PROPERTY TAX ASSESSMENT INCENTIVE MODEL FOR GREEN BUILDING INITIATIVE IN MALAYSIA

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Thankful to

Allah the Almighty for the blessing and guidance

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ABSTRACT

The practice of providing property tax assessment incentives for green buildings has been proven to encourage the growth of green building practices at a local level. However, the property tax assessment incentive available for green buildings in Malaysia is developed without property tax assessment basis and requires large financial expenditure from the local authority. Therefore, this scenario exhibits the incentive only relevant for local authority with strong financial budget. As a result it creates an issue for those unwilling nor do they have large financial budget to spend on the incentive program. This study aims to address the issue by developing a model of property tax assessment incentive based on improved value excluding financial expenditure from the local authority. There are three objectives outlined in this study: 1) to determine green envelope components of green building certified under Malaysian Green Building Index (GBI) rating tool: 2) to analyse the effect of the determined green envelope component on property value; and 3) to develop and validate property tax assessment incentive models for green building. The GBI certified green envelope components were determined through integrating the green benefits of identified green envelope components with GBI green criteria using meta-analysis. The sampling focuses on Malaysian property valuation practitioners with green building valuation experiences. This study comprises quantitative data involving questionnaire survey to 550 property valuation practitioners in Malaysia. The collected data were analysed using frequency analysis. The Cost-Benefits analysis between property tax assessment increment and annual energy saving conveyed by green envelope components on building was conducted to determine the appropriate baseline for percentage of reduction for the proposed incentive models. The developed models were validated through semi-structured interview with the Director of Valuation Department at Kulai Municipal Council. The findings demonstrate that out of ten green envelope components affecting property value, three green envelope components were found to increase property value, namely: solar photovoltaic, green roof and green living wall. Two property tax assessment incentive models developed are: 1) exemption model and 2) reduction model. The results indicate that the reduction baseline for solar photovoltaic, green roof and green living starts from 25%, 0% and 0% respectively. Kulai Municipal Council is willing to provide 50% reduction for each green envelope component.

Through a proposed exemption model, the local authority and taxpayer do not experience any changes on their existing tax. However, through a reduction model, the local authority does experience around RM 18 to RM 40 minimum tax increment on their existing tax revenue. Meanwhile, for the taxpayer, the annual energy saving conveyed by the green envelope components is able to compensate the amount of tax increment.

ABSTRAK

Praktis pemberian insentif penilaian cukai harta tanah untuk bangunan hijau terbukti berkesan dalam menggalakkan pertumbuhan bangunan hijau di peringkat tempatan. Walau bagaimanapun, insentif penilaian cukai harta di Malaysia dibangunkan tanpa asas percukaian harta tanah dan memerlukan perbelanjaan kewangan yang besar dari pihak berkuasa tempatan. Oleh itu, senario ini menunjukkan insentif ini hanya sesuai untuk pihak berkuasa tempatan yang mempunyai bajet kewangan yang besar dan ini menimbulkan isu kepada pihak berkuasa tempatan yang tidak bersedia dan tidak mempunyai bajet kewangan untuk dibelanjakan ke atas program insentif ini. Matlamat kajian ini adalah untuk mengatasi isu ini dengan membangunkan model insentif cukai harta berasaskan nilai tambah tanpa memerlukan perbelanjaan kewangan daripada pihak berkuasa tempatan. Tiga objektif digariskan iaitu: 1) mengenalpasti komponen hijau bangunan yang diiktiraf indek bangunan hijau Malaysia (GBI); 2) menganalisa kesan komponen bangunan hijau ke atas nilai harta tanah; dan 3) membangunkan dan mengesahkan model insentif penilaian cukai harta tanah bangunan hijau. Komponen bangunan hijau yang diiktiraf GBI dikenalpasti dengan mengintegrasikan faedah hijau komponen dengan kriteria hijau GBI menggunakan meta-analisis. Sampel kajian ini menumpukan kepada pengamal penilai harta tanah di Malaysia yang berpengalaman menilai bangunan hijau. Kajian ini melibatkan data kuantitatif iaitu pengagihan kajian soal selidik kepada 550 pengamal penilai harta tanah di Malaysia. Data dianalisis menggunakan analisis kekerapan. Analisis Kos-Faedah dilakukan ke atas jumlah kenaikan penilaian cukai harta dan penjimatan tenaga tahunan oleh komponen hijau bangunan bagi tujuan mendapatkan garis asas bagi peratusan pengurangan untuk insentif model yang akan dibangunkan. Model yang dibangunkan disahkan melalui temubual separa berstruktur dengan Pengarah Jabatan Penilaian di Majlis Perbandaran Kulai. Keputusan menunjukkan daripada sepuluh komponen bangunan hijau yang mempengaruhi nilai, terdapat tiga komponen yang meningkatkan nilai harta tanah iaitu solar photovoltaic, bumbung tumbuhan hijau, dan dinding tumbuhan hijau. Dua jenis model insentif penilaian cukai harta telah dibangunkan iaitu: 1) model pengecualian dan 2) model pengurangan. Keputusan menunjukkan garis asas bagi peratusan pengurangan untuk solar photovoltaic, bumbung tumbuhan hijau, dan dinding tumbuhan hijau bermula dari 25%, 0% dan 0% masing-masing. Majlis Perbandaran Kulai bersedia memberikan 50% pengurangan bagi setiap komponen hijau bangunan. Melalui model pengecualian, pihak berkuasa tempatan dan pembayar cukai tidak akan mengalami sebarang perubahan terhadap cukai sedia ada. Manakala melalui model pengurangan, pihak berkuasa tempatan akan mengalami kenaikan minimum hasil cukai harta dalam lingkungan RM 18 hingga RM 40. Walau bagaimanapun, untuk pembayar cukai, kenaikan cukai harta mampu ditimbal balik oleh penjimatan tenaga tahunan dari komponen hijau bangunan tersebut.

