

WHY COMPANIES RENT GREEN: CSR AND THE ROLE OF REAL ESTATE

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ABSTRACT

We analyze the occupancy of green office buildings by firms and their industrial characteristics, identifying those firms and industries which have the highest occupancy in green buildings. We formulate four main reasons to explain why specific firms and industries may be more likely to lease green space, and test these using a sample of more than 11,000 tenants in 1,100 green buildings and in 3,900 nearby non-green buildings. We analyze the occupancy of office space in green buildings as compared to otherwise comparable non-green buildings. We find that corporations in the oil and banking industries, as well as government-related organizations, are among the most prominent green tenants. The empirical analysis shows that tenants in these industry groups are significantly more likely to rent and to occupy green office space.

INTRODUCTION

Evidence shows that the property sector accounts for approximately 40 percent of U.S. energy consumption and 38 percent of carbon dioxide emissions (www.doe.gov). Awareness of these facts has led to a range of different environmental rating systems for commercial properties worldwide. The labels provide both landlords and tenants with a yardstick as to measure the ‘greenness’ of properties.

Corporate real estate is a key element of companies’ CSR and marketing policies. The consideration of sustainability in housing decisions may therefore influence strategic decision-making in many firms. The behavior of corporate tenants can have important implications for the shift to a more sustainable built environment, as increased demand forces real estate suppliers to adapt rapidly to more stringent environmental expectations of tenants. Of course, there are financial incentives for the property investment industry as well, as the shifting preferences of tenants affect rental rates on commercial buildings and the volatility of flows of rental income. If tenants increasingly prefer to lease green space rather than conventional office space, then a differential in rental rates between green and conventional buildings is bound to develop. Moreover, it is possible that the non-green commercial properties will depreciate faster, and occupancy rates might be lower.

In a recent paper (Eichholtz, Kok, & Quigley, 2009), we analyzed the economic value of office buildings certified with a green label, and found that these “green” buildings command a

premium in rental rates and sales prices over conventional office buildings. Moreover, the analysis showed that occupancy rates are higher, and they are less volatile in commercial office buildings with a green label. This suggests that there is an identifiable group of tenants willing to pay a premium to lease green space. Previous research also shows that part of the rental and value increment can be explained by climatic factors and the thermal attributes of green buildings. However, a part of the green increment is not explained by energy savings. Other factors, such as corporate image, are certainly at work.

Clearly, particular firms must have a preference for green office space. This paper studies the behavior of tenants in “green” buildings – buildings that have been awarded a LEED or Energy Star certificate. Understanding the motivation for this choice of “sustainable” real estate may be important for two reasons. First, for the property sector to undertake the development of sustainable commercial real estate and for the investment community to finance these investments, it is important to identify the characteristics of potential tenants for this more expensive space. Second, a better understanding of firms predisposed to seeking “sustainable” real estate may allow researchers, managers, and policy makers to determine the efficiency of voluntary measures, relative to legislation and command-and-control mechanisms to promote green investments (Bansal & Roth, 2000).

The rest of this paper is organized as follows. In the next section, we formulate a framework to address why firms in some specific industries might choose to pay higher occupancy costs to rent green. The third section provides an overview of the data, the methods, some descriptive information, and we subsequently outline the main results. The paper ends with a brief conclusion.

CORPORATE RESPONSIBILITY AND REAL ESTATE

Adapting the framework of Bansal and Roth (2000), we identify four factors influencing environmental decision-making with respect to corporate space-leasing decisions. First, occupancy of buildings with a green label can be economically profitable, as the operating costs of these buildings may be lower. Anecdotal evidence shows that green buildings on average use 30 percent less energy as compared to conventional buildings (Kats, 2003). Also, improved employee well-being may enhance productivity and efficiency (Porter & Van der Linde, 1995).

Second, a green corporate headquarter may act as a signal to stakeholders and customers that a firm has some long-run commitment to a CSR policy and is willing to pay for it. The occupancy of sustainable buildings can therefore have indirect economic effects through an improved reputation; the policy may attract and retain employees. (Miles & Covin, 2000), and investors (Hong & Kacperczyk, 2007).

