully chosen ranking of uses restricts the flow of *negative externalities* from lower to upper level tiers in the hierarchy. It has been argued that because residential property can be located where lower uses can impose adverse impacts, residential users should willingly pay more to be in the interior of a protected residential area, if other factors are held constant.¹ Yet while this argument may be sound, the rationale offered seems too focused on short-term issues: that people do not like contending with the traffic of heavy commercial uses, or enduring the noise and smells of heavy industrial uses.

residential use, while the other 34% were in mixed-use areas. Our primary analytical tool was *multiple regression analysis*, a statistical technique in which one numerical value (in this case, the price of an apartment property) is viewed as a combination of some related values (in this case, the property's important features). Measuring value based on enjoyment-enhancing features is known among real estate analysts as *hedonic regression*. We theorized that value reflects the locational, physical, and market attributes typically thought to affect per-unit sales prices of apartment buildings, and also reflects whether a building is located in an area that allows non-residential uses.

Apartment properties provide an interesting example for a study in that, unlike single-family residential parcels, many are located in mixed-use areas.

Focusing on the Short Term...

Most US cities and counties practice *hierarchical zoning*, a form of land use control in which residential uses are "protected" from the "less desirable" commercial and industrial uses farther down the zoning hierarchy. The method is hierarchical and protective in that, while residential uses can locate freely in non-residential zones, non-residential uses are prohibited in residentially zoned areas. The restrictions thus are enforced only in one direction and, as a result, a lower level zone can contain a mixture of land uses. An area may also have mixed uses if its zoning has been changed or if variances have been granted.

Unlike mutually exclusive zoning, in which no use may locate outside its designated zone (an approach seen in some Chicago zoning applications), hierarchical zoning thus offers added locational choices to the higher level uses. In other words, those who wish to use land for residential purposes (the higher uses) can choose sites in any zone, whereas someone planning an industrial use is restricted to land zoned industrial. The rationale behind hierarchical zoning

When the Issues Are Long Term

We feel that there may be another rationale for why people should pay more for property in the interior of a higher zone. This rationale reflects a long-term issue: that a property located in the interior of its zone also faces less risk of *locational obsolescence* due to the encroachment of other land uses. After all, ownership is a long-term claim, and it would not make sense for someone to pay top dollar for a property that enjoys freedom from externalities today but is likely to suffer their effects in the foreseeable future.

We tried to find evidence that buyers pay less for residential property outside of residential zones' interiors by looking at sales of apartment buildings in Philadelphia.² Apartment properties provide an interesting example in that, unlike single-family parcels, many are located in mixed-use areas. Apartment property values also should relate to expected future rents, the levels of which tend to reflect the same locational and amenity features that enhance single-family home values.

We found data on 372 sales of apartment buildings in the city; 66% of them were in areas zoned exclusively for

Results

We tried to determine whether the existence of nearby non-residential uses causes buyers to offer lower prices than they otherwise would (in statistical terminology, we attempted to find whether the *coefficient* on a location *dummy variable* would be *significant* with a negative sign). Our main finding was that apartment buildings in lower zones sold for 16% less, on average, than the prices they would have commanded in the interiors of residential areas. Another interesting finding was that lot size, ownership type, neighborhood characteristics, and location in historic districts exert important impacts on apartment property values.

Our finding of substantial price discounts supports the hypothesized existence of a *boundary effect* for zoning. That is, we now have "real-world" evidence for the theoretical idea that buyers will pay less for properties in close proximity to lower uses than for those located in the interiors of conforming zones. ■

Drs. Asabere and Huffman are professors in the Dept. of Legal & Real Estate Studies at Temple University in Philadelphia.

Notes

1. Asabere, P. K. and P. F. Colwell, "Zoning and the Value of Urban Land," *Real Estate Issues* 9 (1), 1984, pp. 22-27.
2. Asabere, P. K. and F. E. Huffman, "Hierarchical Zoning, Incompatible Uses and Price Discounts," *Real Estate Economics* 25 (3), 1997, pp. 439-452.

The Greatest Real Estate Movies of All Time

Stephen Malpezzi

This publication is not one that readers typically associate with movie reviews. But the idea is not so far-fetched; Roger Ebert is an Illinois graduate whose late partner, Gene Siskel, was a lifelong Chicagoan. And let's face it: everyone loves movies. But why did we go to U of I rival Wisconsin to find someone to link the cinema to our readers' other great love, real estate? Because we knew of no one able to do the job more credibly than our friend, film buff Hollywood Steve Malpezzi. And while we considered titles like "Big Ten to Big Screen," "Yes, I Cannes," and the obvious "Reel Estate," we all agreed that no one would pass up the chance to read about "The Greatest Real Estate Movies of All Time."

Everyone enjoys a night at the movies, and everyone who reads the *Illinois Real Estate Letter* enjoys talking about real estate. Have you ever thought about how closely the two subjects are connected? Once you think about it, you come to realize that almost every one of the best movies is, at its heart, about real estate.

To begin with, virtually every Western ever made is about property rights ("No sheep farmer gonna put no fence on that range," as though the hardy herders would meekly endure the threats of a bunch of cattle ropin' varmints). If the hero is not putting up a fence (or taking it down), the villain is stealing someone else's land. *The Big Country*, *The Magnificent Seven*, *McCabe and Mrs. Miller*, *The Sons of Katie Elder*, *Giant*, and even *Cat Ballou* and *Blazing Saddles*; the examples are too numerous to list. My personal favorite from this genre is *Shane*, with Jack Palance even badder than in *Batman* (discussed below), and certainly more terrifying than in *City Slickers*, another property rights film.

A technique professors use to keep students interested is to tell them stories about successful, creative professionals and their work. In real estate we have an abundance of real world examples to use, of course, and truth is often stranger than fiction. Still, many of us talk about real estate and the movies in all of our classes.

Developing a Story Line

A subject often discussed in films is real estate development. My all-time favorite cinematic real estate developer is Lex Luthor, fabulously played by Danville, Illinois native Gene Hackman in *Superman* (a film whose hero is claimed as a native by Metropolis, Illinois). Lex plans to "create value" for Nevada scrubland he owns by bombing the San Andreas Fault, sending California plunging into the sea, and turning his land into beachfront property. What a development concept!

