Institutional-Grade Properties: Performance and Ownership

Authors John D. Benjamin, Peter Chinloy, and William G. Hardin III

Abstract Quality commercial properties differ in operating performance not only on physical characteristics but in type of ownership, management, and control. For 1996–2001 data on Atlanta apartments, a primary market for multiple types of investors, there is varying operating performance by ownership. Larger-scale owners and local property managers earn higher effective rents.

Owners of similar assets with common physical characteristics are assumed to obtain the same performance. Evidence from real estate markets suggests otherwise; characteristics of the owner influence the price. In the residential housing market, when buyers are under time pressure or have school-age children, they pay higher prices for their homes (Harding, Rosenthal, and Sirmans, 2003). For commercial properties, Lambson, McQueen, and Slade (2004) find that out-of-town buyers pay higher prices than locals. An extension of this reasoning is that local owners have advantages over out-of-town owners.

A related issue is whether there are differences in the operating performance of properties based on ownership structure in terms of management, firm size, and control. In operating performance, these differences appear in rent and occupancy. These differences can occur even in large, standardized primary-market properties. These properties attract a spectrum of owners and buyers, including local, national, and international operators.[1] In these primary and high-grade markets, out-of-town investors compete with locally focused players who can either be large or small operators.

This paper empirically examines two aspects of ownership. The first is whether the property benefits from the size of the firm that operates it. Size of firm is determined by the number of properties under ownership and control within a single market. The other is whether being local, either in ownership or management yields a higher return. Data controls are included for the type, grade, and location of the property, standardized by ownership. The property quality is distinguished by a number of dimensions including age, amenities, and exact latitude and longitude in global positioning.

Evidence of the advantage of local managers over non-local ones has been shown to exist in securities markets, despite the apparent liquidity, divisibility, and efficiency of publicly traded stocks. Coval and Moskowitz (1999) find that money managers obtain higher returns from stock investments that are close to home as measured by distance to the corporate headquarters. That premium increases with smaller size and with leverage, and it is more pronounced in the South and Midwest than on the East and West Coasts of the United States. Fund managers in remote areas who focus on local stocks earn abnormal returns in excess of 2% a year (Coval and Moskowitz, 2001).[2] The local stocks avoided by nearby managers under-perform other local stocks bought and held in portfolios, indicating an information and efficiency knowledge in distinguishing between them.

Even in large-market money centers such as Boston, New York, and Philadelphia, similar local effects appear in securities markets. Hong, Kubik, and Stein (2003) find that mutual fund managers hold similar portfolios to those of other neighboring managers in the same metro area. These portfolios exhibit local preference, on the grounds that it is easier for money managers to monitor local firms' financial performance.[3] In managed stock market funds, there is a significantly higher performance for local holdings as opposed to distant portfolios. By analogy, if a local premium associated with management appears in stock portfolios, a comparable test would be whether it occurs for real estate.

Investors typically benefit from diversifying away local risk. Large investors include pension funds and insurance companies that invest nationally and internationally in real estate. They invest in real estate to achieve portfolio diversification, both in a mixed asset and in a real estate portfolio context. Quality local properties attract these investors, yet they may not be able to take advantage of the inefficiencies and opportunities in non-primary local markets and are often hamstrung by a requirement to use third-party asset and property management.

Local owners take advantage of superior information, lower on-the-ground costs, and fewer conflicts between asset and property management. Characteristically, a local focus involves a concentrated and risky portfolio that is not diversified across the country. Local focused operators owning a large number of properties in a single market lack the diversification of national and international investors.

A null hypothesis for this research is that the characteristics of ownership do not matter: once grade of property and conventional property description characteristics are included, there is no difference between properties by performance. Performance is measured in additional gross and effective rent. As an alternative, by holding a more diversified portfolio, national owners and investors accept lower gross and effective rents in a given market after physical vacancy and rental concessions. In exchange for holding more non-diversified risk, local scale operators who operate in the market as well as less-diversified investors earn improved performance.[4]

The model is tested for a time series sample of apartment complexes owned in metro Atlanta, Georgia for 1996–2001. The sample contains apartment buildings with at least 150 units. The apartment properties are classified by a wide range of characteristics, including age, location by latitude and longitude, and amenities, allowing for a finer gradation than the typical A, B, and C. Atlanta is a primary apartment market, allowing for a test for the coexistence of local and national players. During the sample period, Atlanta ranked either first or second in the number of multifamily starts and completions among metro areas in the U.S. These newer units immediately become the focus of national investors.[5]

As shown in the prior comparable stock market studies (Coval and Moskowitz, 1999, 2001; and Hong, Kubik, and Stein 2003), the location of stock ownership is based on the locale of the headquarters of the stock issuing firm and on the locale of the asset manager. Here, real estate properties and their locations relative to ownership are among the units of observation. For each property, the ownership and management are separately distinguished using primary data sources.

The results show that there is a local performance premium for ownership structure.[6] Larger-sized operators, in the number of properties and the number of units owned, obtain improved rent and operating performance relative to other market participants and drive the local market performance premium.[7] The local owner with integrated management behaves strategically. Its effective returns are higher, trading off lower occupancy offset by higher effective rents. The results are robust to specifications by type of apartment unit, number of bedrooms, submarket, and controlled for age, property, and neighborhood characteristics. Property performance is dependent on ownership structure.

There has been extensive analysis of whether some buyers pay more than others when they purchase properties. Here, the focus and contribution are on the operating and performance of properties, and whether some people operate better. Some operators perform better than others based on ownership structure, as well as other observable characteristics. The dominant factor leading to improved performance is less the location of the owner than the size. In equilibrium, a focused local operator should obtain a premium to compensate for the undiversified portfolio risk. These results provide a step toward estimating that premium in additional effective rent.