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CHAPTER 1

INTRODUCTION

1.1 Research Background

The involvement of governments in promoting green building is regarded as one of the undeniable effective ways (Varone and Aebischer, 2000; Qian and Chan, 2008; Sinton *et al.*, 2005; Liang *et al.*, 2007). Green building is defined by Urban Land Institute (2005) as a practice of increasing the building efficiency with the building uses resources while at the same time it reduces the building impact on human health and the environment during the building's lifecycle. This goal is realized through better siting, design, construction, operation, maintenance and removal of building respectively.

In May 2015, the Government of Malaysia has listed green growth as one of the agenda in 11th Malaysian Plan. Besides, the Federal Department of Town and Country Planning Peninsular Malaysia under the Ministry of Urban Wellbeing, Housing and Local Government has prescribed under the Housing Planning Guideline (2011), one of the elements registered under the direction of Malaysia housing development is the residential building construction shall have quality, innovation and construction with green building concept and technology. This guideline indicates that the government of Malaysia is determined in moving Malaysian housing sector towards green building implementation.

Moreover, the initiation of Green Building Index (GBI) as green assessment tool by the Malaysian Institute of Architects (PAM) and Association of Consulting Engineers of Malaysia (ACEM) Malaysia in 2009 has also demonstrates that Malaysia is committed in supporting green building development. Green assessment tool is purposely developed to provide guideline for developers and building owners to design and construct green buildings that meet green criteria in order to reduce the building impact on the environment (Green Building Index, 2009).

Since the Earth Summit in 1992, the government has acknowledged among the key players instrumental in the implementation of sustainable development concepts is the local authority (Fowke and Prasad, 1996). According to Theaker and Cole (2001), local authority is the best place for green policies and incentives to be developed since they have the organizational structures that enforce the development regulations. Besides, the local authority is in the best position to respond to the local level conditions and issues, because sustainability activities are more meaningful and effective at the local level (Theaker and Cole, 2001). Moreover, according to the speech made by the sixth Malaysia's Prime Minister at the United Nations Climate Change Conference 2009 in Copenhagen, Denmark that Malaysia has volunteered to reduce carbon emissions at up to 40% in comparison with the carbon emission level in 2005 by the year of 2020.