Superman also contains this priceless scene between Lex, his inept henchman Otis (Ned Beatty), and his moll Miss Tessmacher (Valerie Perrine), in Lex's lair situated 500 feet below Park Avenue:

LL: *Thanks to the generous help of the US Government, we are about to be involved in the greatest real estate swindle of all time!*

MT: *Lex, what is this obsession with real estate? All the time, land, land, land.*

LL: *Miss Tessmacher, when I was six years old my father said to me...*

MT: *Get out!*

LL: *Before that. He said, son, stocks may rise and fall. Utilities and transportation systems may collapse. People are no damn good. But they will always need land, and they will pay through the nose to get it. Remember, my father said ...*

LL and O, in chorus: *Laaaand!*

Of course, there are many development movies, like *Bugsy* and *Field of Dreams*. Frankly, *Field* is a bit sappy for my taste, but it has one of the all-time great developer lines: "If I build it, they will come." Sound like any developers you know? In a 1990s update, the hero might utter: "If anyone will finance this, I will build it, and if the market is not already overbuilt they will come." And don't forget *The Apprenticeship of Dudley Kravitz*, with Richard Dreyfuss cast against type as a manic developer.

Another great development movie is *Mr. Blandings Builds His Dream House*, in which the residential development process is explained by Cary Grant and Myrna Loy. This classic is far superior to its recent remake, *The Money Pit*. Tom Hanks is a first rate actor, but there is

only one Cary Grant. And Shelley Long as an '80s Myrna Loy? Fuhgeddabahddit. A better modern variant of classic screwball real estate comedies is *Housesitter*, with Steve Martin and Goldie Hawn.

Bad things can also happen when you renovate a house, as in *Pacific Heights*, although my personal favorite in this category, also starring Michael Keaton, is *Beetlejuice*. Keaton's slapstick turn as the manic title ghost, trying to scare new owners out of the house he haunts, is hysterical. See why I avoid rehab projects? And don't forget: especially bad things can happen when you develop atop old graveyards. If in doubt, see *Poltergeist*.

Happily, you don't have to undertake the renovations yourself to experience problems. You can hire *Tin Men*, the second in Barry Levinson's Baltimore Trilogy. Richard Dreyfuss and Danny DeVito play feuding aluminum siding salesmen in a story set in the 1950s, before technological advancements had made it possible to get ripped off buying vinyl siding. (Baltimore fans can also see the films of John Waters, if they don't mind plots with no real estate connection, and if their stomachs are up to it.)

You Can Also Rent the Video

The previous section involved films about single-family homes. Those more interested in multifamily should view *The Apartment*, directed by Billy Wilder. Jack Lemmon lends his flat to boss Fred McMurray, for the latter's affair with Shirley MacLaine. Naturally, Lemmon falls for MacLaine, while learning about life and lease provisions. Many rate Lemmon's and MacLaine's performances as among the best of their careers.

Slightly less sophisticated – all right, a lot less sophisticated – is the view of multifamily living in *Joe's Apartment*. The film's stars are hundreds of roaches that live in Joe's digs. These are not ordinary roaches; they are – you guessed it – party animals. In a different vein, the famous demolition of Pruitt-Igoe's large public housing blocks is set to Phillip Glass's minimalist score in *Koyaanisqatsi* (Hopi for "life out of balance").

It's A Wonderful Flick, Too

A lump of coal for the stocking of anyone who can't name the greatest real estate finance movie ever: Frank Capra's *It's A Wonderful Life*. Too complex to recount in detail (but sufficiently well known that there is little need), *Life* chronicles the S&L ("building and loan") business the way it was supposed to be. The scene of the run on the bank, with an impassioned George Bailey (Jimmy Stewart) explaining the prisoner's dilemma facing the depositors, who have lent to each other, is priceless. No Charles Keatings in Frank Capra's world, and no FSLIC-insured brokered deposits! (But there is Lionel Barrymore's evil-to-the-core Mr. Potter.) Capra's depiction of how Bedford Falls becomes the depraved Pottersville, when its citizens are *renters* instead of home owners, surely warms the cockles of every Fannie Mae executive's heart.

Other real estate finance movies abound, such as *Lost in America*, which shows what *not* to do with home equity. Yuppies played by Albert Brooks and Julie Hagerty take out their capital gain, quit their jobs, and travel across America in the biggest Winnebago seen since *The Long, Long Trailer* (discussed below). A day into the trip, they stop in Las Vegas. Eight hours later, compulsive gambler Julie has lost the entire stake; they have no jobs or money, and so the fun begins.

Some Assembly Required

Anyone interested in site assembly has to see Capra's earlier, slightly less well known classic, *You Can't Take It With You*. Much of the cast of *Life* is here, but Barrymore is a good guy this time, holding out on selling his property to a determined Edward Arnold, and Jimmy's love interest is Jean Arthur rather than Donna Reed. Another site assembly film is the charming *Local Hero*. Charged with buying a Scottish village sitting on a pile of oil, Peter Riegert encounters a cast of characters that change his world view. As Riegert's astronomy-obsessed boss, the estimable Burt Lancaster gives a wonderful supporting performance.

Does It Seem Grainy to You?

Many of the great real estate movies focus on agricultural land. A common theme is the risks involved in making

a living on the land; examples are *The Grapes of Wrath* and *The River*. In a lighter vein – very light – is one of my childhood favorites, *Ma and Pa Kettle on Old MacDonald's Farm*. Who can forget Percy Killbride and Marjorie Main?

Two more favorites in the farm genre are based on novels by Pagnol: *Jean de Florette* and *Manon of the Spring*. The eponymous Jean (Gerard Depardieu) is an educated city dweller, a hunchback who has read about farming his whole life. He puts his life savings into a parcel of land in arid Provence, and ruthless neighbor Le Patet (Yves Montand) secretly blocks the hidden spring on Jean's land. Ruin and death slowly overtake our noble hero, who struggles to haul enough water to keep the farm. In the sequel, daughter Manon takes her revenge.

Heartbreak Hotels

Think your landlord is nasty? See *The People Under the Stairs*. Slightly less diabolical is Joe Pesci in *The Super*. Of course, there are *tenants* from hell in films, too, as in *Pacific Heights* (noted above), and *The Tenant*, directed by – and starring – Roman Polanski.

