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THE UNIVERSITY OF HONG KONG

**PROPERTY PRICE RELATIONSHIP WITH DIRECT ACCESSIBILITY TO SEAMLESS SHOPPING MALL**

A DISSERTATION SUBMITTED TO

FACULTY OF ARCHITECTURE

IN CANADIDACY FOR

THE DEGREE OF

BACHELOR OF SCIENCE IN SURVEYING

DEPARTMENT OF REAL ESTATE AND CONSTRUCTION

BY

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HONG KONG

APRIL 2010

# DECLARATION

I declare that this dissertation represents my own work, except where due acknowledgement is made, and that it has not been previously included in a thesis, dissertation or report submitted to this University or to any other institution for a degree, diploma or other qualification.

Signed: _____

Name: _____

Date: _____

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# ABSTRACT

This paper conducts a real estate research in the Hong Kong context. It aims to examine a special relationship between shopping mall and residential flats in Hong Kong, which should be very different from the phenomenon in the western counterparts due to different development environment, culture and history. An empirical research will be devised to discover the effect of property price by direct accessibility to shopping mall. There have been foreign studies showing that shopping malls would pose both positive and negative effects to neighbouring properties. This research further examines the proximity effect of shopping mall to the residential flats within a development site. Even though many local researchers has investigated or taken into consideration that a shopping mall could be an attribute which have positive effect on residential property prices, no such research has been done to examine the effect of direct accessibility to shopping malls. This is because

local researchers only regard the effect of existence of shopping malls inside a residential site on the property prices. As a consequence, no comparison has been drawn for shopping malls with and without direct accessibility from the residential blocks. This research has categories 3 common types of residential development with different layout of shopping malls with different degrees of direct accessibilities. Large development sites have been chosen as samples in order to exclude the effect from its direct neighbourhood in the investigation. Result has found out that residential blocks having direct accessibility generally have a higher property price to those which has indirect accessibility to shopping malls. This result would be useful in helping developers to determine the locational design of shopping elements in the increasingly common Comprehensive Development Areas, which is a common type of land use in Hong Kong in recent development history.

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# CHAPTER ONE

# INTRODUCTION

## Background

In Hong Kong, due to the high development density, there are a lot of large residential areas, and very often shopping centers are accompanying the residential development. This practice aims to cater for the needs of the community inside or even outside the residential site.

In the past these developments are usually zoned as residential sites because retail components are allowed in the residential zoning. But recently, Comprehensive Development Area (CDA) zoning, although requires the initiative from developers for application, are becoming more common as it allows more flexibility of the development.

One of the reasons is the retail component can have a high building

design flexibility. However, this high degree of freedom of shopping mall design may sometimes make the planners or designers struggle on where and how the shopping mall should be placed. For example, they need to decide whether the shopping mall should cover the whole site or just centralize at a particular area, or whether the shopping mall should be located underneath the tower blocks.

In real practice, some of the large residential sites may be built in different phases at different periods of time, and only some phases are built in form of integrated residential, retail and railway station complex. That is to say, only some building blocks are constructed upon the shopping mall/station complex, while the rest of the blocks are just built on open space on ground. Yet, some of the sites like Whampoa Garden do have shopping mall complex in each phase of development even though there are altogether 12 phases.

Even experienced design consultant cannot figure out the best solution for the design. This is also a vital cause of such many revisions of

Master Layout Plan (MLP). The resubmission of MLP has lengthened

the time for design and also increased the costs. It can be seen that

new developments like LOHAS Park is also a typical example of such

kind of development. Although construction has still yet been finished,

its plan has already experienced several revisions which show the

planners' hesitation and struggle of whether the whole development

should be built on deck or just to centralize the shopping mall in the

middle. Therefore, it is necessary to find out whether there are any

differences in terms of development profit.

However, two phenomenons can be observed. As far as market

practice is concerned, it is observable in the advertisements that

property marketing only focus on whether mall exists in the

development. As for academic research, it is of usual practice that

researchers only concern if there are shopping malls within the site

they are investigating when choosing variables. Thus, it would be

necessary to conduct a research to investigate the impact on the

residential sale for each respective case so as to give the developers a

new point of consideration in the future.

**Significance of research**

This research focuses on the comparison within the same development

or different type of developments with contrasting factors, so as to

examine the perception of general public towards the locational

advantages from a micro point of view. Large CDA zone with blocks

have and/or haven't got shopping complex underneath will be chosen.

As for the sites being chosen, their shopping malls shall at least have a

scale equivalent to a regional mall, and this will be explained later in

literature review. This research intends to find out whether brand

name effect is adequate enough for adding values for the whole site,

or if the effect of direct accessibility to shopping mall overwhelms so

that the extra value is dominant for those buildings upon the complex

only. It is hoped that the result would be useful for real estate

developers to make a better design of large scale development in the

future.

**Aim of research**

This research is to examine the effect of direct accessibility to shopping mall on the property prices of the above residential blocks.

**Objectives**

- To identify the major determinants of apartment prices

- To classify different types of shopping malls by their scale and functions

- To estimate a hedonic price model so that the relationship of property prices and major determinants can be estimated

- To test whether shopping mall underneath will have impact on property prices

- To draw suitable implications from the findings

- To provide developers an insight of whether there can be a higher flexibility of building design layout when creating Master Layout Plan

**Methodology**

An empirical research will be conducted with the adoption of hedonic price model. Residential sites will be classified by whether there is direct or indirect accessibility to shopping mall. Those sites without any shopping mall will not be considered in this research. Site where the shopping mall is built underneath part of the residential blocks will have internal comparison of property prices. Cross comparison will be used for the sites where shopping mall covering the whole residential site or totally separated from residential blocks. The final purpose of such comparisons is to find out the relationship between direct accessibility to shopping mall and the property prices.

