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Impact of Environmental Sustainability on the Market Value of Office Buildings

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Abstract. The issue of environmental sustainability of buildings is relatively new in many areas and has not yet been sufficiently explored. One of the little-explored areas is the relationship between environmental sustainability and the properties' market value. In practice, LEED or BREEAM sustainability certificates are often used to determine the degree of environmental sustainability. These certificates are well known to international investors and tenants in domestic markets. Sustainability has evolved into a competitive factor due to its positive economic, ecological and social impact. Certified buildings are preferred by major corporate tenants with an international field of activity who often have ethical rules for sustainable development. This increases the attractiveness of the building, which has a positive effect on its market value.

1. Introduction

In recent years, sustainability in construction has become very important. Almost all newly built office buildings have a sustainability certificate. Nonetheless, Czech valuers usually do not examine in detail the impact of the object's sustainability certificate on its market value. Most commercial properties are valued using the income approach. Operating costs are generally transferred to the lessee and therefore not directly entered into the calculation of a property's market value. The importance of this issue lies in the impact of a building's certification on the value of real estate not having been sufficiently quantified.

The benefits of certified buildings are addressed in many published articles. Today, sustainability in real estate is firmly anchored in society, policy and in the minds of people. Green buildings have added value to real estate in several areas; this has an impact on the market value. In many markets, green buildings are perceived to be of better quality, and many of today's large tenants are willing to pay extra for green premises. For these tenants, renting green spaces is an opportunity to demonstrate their commitment to sustainability, thereby attracting the best employees and increase productivity [1]. For this reason, green buildings can generate higher rents per unit and thus increase the revenue from its operations [2].



Saving energy is not the only benefit of the green buildings. The added value of a green building is also reflected in risk mitigation for owners and banks providing financing. In the risk assessment process, it is necessary to take into consideration that green buildings can have added value in a more stable yield, higher resilience to consumer preferences, ever tightening requirements for sustainable construction and the impact of rising energy costs. By reducing the risk of investment, the yield is compressed and the value increases. Another effect of less risk is better bank financing when green buildings are constructed [2].

The two the most commonly used certification systems for the sustainability certification of office properties are LEED and BREEAM, both well known to international investors and tenants in domestic markets. The purpose of this proposed research is to quantify the impact of LEED and BREEAM sustainability certificates on the market value of office properties in Prague and to assess whether a higher sustainability certification grade increases market value.

2. Market value of office properties and its key valuation inputs

According to international valuation standards, three basic and generally accepted valuation approaches are used for the valuation of real estate: the market (comparative) approach, the income approach, and the cost approach [3]. Each office building is unique with individual elements affecting its market value. The income approach is most often used for the valuation of office buildings. During the income approach the valuation is performed based on the capitalisation of the potential net income obtained from the rent of the property based on the investment risks relating to the ownership of the property. When this approach is properly applied, it is considered a solid indication of the value of the property for its capacity to produce an income. All valuation approaches involve a valuation method whereby the capital value is found by capitalising or discounting the estimated future income to be derived from the property. The most common methods for establishing yield are the calculation of eternal fixed income (constant yield over a long period of time), establishing yield value by means of appraisal norm, and calculations for variable yield [3].

Simply put, the value of an office building is calculated as the ratio of rental income and the capitalisation rate [11]. Unit rent and yield are two key valuation inputs used for office property valuation and market value determination. For this reason, the unit rent and the yield are important indicators of the condition of the market segment and are analysed by real estate consulting companies, banks, appraisers and other real estate specialists [12].

Individual parameters have a positive or negative effect on these two main key inputs and are closely interconnected. The basic parameters that affect the market value of office buildings include location, age, technical condition, standard, occupancy, tenant structure, competition in the area, lettable area structure, supply and demand, and other individual characteristic.

3. Impact of environmental sustainability on the key inputs effecting market value

According to USGBC, LEED-certified buildings command the highest rents, while lease-up rates typically range from average to 20% above average. Vacancy rates for green buildings are an estimated 4% lower than non-green properties [9]. In the application of the income approach for real estate valuation, several valuation inputs such as structural vacancy, nonrecoverable costs, capital expenditures, voids on expiry, initial void, etc. are used. However, the inputs with the most significant

impact on market value are level of yield and rental level. For these reasons, this article focuses mainly on these two key inputs.

3.1. Impact on the level of yield

The best way to determine the impact of sustainability certificates on the level of yield is by analysing direct market evidence with known initial yields. The initial yield is a particular type of income yield and is the net income received in the first year divided by purchase price, and is a common market measure of investment performance [5].

As described in Chapter 2, several parameters affect the value of office buildings. Restrictive conditions should be set to obtain a sufficiently meaningful sample and thus eliminate the impact of the parameters affecting the value.

Publicly available information sources, such as the real estate cadastre, business newspapers and press releases of investment funds were used to obtain information on realised transactions of office buildings corresponding to the selected parameters. For all properties, the sustainability certificate and its grade was investigated. The sample consist of 32 office properties which meet the selected parameters, 20 have obtained LEED or BREEAM certification at any level, and 12 properties are non-certified.

During the examined period (January 2017 – December 2020) movement in the market level of office yields could be observed. Therefore, it was necessary to adjust the obtained data to reflect market condition at the transaction date. Data adjustment by using coefficients through the indirect comparison method is commonly used in real estate valuation practice to determine market level [6]. The initial yield of all transactions was converted to market level as of December 2020. The adjustment was based on the movement in Prague prime office yields as reported by Colliers International [7]. The prime office yield in Prague in December 2020 was 4,25%. If the initial yield at the date of the transaction was higher (in 1Q/2017 – 1Q/2019) than the level in December 2020, the initial yield was reduced. The opposite procedure was used if the prime yield level was lower (in 3Q/2019 – 1Q/2020).

