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In This Issue

Economic Analysis in Urban Real Estate Markets

By Erica E. Greulich and Manny A. Macatangay

Real estate markets' ubiquitous transactions and the litigation, negotiation, or arbitration associated with them can be better understood through economic analysis. This article discusses the use of economic analysis to address issues concerning urban real estate markets. It focuses on the question of valuation, which is at the center of many real estate disputes. The increased use of economic analysis enables market participants to improve the precision of their approach to valuation and related decisions.

Valuation in real estate is not just a matter of valuing property itself. Agricultural land, environmental rights, and structures acquired through eminent domain or condemnation could require valuation of damages due to contamination, relocation benefits, or goodwill. Delays could cause disputes that require the valuation of differences in timing. Businesses could suffer lost profits due to a delay in the establishment of a store. Investors could suffer lost income due to a delayed sale in a cooling property market. Developers could suffer lost opportunities due to construction delays requiring unexpected financing or allowing the entry of competition.

An economic approach to valuation requires addressing several questions. What are the key features of real estate markets and the economic incentives governing their operation and expansion? How are they related to other markets in urban settlements, such as transport and labor? And what quantitative techniques can be used to analyze real estate markets?

The supply of and demand for land drive interactions in real estate markets. Theoretical models indicate that as a city's population and incomes increase, so does demand for the conversion of land to commercial or residential uses. When the projected commercial or residential value of land exceeds its agricultural or non-use value, development occurs. Numerous parties interact to determine whether, where, and when structures are built. Developers, construction firms, contractors, and design professionals collaborate to supply real estate. Property owners and tenants demand real estate. Brokers and attorneys facilitate transactions and financing. The federal and local governments affect the location and speed of development by regulation (e.g., zoning restrictions), supply-side subsidies and taxes (e.g., development impact fees), and demand-side subsidies and taxes (e.g., mortgage interest and property tax deductions for homeowners).

A defining characteristic of real estate is its fixed location; since it cannot be traded across locations, locally determined prices are the primary mechanism through which the real estate market can react to shocks in the short run. Moreover, real estate is inextricably linked to other urban markets. Industrial expansion in an urban region indirectly stimulates demand for residential real estate via population growth. Industrial growth also stimulates demand for commercial real estate both directly (e.g., new industrial facilities) and indirectly (e.g., structures housing the additional services and retail demanded by the expanding population). As industry and population grow, new roadways, rail lines, and other transport allow firms and households to locate further from the urban center, thus spurring real estate demand in outlying areas.

Quantitative techniques, such as econometrics, statistics, or optimization methods, can be used in property valuation. For example, panel data econometrics can be used to value

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Imperfect Information, Entry, and the Merger Guidelines

By Barry C. Harris, Stuart D. Gurrea and Allison M. Ivory

The analysis of entry in the U.S. Department of Justice and Federal Trade Commission's Horizontal Merger Guidelines ("Guidelines") addresses the likelihood that entry will curtail any potential anticompetitive effects of a merger. To this end, the 1992 Merger Guidelines introduced the important economic distinction between uncommitted entry and committed entry. Uncommitted entry refers to situations where there are little or no sunk costs and entrants can enter and exit quickly at low cost (i.e., so-called hit-and-run entry), while committed entry refers to situations where sunk costs are significant and an economically rational entrant would consider the long-term profitability of its entry decision including a return on the sunk costs. The Guidelines' analysis of entry is concerned with the significance of new competition by committed entrants.

The analysis of entry involves the availability and quality of information and the formation of expectations about future profits. In the presence of significant sunk costs, the decision to enter a market depends on the long-run prospects for profitability in the market. Profitability is affected by post-entry competition and post-entry prices. The Guidelines, however, stress that entry must be sufficient, that is it must prevent the elevation of price above pre-merger levels. Consequently, a committed entrant would need to expect to be profitable in post-merger competition, even though its entry assured that post-merger competition would involve pre-merger prices.

Economic models of entry and The Guidelines differ on how information and the formation of expectations are modeled. The economic models that provide the basis for identifying competitive harm assume that competitors do not have perfect information about each others' competitive responses, while The Guidelines' treatment of entry implicitly makes strong assumptions about the accuracy of an entrant's information about post-entry competition. In particular, The Guidelines generally assume that an entrant has accurate information about the nature of the post-entry market and that at least some potential entrants accurately interpret incumbents' pre-entry behavior.

The results derived from this stylized framework, while useful for identifying issues of entry, are not particularly useful in analyzing real-world mergers. These results are too sensitive to assumptions about post-merger behavior and the nature of information held by the various firms. This sensitivity is illustrated in a variety of theoretical models that show how the nature of uncertainty and the ability of the firm to reduce the uncertainty may affect entry decisions. For example, in some models, firms deal with uncertainty by adopting sequential investment strategies, or clustering their investments. Another significant dimension is the heterogeneity of information across potential entrants and the effect this has on entry decisions. In particular, imperfect information may lead some firms to overestimate their expected success in the market and trigger an entry decision that would not have been made under perfect information.