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                    ┌──────────────────┐
                    │  Empirical Study  │
                    │  on property price│
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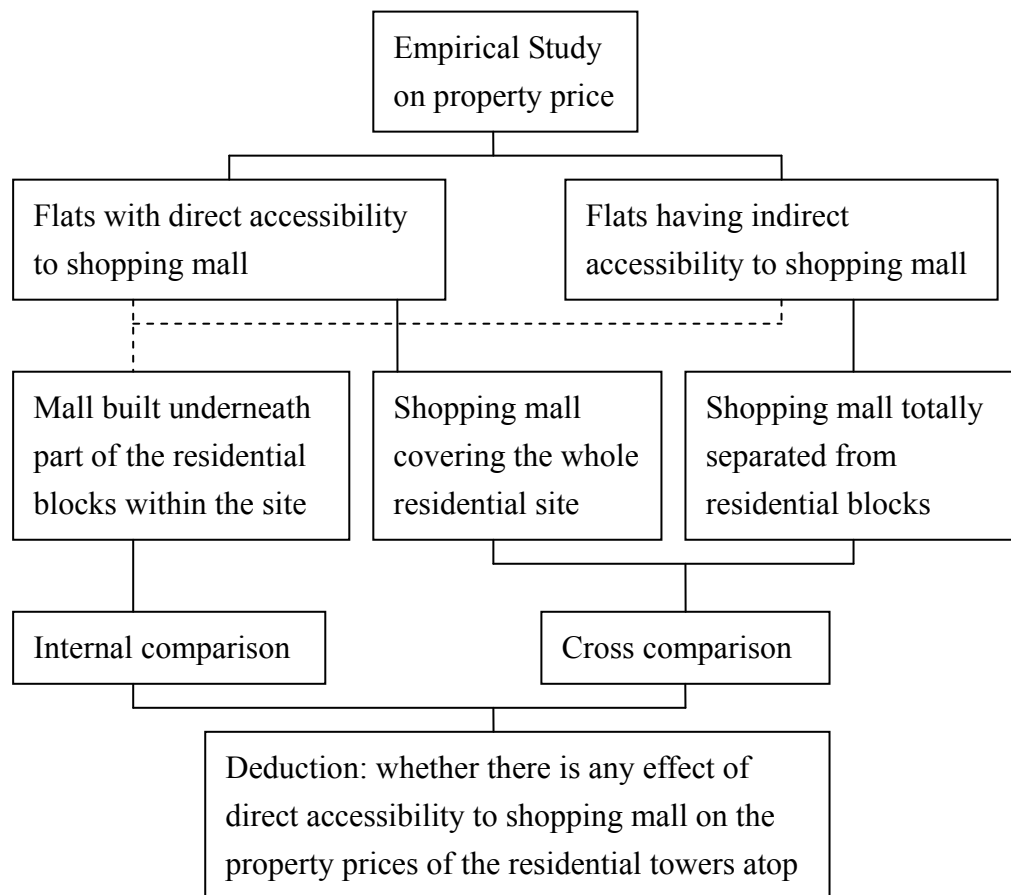
Fig. 1 Outline of this research

**Hypothesis**

In order to test the effect of accessibility to shopping mall on the

residents within a particular site, a major hypothesis will be

established to suggest that,

"Direct accessibility to shopping mall will increase the value of the

residential properties built above."

The details of this hypothesis will be elaborated in the Chapter 3.

**Organisation**

This dissertation is composed of 6 chapters. Chapter 1 is the

introduction which provides the general background information and

the area of application for the topic under investigation, and also the

significance and objectives of the study.

Chapter 2 is the literature review on several numbers of topics, which

include the recent the history of the development of shopping malls,

the types of shopping malls by scales, the foreign study of relationship

between the distance of flats to the nearby shopping mall on the

property prices, the differences of shoppers habit and its derived

hypothesis in Hong Kong and the that of the property development

culture in Hong Kong including the recently popular Comprehensive

Development Area, and finally the way to develop a hedonic price

model for residential flats.

The next two chapters illustrate further on how the research will be

conducted and the expected result for the topic. Chapter 3 is the

methodology of this research, which comprises the definition of direct

accessibility, the sample to be chosen and their basic information and

all the considerations of devising a suitable empirical model for this

research. Chapter 4 is the hypothesis of the research topic. It suggests

the author's prediction of the research result and his proposed

explanation from his observations.

Following the hypothesis, the way of how the empirical model is

implemented will be delved deeper in Chapter 5. This chapter the

hedonic property price model will be devised. This time a holistic

expected outcome will be predicted for all the attributes. The usual

method of analyzing the hedonic price model which will be adopted in

this research will also be illustrated. Finally, the result obtained will be

interpreted from a statistical point of view.

Lastly, Chapter 6 draws the conclusion of this research by firstly

summarizing the findings in Chapter 5, thereby analyzing the

implications of the statistical results in real life situation. The

limitations of this study and recommendation for areas of future study

will be provided at the end as a final concluding remark.

## CHAPTER TWO

## LITERATURE REVIEW

## Shopping Habit and history of malls in global perspective

In order to understand how shopping mall is developed, one should

know how the typical shopping district is formed. In the past,

shopping districts are formed naturally.

Individual shops agglomerate in a particular district due to

convenience, and it then forms a central place for commercial

activities to carry out. This would usually be outdoor area where

different types of stalls such as bakeries, meat markets, cheese stores,

and clothing stores could be found. Traditional shopping districts

appear in different forms ranging from streets to bazaar. Street is a

place where ground floor levels of the buildings facing the road are

occupied by shops, while markets are usually located on open space

like plaza. Bazaar (James Stevens Curl), which is a term less

commonly used, refers to a permanent merchandising area,

marketplace, or street of shops where goods and services are

exchanged or sold. Then in modern history markets, and the later

shopping malls which are of an even shorter history, have evolved. In

essence, the form of shopping environment has developed into

different styles at various points on the time line across different

places.

Development of Street

Far before shopping malls have evolved, goods and services are

provided in some of the individual shops which are often located on

streets or markets. The development of shopping mall is a much later

concept which was came into existence for not more than a century's

time. Nowadays, shopping mall has provided consumers a lot of

shopping convenience such as exclusion of bad weather condition,

and it has developed into a huge variety of forms. Yet the tradition

locations where shops are located have not even since been

eradicated.

The most common place where shops are formed is street. It is the most basic unit in an urban fabric. The original definition the word "street" (Sturtevant, 1965) simply meant a paved road [Latin: "via strata"]. It is still common for general people to use the word "street" to refer to "road", and till now many street names still uses "street" as naming for a particular road, but more and more commonly people and urban planners in particular define the terms distinctively by referring road as the main function for transportation, while streets is for facilitating public interaction.