Background

Hedonic and other methodologies estimate prices for such varied attributes as the number of square feet, location, age, structure, and property condition. Pricing on ownership structure and management of properties has seen less investigation. When owners and managers are physically distant from their properties and markets, they lack the relationships that drive down costs and that create positive externalities for tenants in their search. As Sirmans, Sirmans, and Turnbull (1999) indicate, there are performance differences in the choice of a management firm.

The evidence on performance differences in real estate by ownership is concentrated on the price paid as opposed to subsequent property performance. Harding, Rosenthal, and Sirmans (2003), using data from the *Annual Housing Survey* to determine whether buyers or sellers have the upper hand in bargaining for houses, find that first-time buyers pay higher prices, as do those facing short-term decisions. Zumpano, Elder, and Baryla (1996) indicate that first-time and out-of-town buyers of residential housing search longer. Less informed and high opportunity-cost buyers tend to use intermediaries. For residential housing, Jud and Frew (1986) find that out-of-town buyers have a greater demand for brokerage services. The results on housing prices paid by buyer characteristics, however, are not uniform. Turnbull and Sirmans (1993) do not always find that out-of-towners pay more for houses than locals.

For commercial real estate, Lambson, McQueen, and Slade (2004) examine purchase transactions in the Phoenix apartment market for 1990–2001 by buyer location. They find that out-of-state buyers pay more than locals, particularly if prices are high in the buyers' home territory. This out-of-state effect is a separate test indicating information asymmetry rather than market pricing risk. A risk-based alternative is that local buyers, being less diversified, have to bid up to a higher cap rate or yield than out-of-towners. Hardin and Wolverton (1999) show that, at times, real estate investment trusts (REITs) have paid market premiums for acquisitions, and they postulate that portfolio and capital market decisions drive these premiums.

One characteristic of national investors is a concentration of their ownership in quality properties. Malpezzi and Shilling (2000) find that investors looking across the national market tilt their holdings to high-grade properties. Even adjusting for quality of properties, these investors are over-weighted at the high end by consideration of the need to make prudent (less risky) investments.

A second emphasis of national real estate investors is on portfolio diversification. Graff and Young (1996) indicate that institutional investors diversify using simple diversification (or naïve) rules or by using efficient portfolios built on National Council of Real Estate Investment Fiduciaries data. These portfolios achieve similar types of performance when risk-adjusted even if NCREIF data do not have sufficient depth. But even so, these national investors retain a diversification advantage. These real estate investors have been optimizing with respect to holding patterns. They use increasingly short-time horizons (Graff and Young, 2000), need exit strategies, and require ease of liquidity for quarterly and yearly valuations, as well as earnings reports. Their holding lengths had been declining to 6–8 years by the 1990s, below the 10-year lengths frequently used by appraisers (Fisher and Young, 2000). Fisher, Gatzlaff, Geltner, and Haurin (2003) find that institutional properties in the early 1980s had an annual turnover rate of less than 5%. By 2000, that turnover rate had more than doubled, to nearly 11% annually.

These studies in the residential and commercial real estate sectors concentrate on the capital event or the price paid. Buyers with observable characteristics pay more for real estate, holding the property's physical traits constant. These studies, however, have not addressed the operating side, which is the focus of this research.

Model

The model is for the apartment rental market, but is applicable to office, retail, and industrial institutional-grade properties. Potentially, the performance of the property differs depending on the landlord's characteristics.

The physical characteristics of the property are a. Organizational variables of the ownership are w. The variables of interest are gross rent r and the occupancy rate q. The effective rent collected is $c = rq$. This effective rent is adjusted for the economic vacancy rate $v = 1 - q$. The economic vacancy rate is the sum of concessions and physically vacant units not paying rent, as a percentage of the rent roll. The rent roll r is the collection when all units are occupied with no concessions. In logarithms, the effective rent is the sum of similar transformations for the gross rent and occupancy, or $\ln c = \ln r + \ln q$. The logarithm of occupancy is approximately one less than the logarithm of vacancy since $\ln(1 - q) \cong -\ln q$. So the percentage change in effective rent is the sum of the effects from the logarithm of gross rents, less that for the vacancy rate. Then $\Delta \ln c = \Delta \ln r - \Delta \ln v$ where Δ denotes a first difference; this represents the growth of effective rent as the growth of the rent roll less the growth of vacancy.

If these w variables have identical coefficients across ownership, management, and control structures, conventional hedonic regressions of the form $r(a)$ and $q(a)$ are sufficient. In the semi-log form for the rent equation, then $\ln r = \hat{\beta}_a a$ where $\hat{\beta}_a$ are the estimated percentage increases in rent from the attribute a. Such an equation leaves no scope for actions of the management or organization, and assumes there are no differences between them.

Alternatively, if management decisions vary by ownership and organization, the rent and occupancy structural forms are $r(w, a)$ and $q(w, a)$. Inherent cost differences between types of ownership lead to business decisions resulting in differing rent and occupancy rates. A testable hypothesis is whether the ownership and management differences are immaterial.

All operators face the same market conditions involving rent and occupancy, but are not required to have the same strategy. A property has a gross rent r and occupancy q, where $q \in [0, 1]$. When $q = 0$, the building is empty. When $q = 1$, there is full occupancy and no vacancy (In practice, lender covenants may require that an apartment building carry no more than 10% vacancy.) The building has an inverse demand for rent as a function of occupancy $r(q)$, where $r_q < 0$. Total revenue or gross operating income for the property is $R(q) = r(q)q$, and R is rising up to some level $q = q_1$ and declining thereafter.