But many movies focus on other kinds of property management. *Grand Hotel* and *Psycho* present divergent approaches to running hotels. Frank Sinatra runs a motel in *Hole in the Head*, as does Bing Crosby in *Holiday Inn* (with Marjorie Reynolds and Fred Astaire). Der Bingle introduces "White Christmas," the song, in that film, and then follows up with *White Christmas*, the movie. In the latter, Crosby and Danny Kaye croon with Rosemary Clooney and Vera-Ellen at a New England inn owned by the boys' old army general, Dean Jagger. But my personal favorite hotel management movie is *The Shining*. "Heeeeere's Johnny!"

...and I'm Here to Help

We all know that government profoundly affects the real estate process. One of my favorite real estate films, *Gone With the Wind*, shows the effect of government intervention – here, Sherman's march to the sea – on Atlanta's property market. And, of course, it's a toss-up whether Scarlett O'Hara is more obsessed with her man (Rhett Butler) or her land (Tara).

Real estate development and the government-provided infrastructure are closely intertwined. That's the theme of *Chinatown* (inspired by the Owens Valley water grab that fueled the early Los Angeles real estate boom), with corruption and incest thrown in. Jack Nicholson plays Jake Gittings, a hard boiled private eye in best *film noir* style. Jack is rarely upstaged, but old pro John Huston steals this movie as Noah Cross, one of the most despicable and amoral villains ever to grace celluloid. It's Polanski's best film since *The Fearless Vampire Killers* (one of the few great movies *not* about real estate). Other films whose plots revolve around land grabs of one type or another include *Mr. Smith Goes to Washington* (Edward Arnold is out to get Willett's Creek for a song) and *Who Framed Roger Rabbit?* (greedy Christopher Lloyd and his gang of weasels set out to take over lovable Toontown).

One Town that Won't Let You Down

Speaking of government and real estate, the whole plot (did you remember there *was* a plot?) of *The Blues Brothers* is that Ellwood and Joliet Jake Blues' elementary school was about to revert to Cook County for nonpayment of property tax. That plot and location should resound with *Illinois Real Estate Letter* readers! For those of us outside the Prairie State, any excuse will do to hear Ray Charles, Aretha Franklin, and the late, great Cab Calloway. Donald "Duck" Dunn, Steve Cropper, and the rest of a band assembled from the great Stax/Volt revues of the sixties *almost* make John Belushi and Dan Aykroyd sound like they can sing.

Of course, New York, London, and Paris star in many movies. But the City of the Big Shoulders also has its share: besides *The Blues Brothers* (your state should disown the sequel), *Some Like It Hot*, *Risky Business*, *Ferris Bueller's Day Off*, *The Sting*, and *The Untouchables* all rely heavily on Windy City settings. The truly under-appreciated *In Old Chicago* (1938) revolves around the Great Fire of 1871. Alice Brady won an Oscar for her portrayal of Mrs. O'Leary, whose sons were played by Tyrone Power and Don Ameche; Alice Faye also starred. The climactic scenes of the fire and its aftermath were great special effects for their day.

GIS, the Old-Fashioned Way

A hot topic in real estate today is Geographic Information Systems. A number of movies revolve around GIS – well, at least around maps and mapping, such as *Raiders of the Lost Ark*. A less celebrated example is the Hugh Grant vehicle, *The Englishman Who Went Up a Hill and Came Down a Mountain*. A Welsh village's identity is threatened when Grant arrives to survey their mountain and finds it qualifies only as a hill. The villagers' harebrained schemes to keep Grant around while they try to "grow" the hill back into a mountain recall the classic British comedies from the 1950s.

Finally Getting Some Respect

After years of training, I no longer call manufactured housing "mobile homes." Heaven help me if I ever called them "trailers," as we did growing up – which brings to mind *The Long, Long Trailer*. Lucy and Desi and a 20-foot trailer offer a recipe for disaster, and for laughs.

As the baby boom ages and family incomes rise, leisure real estate, as is true of recreational vehicles, takes on ever-greater importance. There have been many golf movies, like *Tin Cup*. But none has the sophistication and subtle wit of *Caddyshack*. Rodney Dangerfield's second best movie, *Caddyshack* also fits the property management genre; worth watching again and again just for Bill Murray's turn as a lunatic groundskeeper. Of course, there are other kinds of leisure real estate, for example *Jurassic Park*.

Dangerfield's best movie, even better than *Caddyshack* (though it is a close call), is *Back to School*. Thornton Melon (guess who), rich owner of a chain of "Tall and Fat" clothing stores, goes back to school to keep his son Jason company. It's a particular favorite of mine because I regularly threaten to take a sabbatical, stay with my stepsons Piet and Zach at school for a year, and lecture all their friends on real estate. *Back to School* has some marvelous real estate moments in it, such as when Thornton explains to the pompous B-school professor (*I've never met one*), and the rest of his class, what sorts of problems real-world developers face in New York that don't make it into the syllabus. The "Grand Lakes College" scenes were shot here at UW-Madison.

Realtors?

Movies about real estate brokerage have always been popular. *Glengarry Glen Ross* is an obvious example. A great film, despite typical Mamet language (leave the kids at home) and an overly bleak view of the profession. My personal favorite real estate brokerage movie is *The Stepfather*. Jerry Blake (played by Terry O'Quinn) is a homicidal maniac who also happens to sell real estate. Whenever his family of the moment deviates from his idea of perfection, Jerry goes a little berserk. I watch this one every Christmas with my own stepsons – it's good for instilling family discipline.

In the Marx Brothers' *The Coconuts*, Groucho demonstrates the art of real estate brokerage in Florida, with Chico

It's the Real (Estate) Thing

The classic definition of real estate is land, and things more or less permanently attached to the land. Bad things happen when big things are *not* permanently attached to the land; see *Titanic*, or *Alien*, or *Aliens*. (But skip *Alien 3*, and run away if anyone shows up with a video of *Alien Resurrection*.) My own favorite of this particular "real estate – not" genre is *Lifeboat*, a Hitchcock classic. Leonardo di Caprio and Kate Winslett are fine, but they can't stand up to Tallulah Bankhead and William Bendix.