Properties of Streets

Stephen Marshall (2005) suggested that the urban street has shouldered 3 important functions in an urban area. First, a street is a circulation route, for example it make ways for motorway or railway. Second, it is also a public space. Third, it is also a built frontage where building complexes are formed. Therefore, streets exists in busy locations inside a city area which are often accessible by automobile

and pedestrians which/whom are drivers of the economic activities of the region, and hence street is like an artery of a city. Michael Southworth, Eran Ben-Joseph (2003) further suggests that shops are located at the edges along arterials, while other facilities like school or park are centrally placed within the district.

Pedestrian Streets

Nowadays pedestrian streets have evolved with the rise of new urbanism. It is suggested by Michelle Wallar (1988) that pedestrians use twenty times less space than an automobile, and are able to communicate and interact with one another as they travel. Jane Jacobs (1992) appreciates the importance of pedestrian traffic in a city: "Lowly, unpurposeful and random as they may appear, sidewalk contracts are the small change from which a city's wealth of public life may grow."

As a new form of street which differs from the traditional ones which

are dominated by automobile traffic, pedestrian streets, according to

Michelle Wallar (1988), have the advantages of preserving central city

functions, facilitating access for shoppers, enhancing city's image,

reducing noise and air-pollution and improving a city's appearance.

Pedestrian streets have become more and more popular within

different countries. In China, nearly every large city has its own

pedestrian streets which are the most important shopping districts in

those cities. For example, the Wangfujing in Beijing, Nanjinglu in

Shanghai and the Shangxiajiulu in Guangzhou are some of the typical

examples of pedestrian streets in China.


Development of Market


Apart from streets, market is another form of urban structure which

forms a very important shopping habitat in a city. Donatella Calabi

(2004) suggested market & street to have equal importance by saying

that in certain phases of history, the very essence of metropolis lay in

its markets and busy streets. In Europe or some of the colonies it is

quite often to have a market square. The market square is formed on

an open area, usually in the centre, particularly the town square, of a

town. In the market, stalls are set up for the purpose of trading. Some

of the market only opens during a particular day of the week known as

market day, while some of the markets nowadays host different

activities at different days during a week. For instance, the Covent

Garden Market in London sells antiques on Mondays, while from

Tuesday to Friday, general market products, crafts, clothes and food

would be sold. On Saturday and Sunday, hand made crafts will be sold,

and there would be street performance on Sunday. Other examples

like Smithfield Market and Portobello Road Market also sell different

products during the week.

Enclosure of shopping district

However, apart from street shops and markets, in modern cities it is a

common phenomenon that people spend their shopping time in

shopping malls. It is a newly formed shopping concept with a history

of less than a century. In fact, shopping center development has a

large connection with streets or markets. It was evolved from the

shopping districts in Europe, while its development was rooted in

America.

The Encyclopædia Britannica defines the term "Shopping Center" as

"20th-century adaptation of the historical marketplace, with

accommodation made for automobiles." In other words, the concept

of shopping mall is derived from traditional marketplace but the

difference is the shopping centre exclude the traffic of automobile

inside by provision of parking lots. "A shopping centre is a collection

of independent retail stores, services, and a parking area conceived,

constructed, and maintained by a management firm as a unit.

Shopping centres may also contain restaurants, banks, theatres,

professional offices, service stations, and other establishments."

According to the International Council of Shopping Centers (ICSC)

the general definition of a shopping center is "a group of

architecturally unified commercial establishments built on a site that

is planned, developed, owned, and managed as an operating unit

related in its location, size, and type of shops to the trade area that the

unit serves. The unit provides on-site parking in definite relationship

to the types and total size of the stores." Thus, a major characteristic

of shopping center is the whole shopping area is under a central

management, and because this approach offers more suitable planning

and promotion, it has been successfully and widely applied in cities

across the world.

Development of Shopping center

The idea of shopping center was originated from the United States of

America and then spread to other parts of the world. Therefore, the

history of shopping center development in North America has to be

investigated to see how shopping center evolves (Balachandran,

1976).

Shopping centers were developed from the concept of open air shopping district like marketplaces by enclosing the whole shopping area. The the first indoor shopping mall was Arcade of Cleveland, which was opened in 1890 in Cleveland, U.S. This was the first attempt for housing the shops indoor. Since then the idea of shopping center has been shaped. Thirty years later, an early shopping center in the United States called Country Club Plaza opened in 1924 in Kansas City, Missouri. This was followed by a wave of shopping mall development. Highland Park Village in Dallas, Texas; River Oaks in Houston, Texas; and Park and Shop in Washington, D.C. are all built in early 1930s.

However, it was not until 1950s when there were fully-enclosed shopping mall. This was the idea by the Austrian-born architect and American immigrant Victor Gruen. Their idea has been adopted in many shopping centers at that time, such as Northgate Mall, built in north Seattle, Washington, USA in 1950, Victor Gruen's Northland Shopping Center built near Detroit, Michigan, USA in 1954, and

Gulfgate Mall in Houston. These were all originally open-air

pedestrian shopping centers, but later they were enclosed as malls

which are the form of shopping centers we know today.

After the world war, shopping centers became more popular in

America due to the extensive use of automobile. The first enclosed,

postwar shopping center was Gruen's Southdale Center opened in the

Twin Cities suburb of Edina, Minnesota, USA in 1956. Together with

the rapid development of sub-urban area, retails started to move away

from the urban core into the fringe of the city in residential suburbs.

This shopping style has then swept through Europe and America. Now,

many shopping malls in the western countries are away from

downtown. Due to the remote location they are only accessible by

automobile.

Through the development during the past several decades, shopping

malls have been incorporated many architectural innovations to

increase their attractiveness. Atrium, which is first used in shopping

mall, is a break through in building design. Now, apart from solely

shopping, shopping centers have provided more new functions

compared to traditional shopping districts. The whole shopping

environment, such as the design, room temperature, tenure

management parking facilities etc, are all under well planning.

Management companies of the shopping malls now uses different way

to advertise which are different from traditional way of advertising,

unified marketing strategies such as advertising the mall as a whole,

decorating the mall during festivals, or providing shops discounts, are

adopted for the shopping malls. Under this kind of marketing the

trading areas in a shopping mall are often regarded as inter-related

with one another, which often brings a symbolic characteristic to the

shopping mall as a whole.