Local authority is a non-profit agency whose functions are to provide services to the society, to control and regulate town planning and to approve applications for planning permission, development and renovation of premises (Town and Country Planning Act 1976, Act 172). The development of green building has various benefits including, develop positive image, increase property tax revenue, increase productivity, decrease worker absenteeism, reduce pollution and natural disaster, and opportunity to create job field. Moreover, according to several researches, green building development reduces the cost borne by the local authority in order to serve the public needs in terms of the service, maintenance, facility and infrastructure (Turcotte et al., 2006; Guidry, 2004; Romm and Browning, 1998; Kats, 2010; Ibrahim et al., 2014).

Property tax assessment is a compulsory tax collected by local authority from taxpayer. Every property except for few special properties within the local authority administration area is imposed with property tax assessment (Ariffian and Hasmah, 2001). The purpose of the imposition of property tax assessment on property is related to the role of the local authority to serve the social need of the society by providing service, maintenance, basic facility and infrastructure for the public (Mani, 1988; Pawi et al., 2011).

Based on literatures, there are two categories of incentive provided by the local authority as an initiative for green building development specifically; financial incentives and structural incentives (Ibrahim et al., 2014; Commercial Real Estate Development Association, 2007; American Institute of Architect, 2012). Financial incentive relates to monetary support as such property tax assessment, grants and development fees. Meanwhile, structural incentive is inclined to technical supports, such as marketing, technical assistance, expedited permit processing, and density bonus.

1.2 Research Issues

Several Commonwealth countries around the globe which adopted improved value and annual value including Spain, Romania, Italy, Bulgaria, United States, Canada, and India have widely provided property tax assessment incentive as an initiative to encourage green building development at local level. There are three types of property tax incentives available for green building specifically; reduction, exemption, and rebate. The practice of providing these incentives within the green building has been empirically documented to encourage the growth of green building at local level. However, Shazmin et al. (2013) have reported that there are no uniformity and definite basis adopted to develop this incentive. It was verified by Green Building Certification Institute in Washington, DC and North Carolina State University that these incentives were provided depending on the preferences of each local municipal (Shazmin et al., 2013). Furthermore, these incentives were developed appropriate with each country's green rating tool. There are four identified bases adopted to develop these incentives namely; increased amount of property tax assessment on green building, cost of green components, rate imposed on property tax assessment, and level of green certification (Shazmin et al., 2016).

Conversely in Malaysia, the practise of providing property tax assessment incentive on green building by local authority as an initiative to encourage green building development at local level is very low. It was found that there is only one local authority, Petaling Jaya City Council, which is currently providing property tax assessment incentive rebate on green building. Though, it was found that the provided rebate incentive requires large financial expenses from the local authority and it is developed without based on property tax assessment basis, as both building and non-building components are eligible for the incentive.

Therefore, this scenario exhibits that the rebate incentive is only relevant for certain local authority with strong financial capability to spend on the incentive program. Hence, it creates issues for local authority that unwilling nor have large amount of budget to allocate for the incentive program. Moreover, a study published by Sipan *et al.* (2014) reveals that majority of Malaysian local authorities have least preference in providing property tax assessment incentive rebate on green building. Consequently, this issue leads to set back the initiative to encourage all local authorities to involve in promoting green building development at local level through providing property tax assessment incentive. In addition, it is documented that rebate incentive is the least type of property tax assessment incentives provided on green building in United States compared to reduction and exemption incentive (Shazmin et al., 2013).

Therefore, this study is conducted to bridge this gap by developing property tax assessment incentive that does not require large financial expenses from local authority. Besides, this incentive is developed based on property tax assessment basis which relies on improved value. Improved value is adopted as this study is conducted in Johor state and the basis to develop property tax assessment incentives adopted by other countries are based on the concept of improved value including; increased amount of property tax assessment on green building and cost of green component. Improved value might have positive relationship with amount of property tax assessment imposed on property and local authority tax revenue. Higher improved value is translated into higher amount of property tax assessment imposed on property. Consequently, might leads to higher property tax revenue for the local authority. Fundamentally, improved value is derived from a property market value. However, for property tax assessment purpose, a property market value derived from cost method which encompasses land value and building cost.