Another "real estate – not" genre is the search for real estate by those without it. Recent riffs on this theme include *Down and Out in Beverly Hills* and *The Fisher King*. But the master will always

"Stocks may rise and fall. Utilities and transportation systems may collapse. People are no damn good. But they will always need land, and they will pay through the nose to get it."

– Developer and evil genius Lex Luthor

as his skill in running the only auction in history more hilarious than those run by the Resolution Trust Corporation. Another Marx Brothers movie with a real estate theme is *A Day at the Races*. If Maureen O'Hara does not pay her property taxes on time, she will lose her family's sanitarium. Enter Dr. Hugo Quackenbush (Groucho) and friends to save the day, after a fashion. See also *It's A Gift*, with W. C. Fields discovering the pitfalls of buying a California orange grove through the mail.

Not to whine, but why are real estate professionals so often the "heavies" on screen, even giving Father Bing a hard time in *Bells of St. Mary's* and *Going My Way* (even lawyers are sometimes portrayed sympathetically)? Let's face it, real estate people, especially brokers – like college professors – rarely get their due in the movies. Any real estate broker not portrayed as a heavy is shown doing something really stupid. Consider Joan Collins's real estate agent character, who takes potential buyers to an island about to be the site of a nuclear test. The subsequent atomic mutations turn the island into the *Empire of the Ants*.

be Charlie Chaplin. In most of his 81 films, including such classics as *The Kid*, *Modern Times*, and *City Lights*, the Tramp "was always looking for a place to live, and never found one," as Chaplin scholar Gerry Molyneaux puts it. In *Easy Street* he saved a whole city block.

Urban – And Suburban – Jungles

Many films tackle the urban development landscape's bleaker aspects. First, and still greatest, is Fritz Lang's masterpiece *Metropolis* (not about scenic southern Illinois). The many films derived from *Metropolis* range from Anton Furst's fantastic set designs for *Batman's* Gotham City to any number of sci-fi representations, from Ridley Scott's *Blade Runner* to Terry Gilliam's *Brazil* to John Carpenter's *Escape from New York*. Who can forget their first glimpse of the ruins of New York in *Beneath the Planet of the Apes*? And when the producers of *The Truman Show* wanted that claustrophobic, cookie-cutter feel for the set where Jim Carrey's character spends his first 25 years, they did not build a Hollywood set. They shot at Seaside, Florida's famous neo-traditional development.

Scariest Than Reassessment Notices

Interested in horror? The haunted house is *de rigueur* for any self-respecting horror film: *The Haunting*, *Dr. Terror's House of Horrors*, *Bordello of Blood*. We could do an entire separate essay just on the houses featured in the films of the great Vincent Price: *House on Haunted Hill*, *Fall of the House of Usher*, and *House of Wax*, just to name three. If haunted seaside cottages give you nightmares, beware *The Ghost and Mrs. Muir*. Or why not haunt an entire street: *Elm Street*, where nightmares can kill? And can you imagine a listing sheet describing Linda Blair's *The Exorcist* bedroom?

In fact, the greatest horror film ever made was not just *about* real estate – it *starred* real estate. The Empire State Building deserves, at least, second billing to *King Kong* himself (and ahead of Fay Wray). Yes, 't was Beauty killed the Beast – with the help of a 102 story drop. The noble ESB wins my award for “best movie performance by a building,” hands down over the World Trade Center in Dino DeLaurentis's pathetic remake, and even over *The Towering Inferno*. The Empire State Building plays major roles in films from *An Affair to Remember* to *On the Town* to *Sleepless in Seattle*.

Stars and Bars

We decry our high divorce rate. But divorce sometimes happens, and real estate is often at the center of it. If you are faced with this distressing situation, see *War of the Roses*. Kathleen Turner, Michael Douglas, and Danny DeVito teach us how *not* to handle a property settlement.

Speaking of how real estate bears on social issues, we must take note that our stock of prison real estate is increasing. Of course, lockups have always been with us, and this darker aspect of humanity has not been neglected by our movie makers. Some favorites over the years include *Cool Hand Luke*, *Escape from Alcatraz*, and *The Shawshank Redemption*. We could name another half dozen about Alcatraz alone, most recently *The Rock*, but my own favorite in this genre is John Carpenter's *Escape from New York*. See Kurt Russell, Donald Pleasance, and Lee Van Cleef in the not-too-distant future, when the entire island of Manhattan has been converted into a prison.

Castles in the Air

Many other movies' settings rely on distinctive real estate. What would *Citizen Kane* be without Xanadu? Everyone knows that the central character Charles Foster Kane (Orsen Welles) is based on William Randolph Hearst, and Xanadu is based on Hearst's San Simeon. The long shot of the forbidding Xanadu in the beginning of the film strongly resembles the long shot of the Queen's palace that opens the earlier *Snow White*. In turn, Disney animators seemed to return the compliment by drawing the bad witch's castle in the opening shot of the subsequent *Sleeping Beauty* as a dead ringer for the matte shot of Xanadu. And did you know that Welles saved a bundle by using *Son of Kong* footage for his Everglades shots? (Some lose money buying Florida swampland; others save it buying Florida swampland footage.) Look for the animated bats, still in from the original.

One of the most historically important cinematic treatments of real estate is the late Akira Kurasowa's *Hidden Fortress*. Released in 1958, it has always been a favorite of fans of Japanese films. But it takes on a whole new aura after you have seen *Star Wars*. *Jedi* is derived from the Japanese *jidai geki* (samurai movie). It's all there in the Japanese original: R2D2, C3PO, Princess Leia, the struggle with the Empire, the Jedi knight (samurai) ethic embodied by Toshiro Mifune, swordplay (light sabers), and the forbidding, inaccessible death star (fortress) itself.

Another distinctive house plays a role in a classic Italian film. Fellini fans recall the fantastic scene of Fellini's alter ego Guido (Marcello Mastroianni), facing all the women in his life, set in his boyhood home in *8 1/2*.