Increasing emphasis has since been put on the interest of consumer

segments rather than that of the whole consumer group. Diversity of

shopping patterns in malls is promoted in advertisement which caters

for the different consumer groups. Together with the well management

of tenure choices, for example the mix of tenants and the cooperation

with anchor tenants, both the tenants and the developers can achieve

the best economic benefits.

**Classification of different types of malls**

According to the scales, shopping malls can be classified into several

types. There are no strict standard for classification, but most types of

centres built (Prendergast et al, 1996) can generally be categoried into

neighbourhood mall, community mall, and regional/super-regional

mall (See Appendix 1).

Neighbourhood mall

Neighbourhood mall is a small scale shopping mall which provides

daily necessities to cater for the needs consumers in the immediate

neighbourhood. There are usually anchore tenants such as

supermarket or drugs store, which satisfy the needs of the residents

living in the neighbourhood which with has a population normally

under 50,000. In foreign countries they often appear as straight-line

strip malls with no endorsed walkway or mall area, and typical

examples in Hong Kong includes shopping malls in public estates

(Chu, 2009).

Community mall

Community malls are mid sized planned shopping centres (Segel,

2008). Compared to neighborhood malls they provide more variety of

products or services. There will also be more than three tenants such

as department store, convenient store, supermarket, home decoration

store and so on, anchoring in the shopping mall. They are generally 15

minutes away from a potential buying community of up to 90,000

people (Segel, 2008), and have at least a general manager, a

maintenance department and a security department. Such shopping

malls may have different configurations such as L shape or U shape

apart from a straight strip, depending on the site selection and design.

Regional mall

A regional mall has a larger size than the previous two types of malls, ranging from 400,000 to 800,000 square feet according to the definition from International Council of Shopping Centers (ICSC). There would be one or more large department stores as the anchor tenants and variety of goods and services provided has much greater combination, such as stores selling products of latest fashion. This kind of malls draws a population of customers within an even further distance. They usually situate in multi-level enclosed buildings, and the stores are connected by common walkways (Chu, 2009). Parking spaces are also available to cater for the customers from a long distance away.

Super Regional mall

Super Regional malls are similar to regional malls. They are also enclosed mall with multi-level and parking spaces but are of much

larger sizes and have even more anchors. They become the dominant

shopping venue for the region and sometimes are tourist attractions in

vacation areas.

**Shopping mall development around the globe**

Characteristics of malls in foreign countries

Shopping centers in foreign countries such as those in Europe and

America has a very distinct shopping culture as that of Hong Kong.

Thanks for the heavy reliance on private transport and horizontal

residential development, the shopping centers are usually in suburb

area accessible by automobiles with Parking lots provided for private

cars (Crawford, 1992), this kind of development is also called

'Highway comfort culture' (Kowinski, 1985).

A special example to illustrate this is strip mall, which is a kind of

shopping mall which can be found nearly in all residential areas in

North America. It is an open area shopping center where there is a

collection of several stores such as video rental stores, small grocery

stores, fast food restaurants or small independent cafes, located in the

same building, and are arranged in a row with a sidewalk in front,

typically developed as a unit and have large parking lots in front. They

are usually at the intersection of major streets in residential areas or

facing major traffic arterials and tend to be self-contained with few

pedestrian connections to surrounding neighborhoods.


Different situation in Hong Kong


The shopping mall development in Hong Kong is quite different

owning to the exceptionally high density development here. In the

past shopping districts mainly catered for the tourists. Outdoor

shopping was very common in urban districts in the past, but after

1970s a trend of shopping mall construction sweep through new

residential towns (Gordon, 2001). Nowadays, the streetscapes of

Hong Kong are mainly composed of open retail stores, but shopping

mall is common at places where there is high living population. Very

typically New town centers are formed with the existence of large

shopping malls. Unlike western countries parking is uncommon here

due to the easy connection with public transport interchange, in other

words malls are supported by Transport Oriented Development. As

mentioned by Crawford (1992), shopping experience in Hong Kong

differs from that in Canada, US and UK in that here is no hand in

hand relationship between growing affluence and also the

popularization of car ownership. Rather than the separation of

shopping district with residential neighbourhoods, residential blocks

built atop of a shopping mall are usual practices in Hong Kong. This

arrangement provides convenience for consumers, while on the other

hand, is also profitable practice for developers.

Current trend in Hong Kong

As more and more residential sites have certain degree of retail

component incorporated into the site area, traditional form of town

planning has become inadequate in controlling the use of different

types of land. In the past, land use planning are rather straight forward,

in which different piece of land was assigned with a specific land use

in order to have a better control of the whole community planning.

Retail uses are also permitted in sites zoned for residential use, and

therefore many of the large residential developments with shopping

malls developed before 90s are also residential zone.


Yet, as many of the districts in Hong Kong have been aging after years

have passed, the need for redevelopment has become more important

these days. In order to facilitate these kinds of developments and also

to revitalize the neighbourhood of the new developments,

Comprehensive Development Area (CDA), has been introduced and it

allows developers great flexibility in determining the land uses inside

the site. Hence, many other facilities, most commonly shopping

centres, green spaces, public transport interchanges (PTI) or even

some Government, Institution or Community (G/IC) facilities such as

schools can also be included inside the development, so long as the

comprehensive plan submitted is approved by certain governmental

bodies involving in the planning of those facilities.

As seen from the table in the Appendix 2, the CDA application rate

has been increasing rapidly over the past decades. In 25 years of time

the total number of application has increased from 1 (as of 1980) to 80

(as of 2005). In fact, the popularity of CDA zone development is the

outcome of high density development in Hong Kong. Unlike foreign

countries where horizontal development is common, a particular piece

of land in Hong Kong may have to shoulder a variety of functions in

order to serve the high population neighbourhood nearby. Therefore,

CDA development can ease the achievement of this purpose.

**Comprehensive Development Area**

Comprehensive Development Area in Hong Kong

Comprehensive Development Area (CDA) zoning is one of the land use zonings in Outline Zoning Plan (OZP), which is a statutory plan in Hong Kong. It was previously annotated as "Comprehensive Development Area" in the zoning category of "Other Specified Uses". CDA was introduced to OZP in 1976. CDA zones are designated by the Town Planning Board (TPB) in statutory plans under section 4(1)(f) of Town Planning Ordinance.