Suppose there are two types of owners. One L has large size in the number of properties and information. The other group is smaller and less informed and is

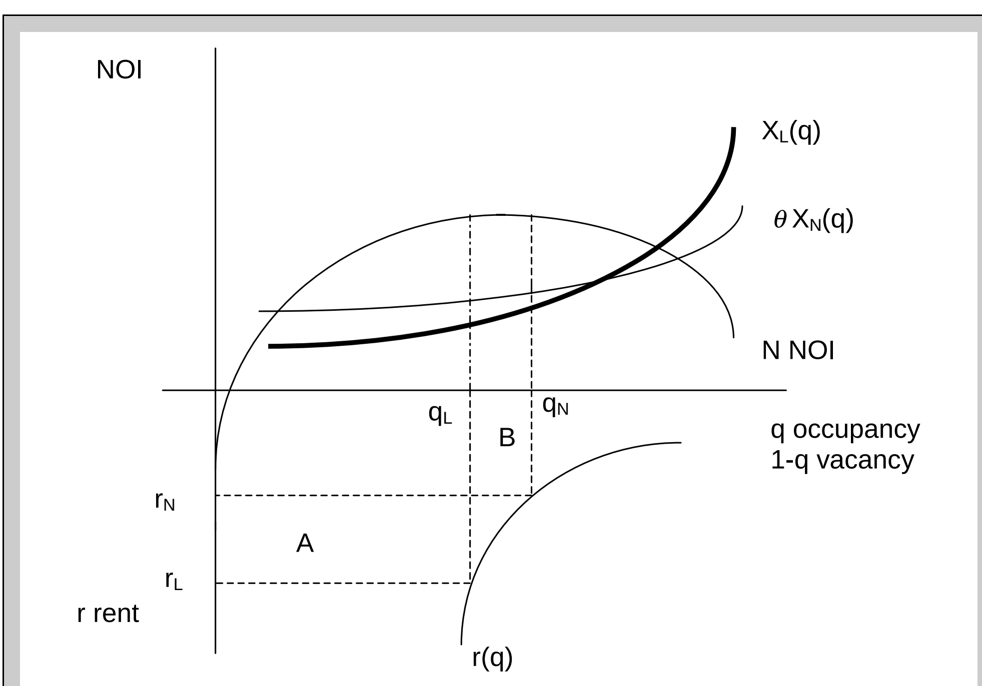
N. Group *L* could be entirely local, but it includes national investors obtaining enough size to surmount any information differential not being based from a particular area. The two groups are distinguished in their costs of attracting tenants and, ultimately, in the prices that they charge for the properties.

The group lacking in size and locality *N* has higher costs of attracting tenants than group *L*, or $X_N(q) > X_L(q)$. Those cost differences can be in operating the properties, advertising and managing tenants, or carrying out capital improvements.

Exhibit 1 illustrates the operating market. The property type is standardized. It is a type large enough to attract several types of owners. In the lower part of Exhibit 1 is the market demand, indicating the rent and occupancy (r, q). That demand is negatively sloped. The two owners are types *N* and *L*. Even with a shift factor $\theta < 1$ on the high-cost firm's capital costs, *N* prefers to avoid turnover. The high-cost investor operates with a lower rent but higher occupancy. Conversely, the lower-cost firm *L*, operating where the demand is inelastic, selects a higher rent and lower occupancy, but shows results with higher collection or effective rent *rq*.

In Exhibit 1, net income is on the vertical axis, and occupancy *q* or vacancy $1 - q$ is on the horizontal axis. The upper half of the graph indicates operator

Exhibit 1 | NOI, FFO, Rent, and Vacancy



performance in net income-occupancy space. Even if the high-cost owner is less efficient as $X_N(q)$ depending on occupancy, there is a shift factor $\theta < 1$ that moves its curve downwards competitively with the low-cost provider with $X_L(q)$. The effective capital expenses are $\theta X_N(q)$ and $X_L(q)$.

At a relatively low occupancy q_L, the high-cost investor finds it more costly to operate, even if the market-wide rent is r_L, relatively high on the demand curve shown in Exhibit 1. As a strategy, this investor selects the higher occupancy q_H to minimize turnover and the related costs that are relatively difficult to manage. With lower turnover, its costs are lowered even if the higher occupancy is achieved with lower rent. Therefore, the high-cost investor chooses a high occupancy-low rent strategy relative to the low-cost player, who goes for low occupancy-high rent.[8]

National landlords can become effectively local if they develop sufficient size. All landlords have a selection criterion based on organizational and structural variables w. If those size variables are particularly large, the landlord becomes local in essence, with index $I = 1$. This selection criterion is:

$$\begin{cases} I^* = w\gamma + v \\ I = 1 \quad if \quad I^* \geq 0. \\ I = 0 \quad if \quad I^* < 0 \end{cases} \tag{1}$$

The w variables have parameters γ and disturbance v with zero mean. The rent r and occupancy q configuration is selected conditionally, or:

$$\ln c = \begin{cases} \ln r(I = 1) = X\beta_r + \lambda_r m + \varepsilon_r \\ \ln q(I = 1) = X\beta_q + \lambda_q m + \varepsilon_q \end{cases}. \tag{2}$$

The logarithm of rent collected is $\ln c$. Here m is a vector of management, size, and control variables with parameters λ, reflecting the conditional probability of selecting the size operators given the unobservable variables with ε, a zero-mean error. The test is on whether the m vector coefficients are equal to zero. If they are, with X denoting hedonic characteristics such as square footage and amenities, then there is no difference by ownership.

With the dependent variable being the logarithm of the rent collected, the effect is the sum of the logarithms for the gross asking rent and logarithms for occupancy. If local ownership is able to achieve higher rents, then $\lambda_r > 0$. The other prediction is that local ownership can patiently wait for the higher vacancy required to obtain higher rents, or $\lambda_q < 0$. This ownership strategy is profitable, meaning that the sum of the coefficients $\lambda_r + \lambda_q > 0$ for $\partial \ln c / \partial m$ even as the occupancy coefficient is negative. Local ownership does face more risk because it is less diversified against idiosyncratic property and systemic market risks. This strategy is profitable, however, as a premium earned by local ownership with size.