You Bring Popcorn; I'll Bring Candy

This short list of great real estate movies just scratches the surface. To learn more, you can do what I did in preparing this article: surf some Web sites, rent the films you've always wanted to see, and watch some old favorites again. My preferred reference work on film is *TLA Film and Video Guide*, a 1997 book edited by David Bleiler and published by St. Martin's Griffin. I welcome you to e-mail me at smalpezzi@bus.wisc.edu, and tell me which real estate movies you

like the best. And I'll see you at the theater – located in a downtown, cineplex, mall, or other real estate of your choice. ■

Dr. Malpezzi is a Professor in the Department of Real Estate and Urban Land Economics at the University of Wisconsin-Madison. He thanks many colleagues and students, notably Doug Carlson, Carolyn Dehring, Richard Green, Keith Ito, Lesley Klein, Roderick Matthews, Kathleen Molla, Gerald Molyneaux, FSC (who teaches The Film as Art), and Kerry Vandell for providing helpful comments.

\$2,000 Grants Available

The Office of Real Estate Research offers grants in support of research that will generate results suitable for publication in the ILLINOIS REAL ESTATE LETTER. While this offer extends to all academic researchers, industry-based researchers, and real estate professionals, special consideration will be given to authors residing in Illinois.

Topics should relate to real estate's financial or economic aspects, including appraisal, property rights, brokerage, and regulation. While the focus need not be specifically on Illinois markets, the output should be of interest to Illinois readers. Because our articles are designed to be accessible to students and other non-technical readers, no submission should contain material that could be understood only by those with highly specialized knowledge. However, a submission can be a non-technical version of technical work, as well as an original creation.

The author of any article accepted for publication will receive a grant of up to \$2,000 (split among co-authors). Anyone interested in submitting work for consideration, or in obtaining further information, should contact Carolyn Dehring at the street or e-mail address, or the phone or FAX number, shown with editorial information on page 2.

Policy on Educational Use

The Office of Real Estate Research continues to receive requests from collegiate faculty wishing to assemble course reading packets. ILLINOIS REAL ESTATE LETTER (formerly ORER LETTER) articles are intended to be readily available for student use. Any original article appearing in this, or any past, ORER LETTER/ILLINOIS REAL ESTATE LETTER may be reproduced IN ITS ENTIRETY by a faculty member (or vendor acting at the faculty member's direction) in quantities sufficient to serve student needs. ORER does not hold the copyright to articles identified as reprints from other publications; professors wishing to reproduce such articles should contact the original publishers.

Accuracy of Articles

The Office of Real Estate Research makes every effort to assure the accuracy of all statements in ILLINOIS REAL ESTATE LETTER articles prepared by ORER staff members. However, the reader should note that legal and regulatory matters, which occasionally are discussed in ILLINOIS REAL ESTATE LETTER articles, are subject to change and to varying interpretations. Articles in this publication do not purport to provide legal or investment advice, and the Office of Real Estate Research shall not be held responsible for damages resulting from inaccuracies or omissions appearing in the ILLINOIS REAL ESTATE LETTER or other ORER publications.

(continued from page 16)

These options have some value to the borrower. Thus, the property is worth less in foreclosure than it would be if the lender received the deed in lieu of foreclosure, because the total value to the lender is the asset's value, minus the value of options that the borrower holds.

Also, the quality of the asset may decline during the period after default but prior to foreclosure, because the owner is unlikely to maintain a property headed for foreclosure. For these two reasons, the lender may be motivated to negotiate to get the deed in lieu of foreclosure, perhaps in return for giving up any *recourse* the lender might have to seek payment of shortfalls by going after the borrower's other assets or income. So it seems reasonable to proceed under the assumption that putting the property to the lender takes the form of the borrower's giving the lender a deed in lieu of foreclosure.

In Figure 1, the horizontal axis indicates the value of the asset that serves as security on the loan, while the vertical axis shows the values of various parties' equity or debt investments (here the only affected parties are the owner and a single lender). A 45° line is labeled "value of asset," the same measure listed on the horizontal axis. This approach is a commonly used graphical device in economics; the geometric idea is that a line that extends vertically from the 45° line to the horizontal axis completes a 45° right triangle, the sides of which are equal. Thus any value indicated along the horizontal axis is automatically measured in the vertical dimension (in this case, investment value) by the height of the 45° line.

Consider a borrower who has owned the asset (house and land) for an unspecified time period. The amount still owed on the mortgage loan is represented as C . Since the lender expects to collect C plus interest over the loan's remaining life, we call C the note's *book value*. (Changes in the note's *market value* as market interest rates change are beyond the scope of this discussion.) In a typical case, we would expect the asset to be worth more than C . If this value is the magnitude shown as B , there is no incentive for default even if the borrower can not afford to keep making loan payments, because selling the asset would produce positive equity. In this case, the lender's investment is worth C , the amount owed (book value) on the note; and the value of the borrower's equity position is the asset value minus the note's book value, or $(B - C)$.

However, if the asset's value were to drop below C , perhaps to A , then the ruthless borrower would default, and the value of the lender's claim would fall from C to A . (If a home is worth less than the principal owed on the loan, then the borrower has no equity, and by giving the lender a deed he gets out of an obligation to repay C by ceding an asset worth only A .) Transaction costs, such as brokerage fees, are ignored here (and throughout this essay). Also ignored is the idea that the defaulted borrower is evicted yet has to live somewhere, so "real world" default decisions have to include the *opportunity cost* of housing, even for ruthless defaulters. (Ruthless default is discussed in an income property context in "Loan Underwriting Rules of Thumb," *Illinois Real Estate Letter*, Summer/Fall 1995.)

What if the borrower is *not* a ruthless defaulter? This situation could prevail for a number of reasons, with reputational effects, tax consequences, and ethical issues among them. In such a case, a drop in the asset's value slightly below the book value of the note does not motivate default unless the borrower is indigent. A solvent, non-ruthless borrower would be expected to default only if the asset value's decline were truly substantial.

Costs of Defaulting

In Figure 2, the situations with asset values A and B are as described above. The new situation is that there are some costs, equal to $(C - E)$, associated with defaulting. As a result, even the ruthless borrower (if he has an ability to pay) will not default unless the asset's value falls below E , the note's book value *minus* the costs of default. Suppose that the value of the asset drops to D . Abandoning the property leaves the borrower with only E after default costs, so there is no default, and the value of the lender's position remains at C . But the asset's total value is only D , which is less than C . Thus the value of the borrower's position must be a *negative* magnitude, equal to $(D - C)$.