The most common way to initiate a CDA zoning is the developers' requests for rezoning of land from other uses, such as residential zoning, into CDA. The purpose behind is often to increase flexibility and complexity in terms of the function of a site. In Hong Kong, institutes which are likely to apply CDA rezoning include large private developers, or quasi governmental bodies such as Mass Transit

Railway Corporation (MTRC), Urban Renewal Authority (URA), or

Hong Kong Housing Society (HKHS) etc.

There are no standard guidelines for application or granting

permission of CDA sites. Very often CDA is designated when it is

considered to be the best available option for a development site. The

general principle in determining this is to consider the interest of both

the general public and the rights of individual property owners. Once

the application is submitted to the Town Planning Board, it will be

thoroughly assessed by relevant government departments, such as

Buildings department, Drainage Service Department, Transport

department and so on. After circulation of the plans among these

departments, the feedback from these departments will finally be

considered by Town Planning Board as part of planning process. The

purpose of this mechanism is to delineate the site boundary, land

ownership, land holding patterns, existing use of subject sites and

other development constraints, finally determine the suitability of

comprehensive development.

Outline Zoning Plan (OZP), is a statutory plan published by TPB

under Town Planning Ordinance. It contains there components, the

annotated zoning map, the Notes and the Explanatory Statement,

while the Explanatory Statement is not part of the OZP but it is always

attached to it. Planning intention of the CDA zoning is specified in the

Explanatory Statement. Meanwhile, the Notes specified development

criteria such as plot ratios, building height restrictions, gross floor area

and site coverage, etc.

In the Note of the Outline Zoning Plan in Appendix 3, the cover page

lists out the types of buildings which are permitted to be built for each

category of land use. The list separates the type of buildings into two

columns, Column 1 and Column 2 respectively, according to the

conditions upon which the building works are permitted. Items in the

columns are different for various land use zoning, and there are minor

differences in the same land use zoning across different sites. The

items in Column 1 are types of buildings which are always permitted

without application by the developer, while those items in Column 2

require application for consideration and permission from the TPB.

The most distinctive characteristic of CDA zoning is it does not have Column 1 items. In other words, the all construction purposes for Comprehensive Development Area fall into Column 2, which means every time a CDA zone is to be granted, application is required by the developer and approval from Town Planning Board is needed.

Section 4A(2) of the Town Planning Ordinance specifies that the applicant for the CDA zone may have to submit a Master Layout Plan, or MLP in short, to the Town Planning Board as supplementary reference when the application is under permission. Section 39 of the Town Planning Board Guideline stipulates that a planning brief, which is a statement of the planning intention, guidelines and requirements for the development of a site, is required to assist prospective applicants to submit MLP for CDA site for TPB consideration.

There are no standard requirements for contents in an MLP, but

according to Town Planning Board PG-No. 27, there are some

guidelines for basic items to be included in the plan when applying for

different purposes. For general applications, typically the plan would

include more detailed information about the site apart from land uses.

For example, site boundary and blocks layout are specified on the

drawing plans. Details of building design such as zoning in each floor,

heights and numbers of stories are often included. Others include

building facilities which are used for reference by other governmental

departments for granting approvals. Examples include vehicular

assess, carpark, loading/unloading area, non-building areas, or even

section and elevation plans would be required.

Today many comprehensive development areas even include more

elements apart from just different land uses. It is commonplace for

developers to include landscape deck or water features in their

development sites, and some even include recreational facilities like

performance center. For these sites which include the consideration of

landscape, environment, infrastructure and G/IC, the following items

should be supplemented in conjunction with the above information.

These items include EVA, landscaping and environment, GIC,

building services, open spaces, pedestrian paths etc. However, these

are just suggestions in TPB guideline. Certain information may be

provided upon the wish of the developers. For example, the MLP of

West Kowloon Express rail terminus development has included the

layout of the 14 platforms.

After the approval of the application by Town Planning Board, the

MLP certified by the chairman of the board would be documented at

Lands Registry and free public inspection would be allowed.

Afterwards, revision of Master Layout Plan for amendments of

approved plans to suit the latest development needs or advice by the

board would be allowed, and they must be deposited as soon as

possible. The final version of MLP should be kept at Land Registry

for public inspection.

Purpose of CDA zone

The presence of CDA zoning have reduced the rigidity of traditional

zoning which permits buildings of one single land use to be built on a

site. The planning intention for comprehensive development area,

according to the notes for CDA sites, is "for comprehensive

development/redevelopment of the area for residential and/or

commercial uses with the provision of open space and other

supporting facilities. The zoning is to facilitate appropriate planning

control over the development mix, scale, design and layout of

development, taking account of various environmental, traffic,

infrastructure and other constraints." Today, CDA zoning is deemed to

be one of the solutions to introduce balanced land-use development

for redevelopment site. By allowing various land uses, the newly

formed site would revitalize the economy of the region, and can even

provide facilities or greeneries to meet the inadequacy of the

community infrastructures nearby.

Significance of this research on future CDA sites

This research aims at investigating the economic benefit enjoyed by the developers for different types of shopping mall development inside a CDA site. Hence it can act as one of the indicators for choosing how the shopping mall shall be designed so that the time changing designs in new MLP revisions due to hesitation on this issue can be saved, and therefore reducing the time and cost on lengthy design process.

**Foreign comparative studies of shopping malls and flats relationship**

Situation in Western Hemisphere

François et al (1996) have conducted research to examine the effect of both proximity and size of shopping centres on the value of surrounding residential properties. This research was conducted under

a Canadian urban context so it should reflect the situation in the

Western Hemisphere. The following graph summerises the

relationship between the sale price of residential flats and their

distance to the nearest shopping centre.