Data and Empirical Results

The application is to apartments in the Atlanta Metropolitan Statistical Area. The sample includes properties with at least 150 rental units and has times-series data covering 20 quarters ending with the first quarter of 2001. The data are longitudinal on the same properties, with 470 buildings observed for all 20 quarters. The source of the data is Databank, Inc., which maintains proprietary information on apartments and their rents and occupancy in the Atlanta MSA.

The data allow for the generation of three ownership structural characteristics for each property: control, size, and management. For the controlling ownership group, entity information is available along with controlling contact data for the principal or managing member so that the definition of ownership is at the controlling group level. This information allows generation of an indicator variable measuring whether the ownership is controlled locally. The number of properties controlled by a specific investor group is also generated. Real estate is often held by single asset entities. The controlling variable, therefore, allows for the grouping of properties owned by an individual or entity to be aggregated.

The size of the ownership variables is generated using the number of properties and units under common control. While the controlling group is not always synonymous with the dominant equity position in a property, it does reflect the actual investment decision-maker who represents the owners. The data allow for quarterly monitoring of each property for ownership exchange as a property sale may transfer control. Four indicator variables are produced. The variables represent owners controlling 1–3 properties, 4–5 properties, 6–10 properties, and 11 or more properties.

Two additional variables measuring property management attributes are available. Similar to the ownership control variables, the management firm overseeing each complex is likewise grouped as being local or not, and the number of complexes managed by a specific firm can be measured. Summary statistics are presented in Exhibit 2.

Three probit models, delineated by apartment unit type, are used to evaluate the organizational variables or *W* that differentiate apartment complexes into size or number of complexes controlled by a single entity. Seemingly unrelated regressions (SUR) are used in the second series of rent and occupancy models for each of the samples by number of bedrooms. Ordinary least squares (OLS) models of effective rent are also presented.

The probit model results in Exhibit 3 are for the three different bedroom unit types. The model results delineate the ownership, management, and property

Exhibit 2 | Descriptive Statistics

Variable	One-Bedroom Units		Two-Bedroom Units		Three-Bedroom Units	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Number of units in complex	305.40	148.97	298.60	145.10	294.62	122.79
Age of complex	19.44	10.34	20.02	10.33	21.78	10.66
Complex Occupancy (%)	94.70	4.70	97.67	4.65	94.53	4.94
Unit Square Feet	780.62	96.23	1097.15	140.21	1363.25	192.93
Unit Rents	605.07	118.06	712.64	175.42	848.67	274.29
Longitude	−84.35	0.13	−84.35	0.14	−84.36	0.13
Latitude	33.84	0.12	33.83	0.13	33.83	0.12
Controlled complexes (#)	6.44	7.47	6.79	7.64	6.37	7.01
Managed complexes (#)	9.57	9.79	10.00	9.86	9.22	9.24
Local control / ownership, 1 = yes	0.52	0.50	0.53	0.50	0.55	0.49
Local management, 1 = yes	0.81	0.39	0.81	0.39	0.83	0.37
Pool	0.95	0.22	0.95	0.22	0.94	0.23
Gated / controlled access	0.39	0.48	0.38	0.47	0.34	0.47

Exhibit 2 | (continued)

Descriptive Statistics

Variable	One-Bedroom Units		Two-Bedroom Units		Three-Bedroom Units	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Fitness center	0.63	0.48	0.62	0.48	0.61	0.48
Business center	0.25	0.43	0.25	0.43	0.23	0.42
Social facility	0.70	0.46	0.70	0.46	0.69	0.46
Playground	0.51	0.50	0.50	0.50	0.54	0.50
Covered parking	0.17	0.37	0.16	0.36	0.16	0.36
Garages	0.16	0.36	0.16	0.36	0.15	0.35
Overall Firm Size	0.34	0.47	0.33	0.47	0.31	0.46
Firm Size (0–3 properties)	0.47	0.50	0.50	0.50	0.32	0.47
Firm Size (4–5 properties)	0.15	0.35	0.14	0.35	0.33	0.47
Firm Size (6–10 properties)	0.15	0.36	0.15	0.36	0.17	0.37
Firm Size (11+ properties)	0.23	0.42	0.21	0.41	0.18	0.39

Notes: Data for unit type for one-(N = 427), two-(N = 470), and three-(N = 320) bedroom apartment units in complexes of at least 150 units in the Atlanta MSA for twenty quarters ending with first quarter 2001. The total sample is 470 garden apartment complexes with a combination of apartment unit types.

Exhibit 3 | Probit Models

Variable	1-Bedroom Model		2-Bedroom Model		3-Bedroom Model	
	Coeff.	Wald Chi-Sq.	Coeff.	Wald Chi-Sq.	Coeff.	Wald Chi-Sq.
Intercept	−28.184**	5.80	−26.586**	5.45	−47.773***	11.45
Local control	0.292***	61.22	0.257***	51.15	0.267***	35.89
Local management	0.447***	71.38	0.516***	103.92	0.689***	95.80
Unit Square Feet	0.001***	8.32	0.001***	64.52	0.001***	23.85
Age	−0.017***	80.01	−0.017***	82.02	−0.018***	62.11
Units in complex #	0.001***	117.69	0.002***	126.92	0.001***	40.04
Latitude	0.586***	17.17	0.349**	6.60	0.554***	11.17
Longitude	−0.079	0.44	−0.145	1.53	−0.314**	4.24
Laundry	−0.024	0.18	−0.050	0.86	−0.216***	8.57
Fitness	−0.054	1.87	0.021	0.33	0.010**	4.44
Pool	0.040	0.23	0.002	0.00	0.344***	10.43
Social facility	0.150***	14.23	0.157***	16.76	0.195***	16.91

Exhibit 3 | (continued)