Now suppose there is the additional complexity associated with a shared appreciation mortgage, or SAM. Assume that the SAM works as follows: when the asset value rises above the original purchase price, the borrower and lender split the difference between the appreciated value and the purchase price (the lender shares in the portion of the equity position that exceeds the borrower's out of pocket contributions). For simplicity,

Figure 1

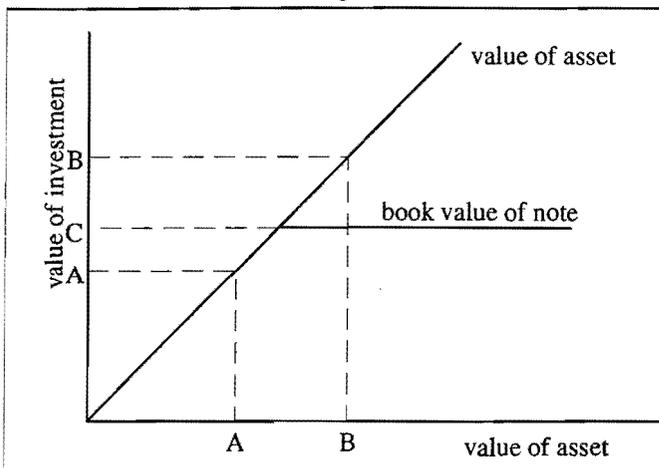


Figure 2

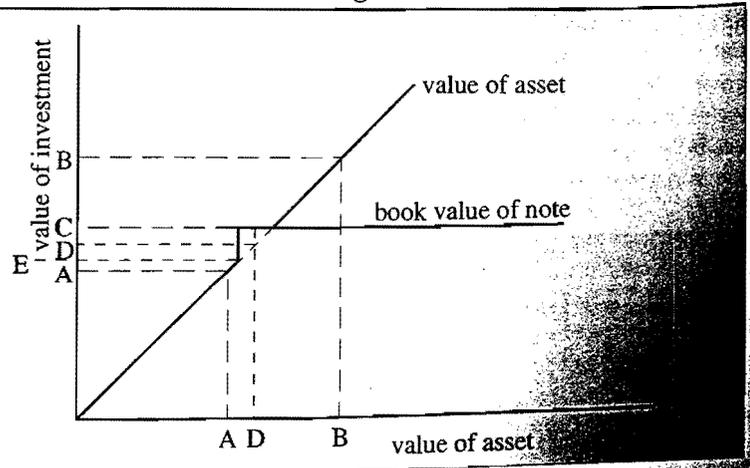
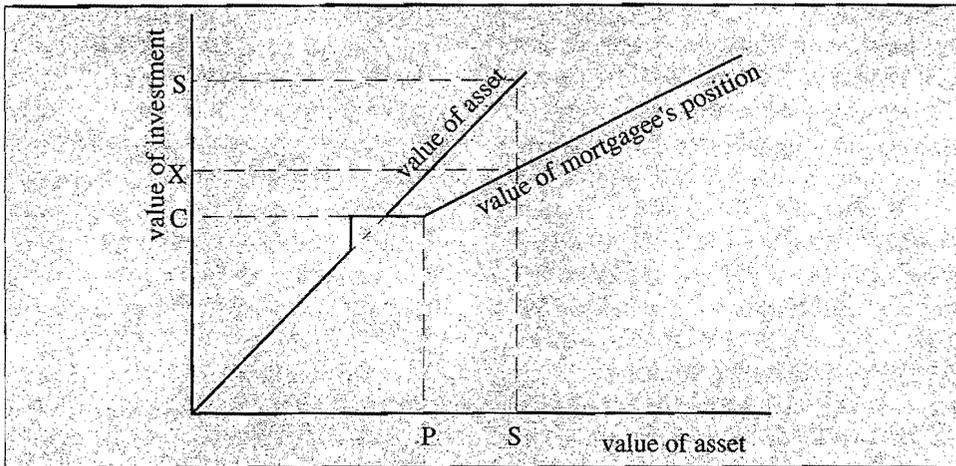


Figure 3



imagine that the split is 50-50. Of course, the loan would have other terms favorable to the borrower, to compensate for the sharing of price appreciation (which appears to be favorable to the lender).

Figure 3 shows a case in which the owner can sell the house at a price, S , that is far above the original purchase price, P . (Under the shared appreciation arrangement, after a prescribed number of years the borrower must either sell the house, or else make a cash payment to the lender based on an appraisal of the appreciated value.) So the lender gets the book value of the loan, C , plus half of the increment in value, $.5(S - P)$. The equity position is the sum of equity contributions to date through downpayment and loan amortization, $(P - C)$, and half of the appreciation, $.5(S - P)$. Figure 4 illustrates the value of the home owner's position, given all possible values of the asset. Note that the graph looks like that of a standard *call option*, with a little extra kink resulting from the shared appreciation feature of the loan.

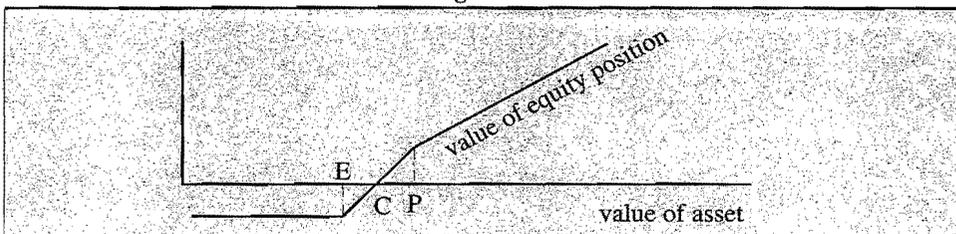
Of course, the sum of the equity and debt positions must be the total value of the underlying asset, *if* the asset value is greater than the book value of debt minus the borrower's cost to default. But at values *below* the book value of debt minus the borrower's cost to default, the non-

ruthless borrower suffers these costs while the lender gets the full asset value. Thus, the sum of the two positions is less than the asset value. Here it is assumed that default costs consist of things other than mere recourse (having to pay the amount of the loan not covered by the asset's net selling price). If recourse is the only source of default costs for the borrower, then the two positions sum to total value regardless of the selling price.