(a) All shopping centres
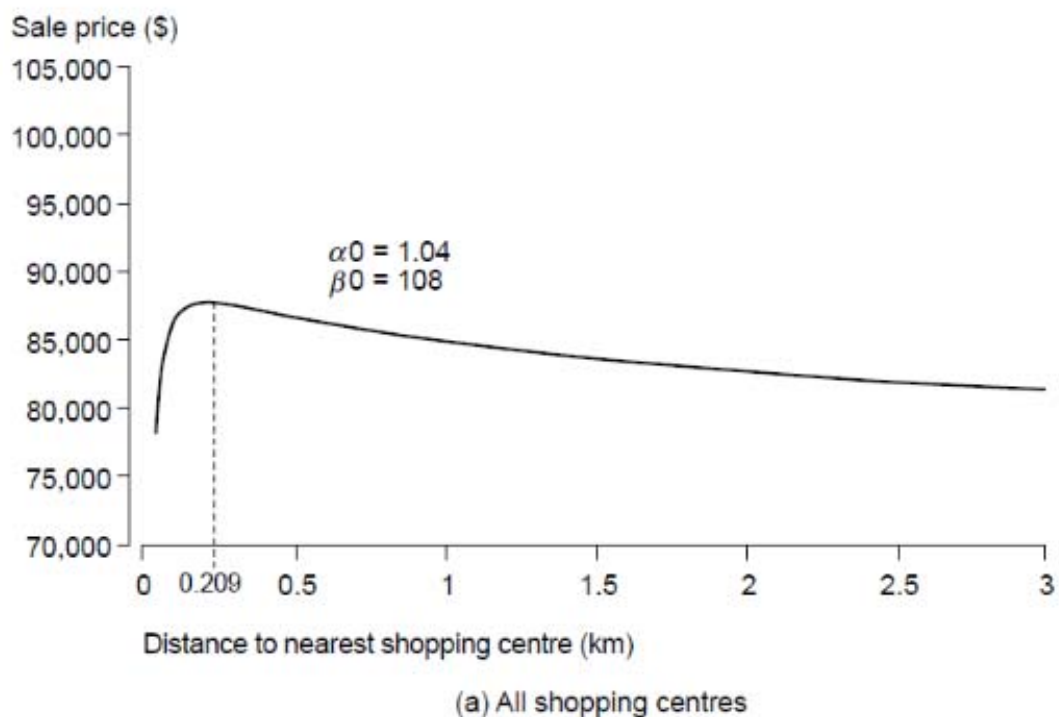
Fig. 2 Property price and the location of shopping mall relationship by

François et al

The result is quite surprising as they do not simply form a directly

proportional/inversely proportional relationship. It is found that the

flats right next to the malls are of much lower price until it is moved

further to an optimum distance where the price would be at maximum.

After then the price reduce gradually when the mall is further away.

The reality is there are two forces with different direction affecting the

property price and they vary when the distances change. The

researchers later concluded that in western countries like US,

shopping malls are not necessarily good to residents nearby. This is

because there are both positive and negative externalities of shopping

malls on the neighbouring residents. Very obviously, the positive

externality the mall will bring to the nearby residents is the shopping

convenience, which is of inverse proportion to the distance from the

flats. The negative externality the mall will bring is crime, because it

also draws crowds of people from outside everyday which affect the

security of the residents. However, it is shown that this effect only

have significant impacts within certain range of distance, and is

deflated to minimal at distance of about 200m. But it is sure that this

effect has a far greater attitude than the effect of convenience, which

means that the residents would strongly consider this factor when

choosing a property.
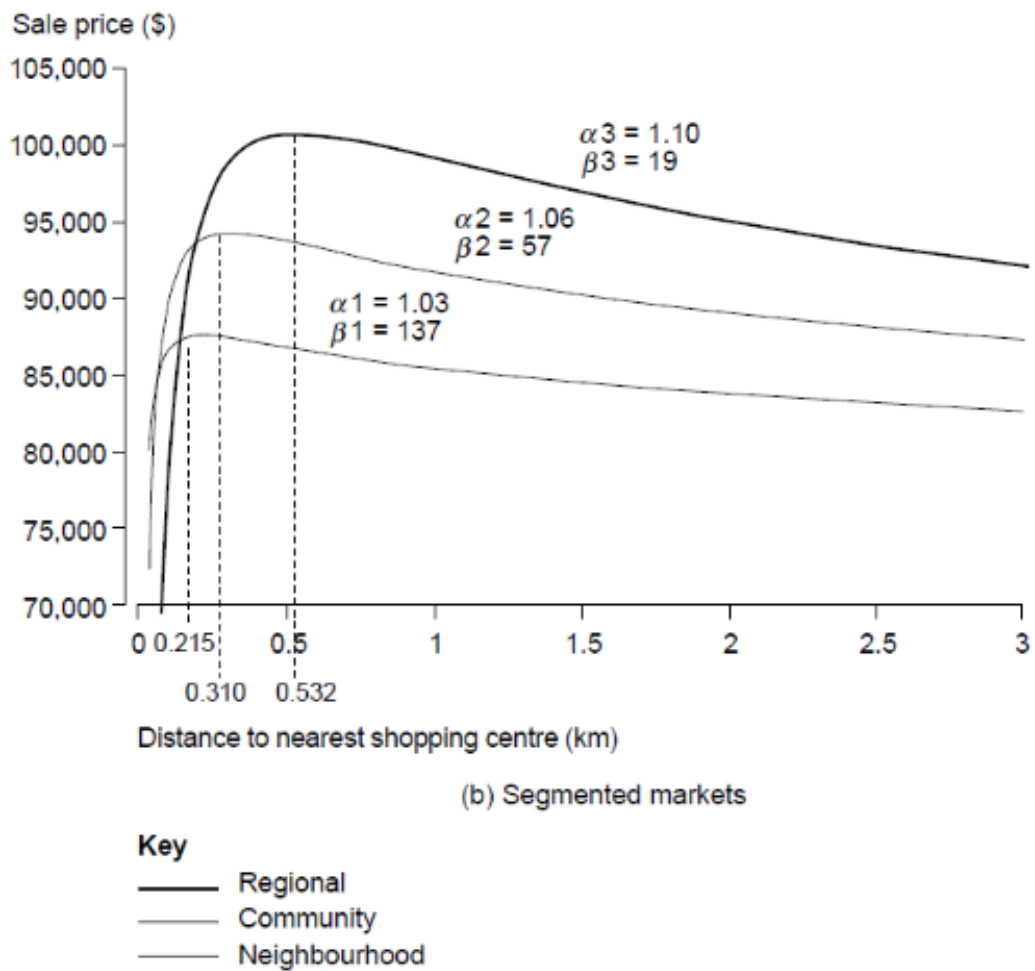


Fig. 3 Relationship of property price and the location of different

   types of shopping mall by François et al

The graph above further divided the investigation targets by different

sorts of malls, and the result is quite similar in pattern. The general

idea is that the larger are the scale of the malls, the higher is the effect

of the property prices nearby.