Probit Models

Variable	1-Bedroom Model Coeff.	1-Bedroom Model Wald Chi-Sq.	2-Bedroom Model Coeff.	2-Bedroom Model Wald Chi-Sq.	3-Bedroom Model Coeff.	3-Bedroom Model Wald Chi-Sq.
Business center	−0.160***	14.55	−0.113***	7.81	−0.136***	6.99
Playground	−0.076**	4.89	−0.068**	4.19	−0.006	0.02
Gated access	−0.123***	10.26	−0.117***	9.72	0.081*	2.75
Covered parking	0.302***	33.84	0.331	43.37	0.305***	13.89
Garages	0.112**	4.14	0.032	0.37	−0.254***	24.48

Notes: The dependent variable is 1-0 for a property being operated by a large entity, with both the ownership and the management company having at least five complexes in the Atlanta market. Individual dummy variables for twenty quarters ending 2001:1 are used in the models but the results are not presented. The log likelihood for the one-bedroom unit = −4,008.45; for the two-bedroom unit = −4,252.88; and for the three-bedroom unit = −2,747.23. For the one-bedroom unit, *N* = 6,837; for the two-bedroom unit, *N* = 7,445; and for the three-bedroom unit, *N* = 4,937.

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

characteristics of properties controlled by the largest investors in the market. The present model implies that local control and local management will be determinants of whether a property is held within a larger portfolio of investment properties. The model results bear this out as properties controlled and managed locally are more likely to be a part of a larger ownership or control grouping. The additional independent variables include the average unit size, age of the property, number of units, and different dummy variables for amenities and show that properties owned by the larger controlling entities tend to be newer with more amenities. The quality of the property is also described by latitude, longitude, and age. In short, the results in Exhibit 3 show that the larger operators are generally locally controlled with local management capacities. Large operations are associated with apartment complexes that are newer, have a greater number of units, and have larger average unit size.

The one-, two-, and three-bedroom submarkets are modeled individually as separate markets, as in Wolverton, Hardin, and Cheng (1999). The empirical results for the performance of apartments at the complex level using SUR models of occupancy and log of rent are presented in Exhibit 4.[9] These models measure operating performance in the form of occupancy and rent. Exhibit 5 presents the results of the OLS models of the log of effective rent. The three size measures are for owners with 4–5, with 6–10, and with 11 or more properties. Ownerships with three or fewer properties are in the intercept.

Even though all properties have more than 150 units, those associated with larger-scale operations measured by the number of complexes controlled in the market garner higher effective rents. As shown in Exhibits 4 and 5, the largest operating size is those entities with 11 or more apartment buildings in the local market. In the SUR models, for the one-bedroom market, the operator obtains 6.7% higher rents and 0.1% higher occupancy, for a total 6.8% higher effective gross income. For two-bedroom units, the largest owners obtain 8.8% more rent and 0.3% more occupancy, for 9.1% higher collection. The premium increases with the number of bedrooms, reaching 11.5% for a three-bedroom apartment. The results in Exhibit 5 using OLS are similar as effective rent is higher across all models that control for operating size. The premiums are again substantial for the largest size operators. With respect to the 3-bedroom model, the benefit for size extends to all the size operators above the small size operators.[10]

In Exhibit 4, holding the size of the operator constant, having a local property manager leads to higher rent collections. The rent is 0.8% higher for one-bedroom apartments with a local manager, although they have a 0.6% lower occupancy, with a strategy that provides 0.2% more effective rent. These estimates are significant at the 1% level. For two-bedroom units, the differences are more substantial. Local managers obtain 2.0% more rent with 0.6% lower occupancy, or 1.4% higher effective rent.

Similar results are shown using the OLS on effective rents, reported in Exhibit 5. In the models without the size variables, the local management benefit is centered

Exhibit 4 | Apartment Complex Occupancy and Rent SUR Models

	1-Bedroom Model		2-Bedroom Model		3-Bedroom Model	
	Occupancy	Rent	Occupancy	Rent	Occupancy	Rent
Intercept	1.891*** (3.82)	−6.861*** (−5.95)	1.992*** (4.25)	−9.285*** (−7.78)	2.048*** (3.22)	−11.200*** (−6.49)
Size Medium (4–5 properties)	−0.001 (−0.87)	0.002 (0.49)	−0.000 (−0.50)	−0.003 (−0.68)	0.001 (0.39)	0.042*** (6.60)
Size Second Largest (6–10 properties)	−0.003* (−1.73)	−0.001 (−0.22)	−0.003** (−2.06)	−0.005 (−1.21)	0.000 (0.09)	0.027*** (3.63)
Size Largest (11+ properties)	0.001 (0.95)	0.067*** (15.34)	0.003 (1.57)	0.088*** (19.28)	0.003 (1.04)	0.112*** (14.33)
Local management	−0.006*** (−3.18)	0.008* (1.75)	−0.006*** (−3.32)	0.026*** (5.39)	−0.006** (−2.46)	−0.012 (−1.62)
Local control	−0.001 (−0.56)	−0.032** (−8.67)	0.000 (0.46)	−0.043*** (−11.27)	−0.002 (−0.86)	−0.012** (−2.27)
Complex units (100)	−0.002*** (−4.58)	0.001 (1.11)	−0.002*** (−4.36)	0.005*** (3.69)	−0.003*** (−4.09)	0.006*** (3.23)
Unit square feet ('000)	−0.003 (−0.48)	0.420*** (24.64)	−0.020 (−0.56)	0.479*** (37.11)	−0.008* (−1.67)	0.352*** (25.31)
Complex age	−0.001*** (−5.71)	−0.001*** (−57.98)	−0.000*** (−6.00)	−0.011*** (−59.35)	−0.001*** (−5.57)	−0.010*** (−37.09)
Central laundry	−0.008*** (−3.71)	−0.044*** (−7.76)	−0.007*** (−3.09)	−0.038*** (−6.58)	−0.011*** (−3.50)	−0.006 (−0.65)
Fitness center	0.001 (0.94)	0.005 (1.32)	0.002 (1.28)	0.006* (1.66)	0.002 (0.94)	0.017*** (3.01)
Business center	−0.005*** (−3.17)	0.006 (1.64)	−0.003** (−2.13)	−0.002 (−0.54)	−0.005** (−2.57)	0.001 (0.16)