Accordingly, this study determines green building cost based on green building components that are integrated with building envelope, known as green envelope components. Several studies have proved that the integration of green components with building envelope is an effective way to regulate indoor comfort of building and reduce energy demand of building (Rodiguez-Ubinas *et al.*, 2014; Yu *et al.*, 2015; Koo *et al.*, 2014; Azari, 2014). Most importantly, several green envelope components were proved to have effect on property value. It is revealed that each country implementing property tax assessment incentive including Spain, Romania, Italy, Bulgaria, United States, Canada, and India have provided the incentive on building and non-building components which are suitable for climates and culture varying from one another, including Malaysia. Therefore this study is conducted to developed property tax assessment incentive models based on green envelope components usage that relevance and appropriate under Malaysia tropical climates, development contexts, and cultures.

1.3 Research Questions

Notwithstanding this, based on the aforesaid issues, some questions arise to be solved in this research as follows:

1. What are the green envelope components of green building applicable to Malaysia weather climates?
2. What are the effects of integration between green components with building and the property value?
3. How to develop property tax assessment incentive without involving financial requirement from the local authority and at the same time do not decrease the existing tax revenue of the local authority?

1.4 Research Aim

The primary aim of this research is to develop property tax assessment incentive models based on improved value without any financial expenses from the local authority in order to implement the incentive program. This is as an initiative to encourage local authority to participate in promoting the growth of new and retrofit green building by providing property tax assessment incentive.

1.5 Research Objectives

Hence, in order to achieve the above aims, there are three objectives outlined in this study as below;

1. To determine green envelope component of green building certified under Malaysia Green Building Index (GBI) rating tool.

2. To analyze the effect of the determined green envelope component of green building on property value.

3. To develop and validate property tax assessment incentive model on green building as an initiative for green building development.

1.6 Research scope

The scope of this research consists of retrofit green building, green envelope components, research area, and types of property.

1.6.1 Retrofitted Green Building

The central focus of this study is to encourage greening the existing building stock. Retrofitted green building is described as to increase the efficiency of existing building through incorporates green component, design, material and technologies (Deloitte and Charles, 2008). According Barlow and Fiala (2007), in building sector, majority of energy is consumed by existing buildings while the replacement rate of existing building by the newly built building is only around 1 to 3% per year. In addition, Menassa (2011) reports that more than 80% of energy is consumed by a building during its life cycle when the building is in actual occupancy and usage. Therefore, this indicates that existing building stock is a significant target for greening purposes.

Ma *et al.* (2012) proposes that building retrofitting is being considered as one of prominent approaches to realistically achieve the aims to reduce building energy consumption and greenhouse gas emissions. According to Deloitte and Charles (2008), a building does not have to be new to be green. Existing building can undergo a top-to-bottom green retrofitting that incorporates green design, material, building components, and technologies. A random survey shows that about one to two million new buildings are being constructed in Malaysia every year (Sipan *et al.*, 2014). Even, if each new building uses net-zero energy technology, it is estimated that it will still take decades to achieve significant impact on the overall energy consumption for the entire building stock (Sipan *et al.*, 2014). Hence, many more productive approaches to achieve building energy efficiency are to focus on the retrofit of existing buildings.

1.6.2 Green envelope components

The scope of this study focuses on greening the existing building stock through integration of green component with building, precisely green building components. This is due to the value of property is derived from the assessment of building components specifically; roof, ceiling, wall, and floor. Green building component is described as the integration of green components with building which is derived from green criteria of green rating tool. There are numerous green building components documented in literatures. However, this study adopts green building components integrating with building envelope called green envelope components. Several studies have proved that the integration of green components on building envelope is an effective way to regulate indoor comfort of a building and reduce energy demand of a building (Rodiguez-Ubinas *et al.*, 2014; Yu *et al.*, 2015; Koo *et al.*, 2014; Azari, 2014).

Besides, according to Cetiner and Edis (2014), the main focus in retrofitting existing building into green is to reduce the energy consumption and emissions that are directly related to the building daily operation. Therefore, the adoption of green envelope components is able to reduce the building energy consumption and emissions. Moreover, for the purpose to retrofit existing building into green, the integration of green building component with building is more practical and applicable. In the meantime, green design and green material selection are more appropriate to implement during the design and planning stage of a new building construction rather than on existing building.

1.6.3 Research Area

This research is conducted in Johor state which adopts improved value for property tax assessment. Johor comprises 14 local authorities, namely City Council (Johor Bahru), Municipal Council (Johor Bahru Tengah, Kulai, Pasir Gudang, Muar, Kluang, and Batu Pahat) and District Council (Kota Tinggi, Labis, Mersing, Pontian, Segamat, Simpang Renggam and Yong Peng).