Introducing a more complex set of assumptions regarding information and the formation of expectations affects not only results concerning entry decisions, but also the optimal strategies of incumbent firms. For example, lack of information regarding the incumbent firms' cost structure may lead potential entrants to interpret supracompetitive prices observed in a market as competitive and, thus indicative of the likelihood of post-entry success. High prices and the prospect of profits under apparently competitive pricing may induce entry because entrants will form erroneous expectations. As a result, incumbent firms may be reluctant to set prices above competitive levels for fear of inducing additional competition that will remain for a significant period due to the existence of sunk costs.

The more complex role of information indicated in the theoretical literature is corroborated by empirical findings. A review of the empirical literature on entry finds that it supports The Guidelines in some respects (e.g., profit opportunities induce entry and entry and exit are more likely with low sunk costs) and contradicts them in others (e.g., some entrants may focus on variability of profits and entry may occur with low average profits.) Most importantly, the empirical literature leaves open the possibility that real-world entry decisions are more complex than the Guidelines process suggests.

These findings have clear implications for how entry should be treated in a Guidelines analysis. All Guidelines analyses should delve into the fact situation peculiar to the specific merger. Among the important facts are the quality and completeness of information available to existing competitors and to potential entrants. A complete analysis would establish the quality and completeness of this information and apply it consistently to both the analysis of competitive effects and to the analysis of entry.

Barry C. Harris, EI's Chairman of the Board, and Senior Economists Stuart D. Gurrea and Allison M. Ivory have extensive experience in dealing with issues concerning entry. This article is based on their article "Are there Contradictions in the Economic Bases for the Merger Guidelines' Treatment of Entry and Repositioning?," in Issues in Competition Law and Policy, *American Bar Association, Section of Antitrust Law (forthcoming 2006).*

Implications of Price Behavior for Market Power and Market Definition in Delayed Entry Generic Drug Cases

By Peter R. Greenhalgh

Considerable litigation has involved accusations that holders of patents on brand name drugs have delayed the entry of generic competitors. Plaintiffs, such as buyer classes or generic drug firms allege that entry was delayed through such actions as falsely claiming patent infringement. These cases typically involve complex issues as to whether there is a legitimate patent and whether the generic firm was infringing on the patent. In addition, the Federal Trade Commission has investigated and litigated cases involving agreements that have settled patent infringement cases between drug patent holders and generic competitors. The FTC has been concerned when such settlements involve payments from the incumbent patent holder to the generic competitor, arguing that such payments may delay generic competition. These cases can be especially difficult to analyze because the settlements can involve benefits, such as technology transfers and reductions in litigation costs.

Private plaintiffs often allege that the incumbent patent holder has monopolized a market consisting of the branded drug and its generic equivalents. Similarly, the FTC has been concerned with settlements that are perceived to prolong the market power of the patent holder. In private cases, the supposed proof of market power sometimes is little more than the simple demonstration that once generic competitors entered, the average price in the alleged market fell. According to plaintiffs, the decline in price demonstrates that ex ante the incumbent patent holder must have had market power, and this market power would only have existed if the market is as alleged by the plaintiffs.

This analysis is simplistic and ignores the competitive dynamic among many branded drugs. In a well-defined economic market, a monopolist increases its profits while raising prices above competitive levels by restricting output below competitive levels. In a well-defined market, entry by competitors results in lower prices and greater output. But in certain drug cases, this paradigm is not met. Generic entry can result in lower prices but lower output.

For many ailments, a number of competing branded drugs can be used to treat patients, even though those drugs have very different chemical compositions. For example, arthritis patients can be treated with any of a variety of non-steroidal anti-inflammatory drugs. Thus, there may be substantial competition among branded drugs.

Competition among branded drugs involves heavy promotional expenditures. These expenditures include the provision of informational materials and complimentary samples to prescribing physicians. Drug companies spend millions of dollars on free samples to encourage physicians to try the companies' products on patients. Promotional expenditures have an important effect on the market shares of competing drugs. Moreover, these expenditures can benefit consumers. Due to differences among patients, physicians cannot be assured that any given drug will be effective and safe for a given patient. Free samples allow a physician and patient to try a particular drug cost-free. If it works, the physician will prescribe more of the drug. If not, the physician typically tries another competing drug therapy to see if that drug works better.

The branded drug manufacturer typically ceases promotional expenditures for the drug when generic competition occurs. In part, this response is due to generic substitution laws that either allow or mandate that pharmacists substitute generic equivalents for prescriptions of branded drugs. Given that substitution, it makes sense for the branded manufacturer to cease promotions because the benefits of its promotional expenditures typically accrue to its generic competitors. Due to elimination of promotional expenditure following generic entry, a drug (including the branded version and generic equivalents) can lose sales to other branded drugs that continue with high promotional expenditures.

The effect of generic entry on promotional expenditures in these types of drug therapies has critical implications for defining economic markets and determining whether an incumbent patent holder has

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EI News and Notes

ScanSoft Acquires Nuance Communication

ScanSoft recently completed its acquisition of Nuance after the Department of Justice found no reason to challenge the acquisition. The firms were the two leading worldwide suppliers of voice recognition software. Barry C. Harris worked with attorneys from Howrey and Wilson, Sonsini to help persuade DOJ not to challenge the acquisition. His analysis demonstrated that because of competition among different customer-response systems, the evolving nature of the technology, and recent entry, the acquisition would not threaten competition.