Third, by voluntarily accepting to the highest legal environmental standards now, firms can anticipate future legislation and avoid the risk of costly litigation later (Kassinis & Vafeas, 2002).

Fourth, although the attention of investors is focused understandably on a firms’ profits, there is a distinct group of potential tenants for which non-financial utility from pursuing an active CSR policy exceeds the potential monetary costs of such a policy: it seems ‘the right thing to do’ (Wood, 1991). Non-profit organizations and governments can therefore be actively engaged in CSR, before purely profit-maximizing firms can.

In consideration of these factors, we propose that firms in specific industries, for example those in the space-intensive tertiary sector, or firms whose operations may be judged more costly

to the environment, are more willing to lease green space, even if this implies paying premium rents. We test these propositions exploiting a unique of office buildings with an Energy Star or LEED-rating, together with a control sample of nearby buildings.

DATA AND METHOD

We collect data on the identity of tenants and the industry characteristics of tenants in green buildings, as measured by an Energy Star or LEED certification, the most widely used certifications of building sustainability in the United States. We construct a control sample of other office buildings matched on geographical characteristics. In all, the dataset comprises information on more than 3,100 tenants in 1,180 green office buildings, and on a control sample of approximately 8,000 tenants in 4,000 conventional office buildings. We match the addresses and postal codes of the Energy Star and/or LEED-certified buildings to the CoStar database. CoStar is the major repository and provider of commercial real estate data, and attempts to record all commercial property transactions, rental data, and the hedonic characteristics of buildings.

For each green building in the sample, we gather the names of the five largest tenants, their Standard Industry Classification (SIC) code, and the floor space they occupy, relative to the total square footage of office space by each individual firm and industry.

Table 1 provides an overview of the green space occupied by the twenty largest tenants. Column (1) shows the aggregate of square footage of green space occupied. Commercial banks, such as Wells Fargo Bank, Bank of America and ABN AMRO are all among the top tenants of green space. This can be partially explained by their extensive use of office space, i.e. the space-intensity of the banking industry. Furthermore, federal government and government-related organizations such as the Department of Health and Human Sciences and the Environmental Protection Agency are prominent tenants of green office space. Last, the oil industry seems to be well represented in green office buildings, with tenants such as Shell and Chevron leasing a substantial percentage of the green office stock.

Table 1 about here

To formally address the clustering of tenants in green buildings, we match each green office building to a set of control buildings, based on the longitude and latitude of the building. To accomplish this, we select all existing non-green office buildings in the CoStar database in a 0.25 mile radius, using geographic information system (GIS) techniques. This leads to 1,180 different clusters with an average of three control buildings per cluster. For each control building, we collect information on the five major tenants, their SIC classification and their square footage occupied. In total, the control sample includes 4390 office buildings, with approximately 8,000 unique tenants.

We first analyze whether the tenant composition is different in green versus regular office buildings. For instance, if green buildings serve as a “flag” for corporations, these buildings may be more likely to be owner-occupied or to have a more concentrated tenant base.

$$H_n = \sum_{i=1}^I O_{in}^2 \quad (1)$$

where H is the Herfindahl index for building n , O is the total square footage occupied by tenants i as a percentage of the total occupied office space in building n .

To measure whether tenants in specific industries are more likely to lease green space rather than regular office space, we compare the fraction of office space occupied by industry i in a green building g with the fraction occupied by the same industry in a control building n in the same cluster z . To control for differences in building quality and locational differences, we include differences in buildings' quality, such as size, age and class. We estimate the following equation for each one-digit SIC code i :

$$(O_{gz} - O_{nz}) = \alpha + \beta_n (X_{gz} - X_{nz}) + \sum_{z=1}^Z \gamma_z C_z + \varepsilon_n$$

where the dependent variable is the logarithm of the total square footage O occupied by tenants with SIC code i as a percentage of the occupied office space in building n in cluster z . $(X_{gz} - X_{nz})$ is a vector of the hedonic characteristics of the green building – building age, building size and building quality – in cluster z , minus the corresponding quality characteristics in the control building. C_z is a dummy variable with a value of 1 if building n is located in cluster z and zero otherwise. These location coefficients can individually affect the percentage of square foot occupied and account for unobserved characteristics related to the specific location. We include one dummy for each of the Z distinct 0.2 square mile clusters. α , β_n , and γ_z are estimated coefficients and ε_n is an error term.