However, this study focuses on the development area of Iskandar Malaysia, Johor due to the rapid economic and real estate development sector within the regions. Iskandar development is the proposed model adopting green concept of a socio-economically and environmentally sustainable development zone with excellent connectivity, infrastructure services, and environmental sensitivity (Rizzo and Glasson, 2012). Iskandar Malaysia is comprised of 221,695 hectare of total land area which is equivalent to more than 3 times the size of Singapore and 2 times the size of Hong Kong. It covers the entire district of Johor Bahru and several parts of Pontian District namely; Mukim of Jeram Batu, Sg.Karang, Serkat and Pulau Kukup.

There are five local authorities under Iskandar Malaysia regions which represent 35% of local authority in Johor namely; Johor Bahru City Council, Johor Bahru Tengah Municipal Council, Pasir Gudang Municipal Council, Kulai Municipal Council and Pontian District Council. Among these local authorities, Kulai Municipal Council is selected as the research area for this study due to the convenience in obtaining data within the administration area. Kulai Municipal council administrates 74700 hectare of total land area. There are total of 81,003 units of properties under Kulai Municipal council consisting of residential, industrial and commercial properties.

1.6.4 Property Type

Residential property is the prominent type of property at 57,167 units which represents 70% of the total property holding in Kulai Municipal Council. This portion represents the landed and non-landed types of residential holding. However, the landed types of residential holding is the largest type of property holding under Kulai Municipal council at around 45,000 units which represents 80% of the total type of residential holding. The major portion of landed residential property in Kulai highlights the significances to encourage this type of holding in order to produce major scale of sustainability effects at local level. Therefore, this study chooses landed residential building as the case study.

All types of landed residential building are appropriate for green retrofitting purpose. The integration of green envelope components on building exclusively depends on the roof and façade design and total area. Therefore, for the purpose to develop property tax assessment model, it is important to determine the minimum size of landed residential property in Kulai in order to determine minimum cost of green envelope components.

Single storey terrace house has the minimum built-up area among others, landed residential building in Kulai. It represents the highest portion of landed residential property in Kulai at 25,000 units which represent 55% of the total landed house. The corner lot of single storey terrace house is appropriate for green retrofitting purposes as it has the largest total external façade area compared to the intermediate terrace house. Therefore, the minimum cost of green envelope components is based on the minimum built-up area of a single storey terrace house in Kulai at 1000sqft (20 x 50).

1.7 Research Significances

This study contributes to several benefits on the real estate academic, valuation field and the society. This study is the pioneer of academic research in Malaysia for the development of property tax assessment incentives on green building. The outcomes from this research are beneficial for several bodies as below:

i. This study contributes to the expansion of academic knowledge on property valuation in Malaysia where this study explores the valuation of new category of property that is green building. This study has established several green components that make an increase in property value.

ii. This study opens up a new level of understanding in green building valuation. This is beneficial for valuation practitioners (private and government appraisers) as it provides new knowledge towards the effect of green components on property value. Hence, this study could assist the valuation practitioners in conducting valuation of green building.

iii. The local authority could benefit from the developed property incentives models where they could encourage the developments of green building among the community without having to sacrifice their existing tax revenues due to the provided incentives. This model is developed compatible with improved value which can serve as a catalyst for the state of Johor especially Kulai Municipal Council (MPKu) to become the local authority that actively promoting the building development and thus could become the sustainable state that implements green development concept in the building sector in Malaysia.

iv. The developed property tax incentives for green building creates public awareness towards green building benefits where it indirectly educates the public on the benefits of green buildings thus it could encourage them to participate in sustainable building and environment.

1.8 Chapter Organizations

This thesis consists of eight consecutive chapters starting from introduction chapter until the conclusion chapter. Chapter 1 covers the research background, research issues, research questions, research aims, research objectives, research scope, research significance, and chapter organization. Meanwhile Chapter 2 encompasses comprehensive literatures review on the concept of property tax assessment, definition of green building, green building assessment tools. This chapter also provides extensive literature reviews on property tax assessment

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