Exhibit 4 | (continued)

Apartment Complex Occupancy and Rent SUR Models

	1-Bedroom Model		2-Bedroom Model		3-Bedroom Model	
	Occupancy	Rent	Occupancy	Rent	Occupancy	Rent
Social facility	0.002	0.010***	−0.001	0.007**	0.001	−0.013**
	(1.46)	(2.65)	(−1.21)	(1.99)	(0.29)	(−2.38)
Covered parking	−0.008***	0.014***	−0.009***	0.023***	−0.015***	0.015**
	(−3.72)	(2.80)	(−4.45)	(4.50)	(−5.57)	(1.99)
Garage parking	0.008***	0.010*	0.007***	0.002	0.010***	0.005
	(3.65)	(1.90)	(3.52)	(0.52)	(3.49)	(0.69)
Playground	−0.001	−0.043***	0.001	−0.048***	0.002	−0.049***
	(−0.19)	(−12.88)	(0.53)	(−13.86)	(1.17)	(−9.48)
Controlled gated access	−0.000	0.027***	0.000	0.027***	0.002	0.056***
	(−0.05)	(7.29)	(0.31)	(7.21)	(1.27)	(9.52)
Longitude	0.007	0.012	0.009**	−0.018	0.010	−0.004
	(1.49)	(1.05)	(2.00)	(−1.40)	(1.55)	(−0.22)
Latitude	−0.007	0.414***	−0.006	0.407***	−0.005	0.505***
	(−1.30)	(29.89)	(−1.15)	(28.76)	(−0.73)	(24.61)
Adj. R^2	0.035	0.600	0.033	0.638	0.035	0.580
F-Statistic	7.54	271.20	7.64	347.06	5.73	178.02

Notes: Results are for different sized ownership, at 4–5, 6–10, and 11 or more apartment properties, with fewer than 4 in the intercept. Local management and control variables are also included. The dependent variables of interest are the occupancy rate and the log of apartment unit rent. *t*-Statistics are in parentheses. Individual dummy variables for twenty quarters ending 2001:1 are used in the models but the results are not presented. For the one-bedroom unit, $n = 6{,}836$; for the two-bedroom unit, $n = 7{,}444$; and for the three-bedroom unit, $n = 4{,}936$.

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

Exhibit 5 | Apartment Effective Rent OLS Models

	1-Bedroom Model		2-Bedroom Model		3-Bedroom Model	
	Size Excluded	Size Included	Size Excluded	Size Excluded	Size Excluded	Size Included
Intercept		−7.330*** (−5.54)		−9.435*** (−7.01)		−11.287*** (−5.83)
Size Medium (4–5 properties)		0.002 (0.38)		−0.003 (−0.63)		0.046*** (6.30)
Size Second Largest (6–10 properties)		−0.004 (−0.79)		−0.009 (−1.72)*		0.031*** (3.64)
Size Largest (11+ properties)		0.069*** (13.67)		0.091*** (17.53)		0.118*** (13.32)
Local management	0.000 (0.09)	0.001 (0.22)	0.018*** (3.29)	0.019*** (3.47)	0.001 (0.09)	−0.020** (−2.43)
Local control	−0.023*** (−5.45)	−0.033*** (−7.67)	−0.031*** (−7.10)	−0.043*** (−10.01)	−0.007 (−1.18)	−0.015** (−2.43)
Complex units (100)	0.002* (1.65)	−0.001 (−0.42)	0.006*** (4.22)	0.003** (1.97)	0.008*** (3.86)	0.004* (1.67)
Unit square feet ('000)	0.417*** (21.01)	0.426*** (21.65)	0.491*** (33.05)	0.481*** (32.90)	0.358*** (22.56)	0.347*** (22.18)
Complex age	−0.012*** (−53.58)	−0.012*** (−53.16)	−0.012*** (−55.23)	−0.012*** (−55.19)	−0.011*** (−36.70)	−0.011*** (−35.29)

Exhibit 5 | (continued)

Apartment Effective Rent OLS Models

	1-Bedroom Model		2-Bedroom Model		3-Bedroom Model	
	Size Excluded	Size Included	Size Excluded	Size Excluded	Size Excluded	Size Included
Central laundry	−0.047***	−0.047***	−0.038***	−0.041***	−0.012	−0.013
	(−7.05)	(−7.27)	(−5.72)	(−6.21)	(−1.17)	(−1.27)
Fitness center	0.013***	0.012***	0.016***	0.013***	0.034***	0.026***
	(2.91)	(2.69)	(3.57)	(3.12)	(5.26)	(4.16)
Business center	−0.002	0.001	−0.010*	−0.005	−0.009	−0.004
	(−0.59)	(0.24)	(−2.12)	(−1.19)	(−1.39)	(−0.70)
Social facility	0.015***	0.016***	0.010**	0.012**	−0.008	−0.010
	(3.44)	(3.81)	(2.16)	(1.89)	(−1.26)	(−1.58)
Covered parking	0.011*	0.003	0.021***	0.011*	0.004	−0.005
	(1.79)	(0.58)	(3.51)	(1.92)	(0.45)	(−0.64)
Garage parking	0.002	−0.010	0.017***	0.011*	0.011	0.018*
	(0.45)	(−0.23)	(2.61)	(1.86)	(1.26)	(1.98)
Playground	−0.047***	−0.041***	−0.053***	−0.045***	−0.051***	−0.043***
	(−12.14)	(−10.44)	(−13.34)	(−11.41)	(−8.71)	(−7.47)
Controlled gated access	0.027***	0.027***	0.028***	0.027***	0.062***	0.058***
	(6.27)	(6.30)	(6.34)	(6.24)	(9.22)	(8.70)
Longitude	−0.003	0.006	−0.032**	−0.020	−0.008	−0.005
	(−0.21)	(0.45)	(−2.29)	(−1.47)	(−0.40)	(−0.26)