Consider a case in which there are two notes secured by the asset in question. The accompanying security documents would be called a *first mortgage* and a *second mortgage*. This terminology denotes the priority of claims on the underlying asset. Typically, the note secured by the first mortgage is satisfied completely before the holder of the note secured by the second mortgage is paid anything; this sequence is referred to as *absolute priority*. And, as before, all of the secured debt positions are satisfied before the equity position gets a dime. Figure 5 illustrates the situation involving two notes, while including the issue of default costs but excluding the sharing of the asset's appreciation in value.

If the value of the asset is H in Figure 5, then the first mortgagee receives the senior note's book value, I . The second mortgagee receives the subordinate note's

Figure 4



book value, $(C - I)$. Finally, the equity position receives the residual amount, $(H - C)$. If, however, the value of the asset is only G , then the equity position receives nothing (and also must suffer the costs of default). The second mortgagee receives only a portion of the subordinate note's book value, $(G - I)$, but the first mortgagee receives the full book value of the senior note, I . Finally if the asset value is F , the equity position's value is zero (or negative, with costs of default considered). The second mortgagee's position is also worth zero, and the first mortgagee receives only a portion of the book value of the senior note.

The Income Property Case

Now consider the case of income producing real estate. Of course, everything stated above regarding owner occupied housing deals is also relevant to the realm of income properties. However, there are two primary differences. First, the borrower's costs of default tend to be minuscule in the income property arena, where recourse is almost nonexistent, ownership entities are often created for single projects, and default seems neither to have adverse reputational consequences nor to raise ethical questions (since the economics of the default option is well understood by both borrowers and lenders in deals involving income property).

Second, with the advent of commercial mortgage backed securities, there may be many layers of debt seniority; these layers are called *tranches* (French for *slices*). Tranches represent different default risk classes. Just as a second mortgage is subordinate to a first note, a *B* tranche is subordinate to a *BB* tranche, both are subordinate to *BBB*, and so on through *AAA*. There may even be an *unrated* securities tranche that bears the risk of first losses. Figure 6 shows seven tranches, with six rated and one unrated.

Suppose that the value of the asset is J in Figure 6. In this case, neither the equity position nor the unrated tranche has any value. However, the *B* rated securities have about half of their book values, and all of the other higher priority tranches are worth their book values. A deal like this one would be structured so that foreclosure would not occur. In the face of a default, the property would go

Figure 5

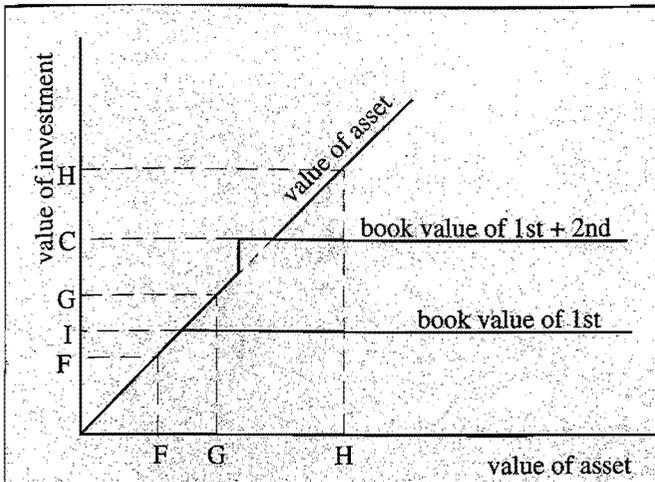
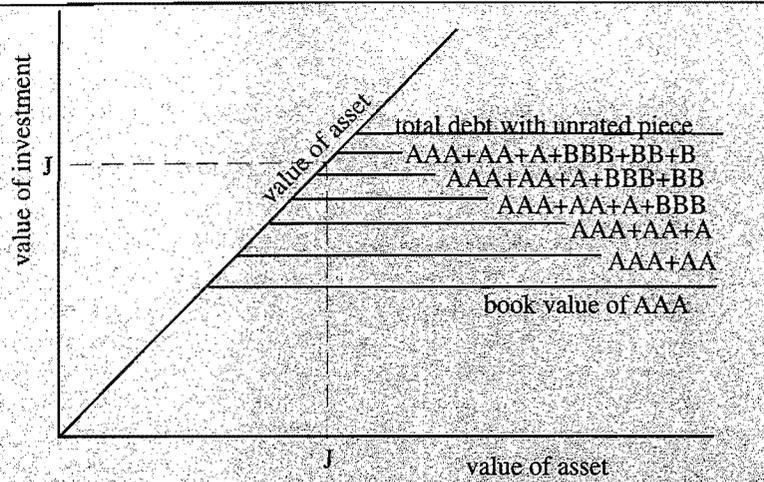


Figure 6



directly to a trust, and an entity called the *special servicer* would liquidate and distribute the money to the various security holders. But what if the special servicer were to own a very subordinate tranche, perhaps the unrated piece; could there be a conflict of interest? That is, might the servicer profit by dragging its feet, hoping the asset value might rise, thereby making its position in the first loss piece whole? The point is not to accuse any particular special servicer of potentially violating its duties as an agent. But we can at least recognize that there could be mechanisms for transferring value from less risky to riskier classes.

In fact, this type of activity does occur in other contexts, and it is a serious problem. In general, it is called a *violation of absolute priority*, and it happens most often in bankruptcy. Clearly, a lender can structure a deal to avoid bankruptcy by forcing the owner to hold the equity interest through a single purpose entity (so that problems in other parts of

the owner's portfolio will not drag down the subject deal). Nevertheless, when bankruptcy is initiated, judges are likely to allocate voting rights to claimants whose positions have zero values. (Of course, there can be substantial disagreements over values, so it would be unfair to assign all of the blame to the courts.) Those claimants that have votes, but whose positions have no actual values, have incentives to delay reorganization: either until the market turns around, or until the claimants with value agree to share their good fortune in any reorganizing of the claims. Figure 7 shows the impact of violations of absolute priority on the values of the various debt positions. The darker shaded areas on the figure thus indicate a degree of uncertainty (the "gray areas" do not simply provide a visual pun).