Another foreign research (Colwell et al, 1985) has also investigated

the effect of a neighbourhood mall on property price of the residential

flats. It was suggested in the hypothesis that positive and negative

externalities such as convenience, disamenities of noise, traffic and

crime may affect the property price. Hence similar types of sites with

and without neighbourhood malls have been chosen for comparison,

and a regression result has shown a general pattern that flats within

1500 feet distance to a mall will show diseconomy, while those

beyond 1500 feet distance economies appear to dominate. Again it

proves the existence of negative impact on neighouring properties at

immediate distance.

Situation in Hong Kong

There are yet any similar kinds of research conducted in the orient. It is expected that the situation would be different here in Hong Kong. As it is understood that Hong Kong is densely populated, people are used to dense development where mixed variety of development types is tolerated in a small area. In fact, this is a necessary outcome of dense development because this mode of land use facilitates the daily activities in a region which has a higher population.

**Property Price as means of valuating property**

The reason of using property prices as a unit of measurement of certain effects on a property is because it is the most directive way to reflect the value of a property and so it contains certain reference value. Meanwhile, property price is qualitative in nature, and its data is easily obtainable. This is why property price has been a popular topic for investigation. Many researchers have used property price

data to measure the effects of some variables on properties. Their

efforts have been spent to investigate ways to set up property price

model and also the relationship between property price and different

housing traits.

Hedonic price model

Hedonic price model is most common tool among all pricing models

in measuring property prices. Its earliest usage can be dated back to

the research by Waugh(1928), in which the prices of asparagus,

tomato and cucumber are examined by this model. But when it comes

to its application in real estate, Harris et al. (1968) was the first to

adopt Hedonic Price Model to find out the effect on property price

values by various circumstances. Griliches (1961, 1971) then further

developed this model into hedonic price indices to estimate the effect

on automobiles and other kinds of consumer goods by the change in

quality.

Rosen (1974) gave a definition of Hedonic price model as 'the implicit prices of attributes' and are 'revealed to economic agents from observed prices of differentiated products and the specific amounts of characteristics associated with them'. In his research he applied the hedonic price concept to study how products in competitive markets are differentiated their demand and supply of the characteristics. He proved that the marginal trait prices are the resultant of the equilibrium force by supply and demand for traits. He also proved the existence of housing attributes by assuming that each household occupied only one residence.

This concept was further polished by other researchers. Peter Linneman (1982) pointed out the limitation of Rosen's study that the hedonic function in this example only measured the prices without addressing the supply and demand functions. Hence, in Linneman's research he did an observation on the different bundles of grocery items bought by the grocery customers after they paid and stepping out of the shop. He categorized the customers in accordance to their

family size, income and other factors. These are the so called

component attributes to the price of subject under investigation. The

study now covers the examination of the driving factors and also the

effect on the prices. In this regard, Pickett and Perrett (1984) affirmed

that the price is made up of the sum of the value of component

attributes and he used the Hedonic price model with the aid of

multiple regression techniques.

Different housing traits which are determinants of property value

To start with, the most important things to be included in data

collection are the sales transaction and housing attributes. The general

idea to estimate the equation by using the method of trial and error to

obtain an equation which best fit the data, and that the coefficient of

independent variables should be of expected sign and are statistically

significant.

There are many traits of real estate properties, or housing attributes,

which make their value different from others. Little and Yinger (1977)

regarded housing as a multi-dimensional commodity, but the first

recognision of housing traits was by Harris et al., who proposed that

'housing is composed of a variety of residential site characteristics'

and that 'the composition and level of housing quality are both

important determinants of the housing values'.

Throughout the past decades the hedonic price model formed the

bases of many researches, and models are developed to examine the

impacts of a variety of amenities on property values. Although the

target of researches is to find out the attributes which have significant

impact on property prices, there are indefinite variables affecting the

value of a property in real practice. Linneman (1980) has included

public facilities, which are similar to G/IC facilities in Hong Kong,

such as school and public roadways as neighbourhood and locational

traits. Butler (1982) asserted that hedonic functions should include

only housing attributes that are 'costly to produce and yield utility to

residents'.

Yet the most widely conceived idea is from Dewees (1976), who

suggested that attributes affecting property values include (1) structure

quantity, (2) structure quality, (3) neighbourhood characteristics, (4)

transport access. This is because they are most likely to affect a

property value. These key attributes will form the main structure of

the empirical study in this research.

Structural traits

Rodriguez and Sirmans (1994) referred the structural traits of housing

attribute to the structure of the property itself which include age, floor

level and size of the properties. Later on this concept was applied by

researchers and now structural traits are included in most of the

studies. Apart from these traditional attributes, Cheshire and Sheppard

(1995) incorporated a wider variety of structural features in their

hedonic model, including the provision of electricity system,

plumbing and drainage system and heating system etc. Apart from

these, some interesting features applicable in particular places due to

cultural reasons may also exist. Chau and Ma (2001) have studied the

effect of the lucky floor number in the address of the unit on a

property value, which is also a kind of structural traits.

Locational traits

Alonso (1964) was the first to utilize locational traits. His

theoretically assume the existence of location rent by asserting that the

travel distance to work and the level of rent are the struggle by general

household in making the choice of their property location, assuming

that all jobs opportunities are centered at one single place. The result

suggested that the land price in the centre of a city, which is the

central business district, is higher. Wilkinson (1973) found out that

household with higher income or higher educational level would like

to live in residential flats with higher quality which are further away

from the downtown district. To certain extent the situation in Hong

Kong also reflects a tendency in this relationship but in an opposite

sense. Recently, accessibility has becoming more considerable factor

in location traits and similar researches have been done by Bajic

(1983).

Neighbourhood Traits

Sometimes the price of a property is not affected by the traits inside

the building site. Nearby property developments may be regarded as

the neighbourhood traits in the model. Stegman (1969) have used the

surrounding environmental attribute of the residential properties as a

determinant of the housing price. Later on, after the wide adoption of

hedonic price model, researchers like Evans (1973) have considered

the effects of non-residential land uses on the values of nearby

residential properties.