Exhibit 5 | (continued)

Apartment Effective Rent OLS Models

	1-Bedroom Model		2-Bedroom Model		3-Bedroom Model	
	Size Excluded	Size Included	Size Excluded	Size Excluded	Size Excluded	Size Included
Latitude	0.432***	0.412***	0.430***	0.407***	0.553***	0.505***
	(26.74)	(25.70)	(26.17)	(25.23)	(23.91)	(21.77)
Adj. R^2	0.525	0.539	0.587	0.587	0.511	0.528
F-Statistic	223.28	217.64	287.70	287.70	152.75	150.36

Notes: Results are for different sized ownership, at 4-5, 6-10 and 11 or more apartment properties, with fewer than 4 in the intercept. Local management and control variables are also included. The dependent variable of interest is the natural logarithm of effective apartment unit rent. Individual dummy variables for twenty quarters ending 2001:1 are used in the models but the results are not presented. For the one-bedroom unit, *n* = 6,836; for the two-bedroom unit, *n* = 7,444; and for the three-bedroom unit, *n* = 4,936.

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

on the two-bedroom units. Local management generates about a 1.8% premium for these units, which are the most typical unit type. In the full model with the size variables, the results are similar except with the three-bedroom model. In the SUR models, local ownership as contrasted with local control leads to lower rents. Local owners obtain from 1.2% to 4.3% lower rent. The results are similar for the OLS models of effective rent.

It is local managers who are able to trade off between rent and vacancy. This group obtains higher effective rents than other groups, charging higher posted rents and accepting more vacancy. This group delivers improved operating performance over other owners.

Among the amenities and characteristics, larger buildings in number of units obtain higher rents and greater occupancy in two of the three markets in the SUR of Exhibit 4 and consistently in the OLS of Exhibit 5. In all cases, the size of the unit is positive and statistically significant at the 1% level. This is as expected. The unit size coefficients in the occupancy models are not statistically significant for any of the occupancy models.

The remaining variables are as expected. A central laundry, a measure of functional obsolescence, leads to reduced rent and occupancy. Effective gross rent is 1.7% to 5.2% lower in Exhibit 4 and is confirmed in the one- and two-bedroom single equations in Exhibit 5. Across all models, a fitness center has a small positive effect on rent, while a business center is associated with a small reduction in occupancy and no impact on effective rent. More affluent tenants can pay for in-unit technology.

A social facility earns between 0.6% and 1.2% higher effective rents for one- and two-bedroom units in Exhibit 4, but there is a reduction at the three-bedroom level. Similar results are found in Exhibit 5 for effective rent. Covered parking generates between zero and 2.1% more effective rents. A playground, an indicator that a property is targeting households with children, has a 4.1% to 5.3% reduction in effective rents across both in Exhibit 4, with two equations and single-equation in Exhibit 5. A property with controlled gated access has 2.7% to 6.2% higher effective rent. This is a result similar to Hardin and Cheng (2003) and confirms the value of security noted in Benjamin, Sirmans, and Zietz (1997). The geographic control variables for longitude and latitude indicate that growth patterns have an impact on rents.

Quality commercial properties differ in operating performance not only on physical characteristics but in type of ownership, management, and control. For 1996–2001 data on Atlanta apartments, a primary market for multiple types of investors, there is varying operating performance by ownership. Larger-scale owners and local property managers earn higher effective rents. Performance is measured in additional gross and effective rent. In exchange for holding more non-diversified risk, local scale operators who operate in the market and less-diversified investors earn improved performance.

Conclusion

This paper examines the structure of ownership in real estate performance. Larger-sized owners obtain improved performance in effective rent. Local management is able to obtain higher effective rent by obtaining higher posted rents with carrying increased vacancy. Local ownership as opposed to local management does not earn a premium. It is the local managers rather than the owners that are able to earn a premium. Large operators with local management generate better operating performance.

Atlanta is an institutional-grade apartment market. The target sample is an institutional-grade product—apartments with at least 150 units. Who owns a property and who manages the property are important. Performance does not depend just on the amenities of the property, although some such as controlled gated access are significant. The results provide direction to investors in real estate portfolio creation and management, and highlight the management structure required for improved operating performance. Performance can be enhanced with local management and with the creation of focused market-specific portfolios. While the results here show that the local, larger-scale operators are likely to earn higher effective rent, there is no reason that non-local institutional investors cannot emulate these successful local operators. The larger the size of the investment portfolio and accompanying scale of operations in a particular market has operational benefits.

Endnotes

1 Large-scale real estate investors have become more focused and effectively compete with local players by concentrating on primary markets. For office real estate, Legg Mason's Quarterly Real Estate Cycle Monitor flags the top ten primary markets led by New York City and Washington DC, which account for more than half the eligible high-grade space. For hotels, Smith Travel reports on the top 25 markets, led by Las Vegas and Orlando. For industrial properties, Wheaton-Torto reports that the principal warehouse and distribution market is Los Angeles including exurban Riverside-San Bernardino.

2 Local is defined as having the corporate headquarters within 100 kilometers of the operation of the fund manager.

3 This local preference occurs despite the three largest mutual fund markets, Boston, New York City, and Philadelphia, accounting for 65% of total fund holdings.

4 If a local operator only owns one or a small number of properties, it has not achieved the scale necessary to take advantage of local expertise. Additional properties would have to be required.