RESULTS

In general, the descriptive evidence confirms our propositions, to the extent that the expected industries each have a few 'green' leaders. Especially firms in the legal and financial services industry lease a substantial share of green office space. For some of these firms, further investigation shows support for our proposition that firms in the tertiary sector acknowledge the productivity benefits of green buildings. However, for other firms, leasing green is a result of the preference for high quality buildings, rather than an act of responsible behavior.

We more formally address tenant composition in green buildings as compared to regular office buildings using Model (1). We find that, controlling for differences in quality and unobserved location characteristics, tenants are more concentrated in green buildings, occupying larger shares of the buildings. This may indicate the desire to use a building as a flag to signal commitment to CSR.

The results of Model (2) show that for most industries, coefficients on the green variable are significantly negative, which indicates that tenants in these industries are more likely to lease space in non-labeled buildings rather than environmentally-labeled buildings. This is consistent with the small fraction of the total office stock that has obtained a green label hitherto. However, exceptions to the pattern of significantly negative coefficients are the 'Mining and Construction' and 'Public Administration' industries. The former has a significantly positive constant, which indicates that tenants in this industry group on average lease more office space in green buildings than in comparable and nearby non-green buildings, controlling for differences in building quality. That the oil industry is a major occupier of green office space, is in line with the notion that firms in environmentally sensitive industries will actively incorporate sustainability in strategic decision-making such as headquarters selection, for example to enhance reputation. Moreover, the government and government-related organizations, for which non-financial utility

is of major importance, are significantly more likely to rent green office space than regular office space. Most prominent example is California's Environmental Protection Agency, with all of its activities located in a highly sophisticated environmental-friendly office building.

CONCLUSIONS AND IMPLICATIONS

For developers and investors, our findings have important implications. The higher initial outlay that may be needed for a newly developed sustainable office building, or for the refurbishment of an existing office building, can be recouped through energy savings and lower risk premiums, or through higher net rents. Currently, industry leaders and non-profit organizations (i.e. government) seem to be most willing to pay this rental premium. However, for the critical mass to engage in renting green, more insight in direct and indirect benefits of such a strategy is needed first. This paper provides only the first step in that.

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TABLE 1
Incidence of Green Space Utilization by Major Tenants
Fraction of Firm's Office Space Housed in Green Buildings

Tenant Name	Industry Description	Space Occupied		
		(1)	(2)	(3)
		Green Office Space	Total Space CoStar	Green Space as % of Total Space CoStar
		<i>x 1000 sq. ft.</i>	<i>x 1000 sq. ft.</i>	%
Wells Fargo Bank	National Commercial Banks	2,741	7,343	37.33%
United States Government	General Government	2,415	14,631	16.50%
Bank of America	National Commercial Banks	2,124	18,695	11.36%
ABN AMRO	State Commercial Banks	1,724	2,993	57.60%
State of California	General Government	1,568	5,706	27.49%
Deloitte & Touche	Accounting, Auditing, Bookkeeping	1,554	5,131	30.28%
Best Buy	Radio, Television, Consumer Electronics	1,500	2,104	71.31%
U.S. Dept. of Health & Human Sc.	General Government	1,442	1,662	86.72%
Shell	Gasoline Service Stations	1,362	3,989	34.14%
Chevron	Gasoline Service Stations	1,229	6,181	19.88%
Blue Cross & Blue Shield	Hospital and Medical Service Plans	1,211	12,251	9.89%
Adobe Systems	Prepackaged Software	1,158	1,388	83.43%
Compuware Corporation	Prepackaged Software	1,094	1,300	84.18%
American Express	Personal Credit Institutions	1,018	6,754	15.07%
The Vanguard Group	Investment Advice	990	1,569	63.07%
Cal/EPA	Land, Wildlife, Forest Conservation	950	950	100.00%
Mitre Corporation	Commercial, Physical, Biological Research	944	1,293	73.02%
JP Morgan Chase	Investment Advice	907	10,670	8.50%
Skadden	Legal Services	889	1,751	50.77%
Ernst & Young	Accounting, Auditing, Bookkeeping	864	4,149	20.83%

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