Utah Health Care Markets Study

A team of EI economists led by David A. Argue conducted a comprehensive study of competition in Utah for health insurance services, hospital and ambulatory surgery center services, and physician services. The report considers the structure of markets and assesses the competitive impact of various practices, such as managed care contracting, provider network formation, investment in facilities and equipment and physician employment. The team found considerable evidence that Utah's health care markets are performing competitively notwithstanding the size, geographic spread, vertical relationships, and contracting practices of some participants.

Whirlpool Maytag Merger

EI economists Philip B. Nelson, William P. Hall, Michael G. Baumann, John M. Gale, Sudip Gupta, Gloria J. Hurdle and Joel B. Papke assisted Maytag Corporation in obtaining approval of its merger with Whirlpool Corporation. EI worked closely with the law firms of Wachtell Lipton Rosen & Katz and Cleary Gottlieb Steen & Hamilton, who represented Maytag, and Howrey, who represented Whirlpool. The transaction, which involved overlaps in a variety of household appliances, such as washing machines, was investigated by the DOJ. The DOJ's approval of the acquisition was unconditional.

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commercial real estate. The price of commercial property is influenced by several factors, such as the characteristics of the structure currently on it, commute distances and times, proximity to public transport hubs and business districts, the quality of local amenities and infrastructure, local construction costs, zoning and government regulations, density of nearby development, population, and area median income. Data on property values and determinant factors could be gathered for multiple years and metropolitan areas. Parameters could be estimated for the impact of each determinant on property value. The econometric model could determine the impact on property value of a change in one determinant (e.g., a plan to establish a bus line two blocks away), keeping other determinants constant.

Optimization methods involving geographic information and cartographic techniques can also be used in valuation. Participants in interrelated product, labor force, and transportation services markets all affect property values as they pursue optimal strategies. A firm seeking a location that maximizes its profits may focus on areas with adequate links to transportation for exports, strong growth to support local sales, agglomeration effects such as input scale economies or spillover shared with other firms, and an appropriately skilled workforce. Workers need to commute from homes to workplaces; their wages and living costs, including transportation costs, affect their choices of housing, schools, lifestyle, workplaces, and transport modes, such as walking, biking, driving, or public transit. As noted earlier, transportation services evolve with population growth and activity. Public transport systems emerge as urban densities rise, and new freeways and roads are built as urban areas expand.

Optimization models can capture the effects of these interacting markets on property valuation through representations of the entry, growth, and exit of firms, demographic change, or spatial development of transport systems. The models can also be used to forecast the profile of enterprises, workers, or transport services that may locate in an area over time. The various profiles could then assist in projecting individual or aggregate real estate values.

Participants in real estate markets must make many different types of decisions. A real estate developer considers acquisition, amenity planning, covenants balancing rights among multiple uses and users, and tax abatements. Landlords and tenants may engage in negotiation or litigation for commercial or residential leases. Investors review the risks of investment targets, develop strategies for selling assets, and analyze land use limitations and possibilities. A corporation may consolidate or expand operations geographically. A property tax professional may evaluate issues related to asset recovery, bankruptcy, and state or local incentives for commercial or not-for-profit entities. Economic analysis can better inform market participants when making these decisions.

Erica E. Greulich, a Senior Economist in EI's California office, studies regulation, housing markets, and wage and employment outcomes with the use of econometric and other models.

Manny A. Macatangay, a Vice President in EI's California office, has prepared valuations of infrastructure projects with the use of market simulation models and network optimization techniques.

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market power. Generic entry of a particular drug sometimes dramatically lowers the sales of that drug, including both branded and generic versions. If after entry, volume falls as well as price, it does not make sense to conclude that the incumbent drug manufacturer has monopolized a market consisting solely of its branded sales plus sales of generically equivalent products. If one accepts that market, one must also accept the anomalous result that lower average prices lower output. That candidate market is invalid because it ignores the competition across branded products.

Similarly, a post-entry price decrease does not show that the incumbent branded manufacturer has meaningful market power. That manufacturer's sales depend on its success competing against other branded drugs. Once the incentive to promote is eliminated by generic entry, both the ability of the branded drug to compete as well as the total sales of the branded drug and its generic equivalent can decline precipitously in competition with other branded drugs.

It would also be overly simplistic to conclude that delaying generic entry necessarily harms consumer welfare. Even if the onset of generic competition benefits some customers through lower prices, it may harm others through reduced promotional activities, which could cause some patients not to receive the best product for their needs.

The effects of generic competition can vary widely across patented drugs. In cases involving competition between generic and branded drugs, conclusions regarding market definition and market power require careful empirical investigation rather than automatic conclusions based on insufficient evidence.

Peter R. Greenhalgh is an EI Principal and was a former Assistant Director of the Economic Policy Office of the Antitrust Division of DOJ. He has provided expert analyses and deposition testimony in several generic drug matters involving anti-depressants and pain relievers.

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