5 The Census H-131 series on construction is the data source for U.S. apartments. In 2003, Atlanta was the largest apartment market for new construction, with 12,393 units built, followed by Denver with 10,392. Atlanta was the leading market for new apartment construction over 1996–2001, and led the country in each of the years 1999–2003. Atlanta is therefore a primary apartment market; as such, it is on the list for institutional

investors. By 2004, the nationwide for-sale market was booming for multifamily construction, including condominiums; in this for-sale market, Atlanta moved out of either the first or second position, which it had held since 1996. Yet Atlanta remained in the fop five markets during 2004 and 2005 despite a market less focused on for-sale multifamily construction. The top three multifamily markets after 2004 for construction were New York City, Miami, and Los Angeles, all dominated by condo construction. New York City led with 16,677 units permitted in the first half of 2005. Atlanta was ranked fifth in 2005, with 5,640 units completed in the first half of 2005.

[6] The effective rent is the product of rent times occupancy. The natural logarithm of the effective rent is the sum of the corresponding transformations of the rent and the occupancy. Approximately, the logarithm of the occupancy is the negative of that for the vacancy. So the growth of effective rent is the difference between the growth of gross rent and the growth of vacancy.

[7] Turnbull and Sirmans (1993) discuss the agency and measurement issues for smaller, owner-managed properties.

[8] Other factors determining the choice are the demand elasticity and the production technology. Also, the strategy of the manager can differ by type of property, emphasizing the requirement to standardize (Chinloy and Maribojoc, 1998).

[9] The occupancy model results are not robust because apartment complex occupancy levels are potentially skewed due to product in the lease-up phase, renovation and rehabilitation, condo conversions, and negative complex-specific events like casualty loss. The occupancy models have low explanatory power indicating that other factors will have an impact on property occupancy levels. Other aspects include tenant quality, as in Benjamin, Chinloy, and Sirmans (2000).

[10] Three-bedroom units are the least typical in this market.

References

Benjamin, J.D., G.S. Sirmans, and E.N. Zietz. Security Measures and the Apartment Market. *Journal of Real Estate Research*, 1997, 12, 1–8.

Benjamin, J.D., P. Chinloy, and G.S. Sirmans. Housing Vouchers, Tenant Quality and Apartment Values. *Journal of Real Estate Finance and Economics*, 2000, 20, 61–74.

Chinloy, P. and E. Maribojoc. Expense and Rent Strategies in Real Estate Management. *Journal of Real Estate Research*, 1998, 15, 267–82.

Coval, J.D. and T. Moskowitz. Home Bias at Home: Local Equity Preference in Domestic Portfolios. *Journal of Finance*, 1999, 54, 2045–73.

——. The Geography of Investment: Informed Trading and Asset Prices. *Journal of Political Economy*, 2001, 104, 811–41.

Fisher, J.D. and M. Young. Holding Periods for Institutional Real Estate in the NCREIF Data Base. *Real Estate Finance*, 2000, 17, 27–34.

Fisher, J., D. Gatzlaff, D. Geltner, and D. Haurin. Controlling for the Impact of Variable Liquidity in Commercial Real Estate Price Indices. *Real Estate Economics*, 2003, 31, 239–64.

Graff, R.A. and M.S. Young. Real Estate Return Correlations: Real-World Limitations on Relationships Inferred From NCREIF Data. *Journal of Real Estate Finance and Economics*, 1996, 13, 121–42.

Hardin III, W.G. and P. Cheng. Security, Gated Communities, and Apartment Rents. *Journal of Real Estate Research*, 2003, 25, 145–58.

Hardin III, W.G. and M.L. Wolverton. Equity REIT Property Acquisitions: Do Apartment REITs Pay a Premium? *Journal of Real Estate Research*, 1999, 17, 113–26.

Harding, J.P., S.S. Rosenthal, and C.F. Sirmans. Estimating Bargaining Power in the Market for Existing Homes. *Review of Economics and Statistics*, 2003, 85, 178–88.

Hong, H., J.D. Kubik, and J.C. Stein. Thy Neighbor's Portfolio: Word-of-Mouth Effects in the Holdings and Trades of Money Managers. 2003, Working paper, Harvard University.

Jud, G.D. and J. Frew. Real Estate Brokers, Housing Prices and the Demand for Housing. *Urban Studies*, 1986, 23, 21–31.

Lambson, V.E., G. McQueen, and B. Slade. Do Out-of-State Buyers Pay More for Real Estate? An Examination of Anchoring-Induced Bias and Search Costs. *Real Estate Economics*, 2004, 32, 1080–90.

Malpezzi, S. and J. D. Shilling. Institutional Investors Tilt Their Real Estate Holdings Toward Quality Too. *Journal of Real Estate Finance and Economics,* 2000, 21, 113–40.

Sirmans, G.S., C.F. Sirmans, and G.K. Turnbull. Prices, Incentives and Choice of Management Firms. *Regional Science and Urban Economics,* 1999, 29, 173–96.

Turnbull, G. and C.F. Sirmans. Information, Search and House Prices. *Regional Science and Urban Economics*, 1993, 23, 545–57.

Wolverton, M.L., W.G. Hardin III, and P. Cheng. The Relationship between Unit Mix and Apartment Property Performance. *Journal of Real Estate Finance and Economics,* 1999, 19, 113–26.

Zumpano, L.V., H.W. Elder, and E.A. Baryla. Buying a House and the Decision to Use a Real Estate Broker. *Journal of Real Estate Finance and Economics*, 1996, 13, 169–81.

The authors are grateful to three referees and participants at the American Real Estate Society 2006 Annual Meeting in Key West, Florida for comments. Helpful comments were also provided by Donald Haurin, Steve Pyhrr, Anthony Sanders, Zhong Yi Tong, and Nik Varaiya.

John D. Benjamin, American University, Washington, DC 20016 or jbenj@american.edu.

Peter Chinloy, American University, Washington, DC 20016 or chinloy@american.edu.

William G. Hardin III, Florida International University, Miami, FL 33199 or hardinw@fiu.edu.