The aim of my research was not only to determine the impact of sustainability certification on market value but also the impact of a building's certification grade. To reflect the sustainability certificate grade, the properties were divided in for groups:

- sustainability certificate with highest grade – LEED Platinum/BREEAM Outstanding
- sustainability certificate with high grade – LEED Gold/BREEAM Excellent
- sustainability certificate – LEED Silver/BREEAM Very good - Good
- no sustainability certificate.

Subsequently, the initial yield was determined for each group. To determine the impact on market value, the properties without certification were used as a base.

Table 1: Adjusted average initial yield reflecting the sustainability certificate grade (source: author)

Certificate grade	Number of properties	Adjusted average initial yield	Impact on market value
LEED Platinum/BREEAM Outstanding	7	4,90%	128,78%

LEED Gold/BREEAM Excellent	7	5,62%	112,28%
LEED Silver/BREEAM Very good - Good	6	6,25%	100,96%
None	12	6,31%	100,00%

Table 1 shows that the certification of the office properties already has had an impact on the level of yield which effect market value.

For sustainability certification to have an impact, the property must at least achieve a LEED Gold or BREEAM Excellent certificate, so that due to yield reduction the market value could increase by 10-15%. If a building obtains the highest grade of sustainability certification, its market value can increase by up to 25 - 30% compared to a building with a lower grade or without certification.

3.2. Impact on the level of rent

The second most important key input is the level of rent. Certified buildings are preferred by major corporate tenants with an international field of activity who often have ethical rules for sustainability. One of the most obvious benefit of green buildings should be energy savings. Saving energy reduces operating costs and thus helps to increase headline rent, which has a positive effect on the value of the property. To verify this assumption, an analysis of headline rents and service charges on the Prague office market was performed. As a source of information, the CBRE office advertising server was used [8].

As described in Chapter 2, several parameters affect the value of office buildings. Restrictive conditions should be set to obtain a sufficiently meaningful sample and thus eliminate the impact of the parameters affecting the value. The selected sample consisted of 43 office properties. Subsequently, the properties were divided into the same groups used in the initial yield analysis. For these groups, the average headline rent and average service charges was determined.

Table 2: Average headline rent and service charge fee reflecting the sustainability certificate grade (source: author)

Certificate grade	Number of properties	Average headline rent	Average service charges
LEED Platinum/BREEAM Outstanding	6	15,08 €	3,65 €
LEED Gold/BREEAM Excellent	12	14,74 €	3,60 €
LEED Silver/BREEAM Very good - Good	5	14,60 €	3,51 €
None	20	14,43 €	3,78 €

Table 2 shows that the certification of the office properties has had a very low impact on the level of headline rent and service charges. The identified difference in headline rent of the property with the highest grade of sustainability certificate is lower than 5%. Also, the difference in service charges is almost negligible. Green properties may have lower costs for energy supplies, however, these costs are balanced by higher maintenance costs which are reflected in service charges.

The assumption that energy savings reduce operating costs and thus help to increase headline rent was not confirmed. Also, the assumption that tenants are willing to pay higher rent for properties with a higher sustainability certificate grade was not confirmed.

It is necessary to take into consideration that headline rent is only one component of net effective rent calculation. The net effective rent which is used for property valuation also includes rental incentives such as rent free or fit-out contributions. However, the impact of these components is significantly lower than the impact of headline rent and author team is not aware of any publication supporting the impact of sustainability certification grades on rental incentives.

4. Conclusion

Real estate is a specific type of asset and every real estate is unique. There may be significant differences between individual office buildings, especially in location, size, design standard, and other key factors that have a decisive impact on the resulting market value. The Czech real estate market is becoming increasingly interesting for international investors who want to invest in premium real estate. Foreign investors and tenants often do not have the know-how of local investors and therefore prefer certified properties they know from their markets. For them, certification is a sufficient indication of quality that ensures higher and stable income and lower risk levels. These factors contribute positively to the transaction prices of certified buildings. From the perspective of an international investor, the real estate market in the Czech Republic consists mainly of Prague. Regional cities are not as interesting for foreign investors, and therefore certification is not so widespread.

The income approach is most often used for the valuation of office buildings. When using the income approach, the unit rent and the yield are two key valuation inputs used for office property valuation and market value determination.

To determine the impact of sustainability certificates on yield, information on realised transactions of office buildings corresponding to pre-selected parameters was obtained from publicly available information sources. For sustainability certifications to have an impact on yield, the property must at least achieve a LEED Gold or BREEAM Excellent certificate, then the market value could increase by 10-15% due to a yield reduction. If a building obtains the highest grade of sustainability certification, its market value can increase by up to 25 - 30% compared to a building with a lower grade or without certification.

The analysis of real estate advertising shows that the certification of the office properties has a very low impact on the level of headline rent and service charges. The identified difference in headline rent of the property with the highest grade of sustainability certificate is lower than 5%. The difference in service charges is also almost negligible. Green properties may have lower costs for energy supplies, however this costs are balanced by higher maintenance costs which are reflected in service charges. The assumption that energy savings reduce operating costs and thus help to increase headline rent was not confirmed. The assumption that tenants are willing to pay higher rent for properties with a higher grade of sustainability certificate was also not confirmed.

This research shows that higher grades of sustainability certificates have an impact on the market value of office properties. A higher certificate grade causes yield compression, which increases the market value. This corresponds with the assumption that sustainability certificates mitigate risks for owners and banks providing financing.

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