Creating the Right Incentives

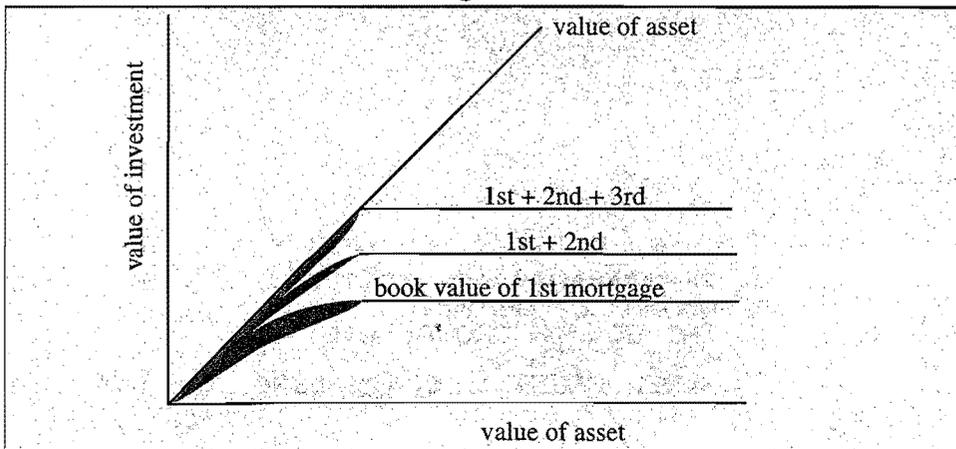
What should really be done to avoid violations of absolute priority? It may be

obvious that relatively rapid liquidation, followed by a swift distribution according to priority, is ideal. However, this arrangement is unlikely to occur, because it would mean a radical change in the US legal environment. (The law is not the only problem; some analysts assert that bankruptcy declarations would be delayed, and thus losses would grow, if liquidation were the certain outcome.) Thus, a more modest proposal is in order.

First, voting rights should be allocated *only* by priority classes. Second, value should be determined by an auction process. Specifically, the value asserted by a particular creditor should stand until another creditor's bid asserts a higher value (it would not be proper to open this auction to the general market). A contrary bidder thus would agree to buy the position of a lower initial bidder at the value the low bid implies (those with *no* value would have no incentive to bid *anything* to buy out higher priority claims). Alternatively, if the first bid is high enough, the contrarian agrees to *sell* at the price implied by the higher bid. Thus if the initial bidder agrees to buy or sell, as the case may be, the initial valuation stands. If the initial bidder decides *not* to buy or sell, the contrary bid establishes value.

This process would continue until a deadline, imposed by the judge, were reached. At the end of the auction, the judge would activate voting rights only for those creditor classes with positive value, according to the determination of the auction process. An agreement adopted by those classes would then determine the nature of the reorganization. ■

Figure 7



Deals Illustrated

Peter F. Colwell

It is often difficult to visualize the structure of *deals* – various types of real estate transactions that involve negotiations – because deals are often complex, and we have not yet sufficiently developed the graphical devices that make the visualization of complex deals relatively straightforward. The purpose of this article is to explore how the terms of real estate deals might be visualized.

Default and Foreclosure

A starting point might be the relatively simple case of home ownership, a situation that can involve more complexity than often is apparent. A deal involving home ownership revolves around an asset (the house and land) that has value. If the individual buying the home is unable to pay the entire purchase price with his own funds (or if he simply chooses not to do so, for portfolio reasons), then the home owner also becomes a borrower. Under a mortgage lending arrangement (with a *note* specifying the terms of repayment and a *mortgage* that gives the lender a claim on the property's value in the event of nonpayment, or *default*), the borrower (mortgagor) and lender (mortgagee) share in the asset's value in ways that depend on the magnitude of that value. We might initially assume that there is *ruthless default*, meaning that

if the property's value drops below the amount remaining due on the note, the borrower defaults on the loan immediately even if he could easily afford to continue making payments. Financial commentators might say that the borrower has a *put option*, and is able to exercise that option by *putting*, or selling, the property to the lender at a price equal to the remaining loan balance.

This act of putting the property to the lender could take different forms. First, the borrower could simply give the lender a *deed in lieu of foreclosure*, handing title to the property over to the lender without any protest or legal wrangling. Alternatively, the borrower could drag the process out through legal maneuverings, and force the lender to *foreclose*. This latter direction provides the borrower with additional months of occupancy *and* an option to get the property back, within some period of months, by paying the missed payments plus interest and any applicable penalties. (This option is likely to be exercised if the asset price should happen to rise sufficiently after the lender begins taking legal action.) Prior to foreclosure, this option exists through the *equitable right of redemption*. After foreclosure, the option exists through the *statutory right of redemption*.

(continued on page 13)

"The Price of Zoning Revisited: Zoning Issues Raised by the Telecommunications Act of 1996" (page 1) explains how public officials could benefit their communities, and also enhance economic efficiency, simply by charging appropriate prices for the approval of transmission tower sites. **"The Value of Zoning"** (page 4) is a technical discussion of the effects that zoning has on the relative values of land in different zones. The authors demonstrate how neither the typical zoning effort nor the market's own allocation of land leads to the optimal condition of equal values in differing zones' interiors. **"Hierarchical Zoning, Incompatible Uses, and Price Discounts"** (page 8) offers the theory that owners' fear of future locational obsolescence helps to explain why lower prices are observed for residential property located in areas zoned for commercial use. **"The Greatest Real Estate Movies of All Time"** (page 9) provides a professor's lighthearted, but thorough, look at the many aspects of real estate that have provided plot lines for the great (think *It's a Wonderful Life*) and not so great (think *Joe's Apartment*) products of the silver screen. **"Deals Illustrated"** (page 16) discusses the types of negotiations in which a lender and borrower might engage to protect their positions, and to assure that their expected returns are appropriate to the risks accepted.

Office of Real Estate Research
University of Illinois at Urbana-Champaign
304-D David Kinley Hall
1407 W. Gregory Drive
Urbana, IL 61801

Non-profit Org.
U.S. Postage
PAID
Permit No. 75
Champaign, IL 61820

*****AUTO**3-DIGIT 604 75 10
Robert C. Gorman
THE GORMAN GROUP, LTD
1200 175TH ST
HAZEL CREST IL 60429-1936