Examples of neighbourhood traits are ubiquitous. It involves

investigating the issue of externalities of certain surrounding

ambience. Ridker and Henning (1967) examined the negative impact

of air pollution on property prices. Others include Leggett and

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Bockstael (2000) who studied the effect of water quality on prices of residential flats. Sirpal (1994) proved that the enhancement of neighbouring facilities like shopping centers can have a positive effect on the house prices. Huang (1996) estate-type residential blocks, when compared with single block developments, are usually accompanied with a price premium. Lee (2006) has also proved that there are positive effects of amenity traits such as sea view, proximity to CBD, prime school network, and availability of shopping malls and clubhouse facilities on property values.

Conclusion

Hedonic price model, as an effective way to measure the effect on property value, will be used in this research to study the unique shopping mall development in large residential sites in Hong Kong. With the exceptionally high development density here, it is to be justified in our hypothesis that the direct accessibility to shopping mall by residents should be an overwhelming positive externality.

# CHAPTER THREE

# METHODOLOGY

## Definition of direct accessibility

When the residential sites with shopping malls inside are taken into consideration, the shopping malls can be defined into two categories which are 1) those which have direct accessibility from residential blocks, and 2) those which have indirect accessibility from the residential blocks, in order to suit for the research purpose of this paper.

The definition for direct accessibility would be that the shopping malls have seamless design with the residential development. Simply put, those residential blocks built on top of a shopping mall would be considered to have a direct accessibility to shopping mall because residents on top could access the mall directly without going beyond their living place. For the definition of indirect accessibility, it will be

defined as those residential blocks which are built separately from the shopping mall, while accessibility to shopping mall is available due to the existence of mall within the residential site.

The other kind of residential sites, which have no shopping mall inside the site, will not be considered because they are regarded to have neither direct nor indirect accessibility to shopping malls by the residents within the site. In order words, they are considered to have null accessibility to shopping malls. In order to control the factor that there may be existing shopping malls in the direct neighbourhood sites which may affect the result by offering indirect accessibility to malls, only large development sites will be considered such that they are large enough to be considered as a 'community' itself, which has a huge population, huge site area, and also a large region shopping mall to satisfy its daily needs.

Empirical model would be used to find out the effect of direct accessibility of shopping malls to the residential property prices above.

In the following part, the methodology for devising the empirical model will be illustrated.

**Empirical Study**

Choice of sites

The purpose of this dissertation is to measure the effectiveness of the shopping mall layout on the value-adding property on the residential flat above. This is particularly useful in comprehensive planning in CDA developments. In order to investigate this relationship, already completed residential sites with shopping mall will be under examination. The samples to be chosen should be indicative so as to ensure that the result would apply on other future developments. Thus, residential sites with large scale of development and high transaction volume are targeted.

Development of 10 blue chip residential sites

The most common indicators for large residential sites include 1) Large site area, 2) Huge residential population, and 3) High transaction volume. These factors are interrelated, so choosing one of the factors and find out whether the residential sites sorted out suits the rest of the two characteristics would be adequate enough.

In this regard, Centaline market research department, a research department of one of the largest real estate agency firm in Hong Kong, has invented a term called 'Blue chip residential sites'. They defined the 10 largest blue chip residential sites in Hong Kong which have the highest transaction volume. They are all reputable large developments in Hong Kong. The sites we investigate in this research would be chosen from these residential sites which are found suitable.

According to the Centaline market research department, the following residential sites are regarded as 10 blue chip residential sites. They all

have a common characteristic in that they all have shopping malls in

the sites.

| Hong Kong Island | Kowloon | New Territories |
|---|---|---|
| Taikoo Shing [R] Hang Fa Tsuen [OU] Kornhill [R] South Horizon [R(E), C/R] | Laguna City [R] Mei Foo Sun Chuen [R] Sceneway Garden [R] Whampoa Garden [CDA] | City One Shatin [R(A)] Kingswood Villa [R(B), C] |

Table 1 Classification of the 10 blue chip residential sites by location

**Remarks:** the letters in the brackets next to the sites indicates the land

use of that particular site.

Categorise the 10 blue chip residential sites

1. Classification by shopping mall locations

The first key criterion to categorize the sites for different investigation purposes is the location of shopping malls in the sites. As seen from the objective of this dissertation, the effect of the design of the shopping mall on the residential sites is the key issue. From the 10 blue chip residential sites, the location of the malls can be categorized into 3 major types, the first type is where the mall is under one or some of the site, the second type is where the mall is separated from the residential blocks, while the third type is where the mall is incorporated into the whole site area.

Arranged by: location of the mall


Mall under one/some phases of the site:

1) Mei Foo Sun Chuen

   Location of the mall: Phase 4 and Phase 7 (Mount Sterling)

2) Taikoo Shing

   Location of the mall: Horizon Gardens (Phase 2 of the Cityplaza)


Mall separated from the residential blocks:

1) Hang Fa Tsuen

   (Paradise Mall)

2) Kornhill

   (Kornhill Plaza)

3) South Horizon

   (Marina Square)

4) Laguna City

   (Laguna City Shopping Arcade)

5) City One Shatin

(City One Plaza)

6) Kingswood Villa

(Kingswood Ginza)

Mall incorporated into the whole site area:

1) Sceneway Garden

(Sceneway Plaza)

2) Whampoa Garden

(Whampoa World)

2. Classification by other factors such as the class of shopping mall,

class of properties, location, transport link etc

The features of the malls in the above samples have been further

investigated. Malls which have common features and significance

have been chosen for investigation. It should also be noted that only

those which the malls have a scale of at least a regional mall should be

considered as mentioned in the Introduction.

After investigating the design of master layout of shopping mall, an assessment method has been devised to examine whether the building blocks having direct accessibility to shopping mall will have a higher property price. Of the 3 types of sites we defined, they will be 2 set of examination.

1) For those which the shopping mall is not covering the whole site, internal assessment will be conducted to compare the price performance of the blocks right above the malls and those which are built on the ground. This assessment can ensure that factors to be controlled will be reduced as the buildings inside the site will be of similar location and quality. And more importantly, direct comparison within the same site in this case will give a more indicative result.

2) For those which the shopping mall is covering none of the residential blocks/whole of the site, 2 samples with one from each category will be chosen for comparison. There will be more variables needed to be controlled as it is a comparison across different sites.

Therefore, in choosing the sample, special care is needed and sites with similar location and quality should be preferred.

In summary, for each of the above three types of the residential developments, one of the sites would be chosen from the ten blue chips residential sites above for deep empirical investigation of the data in this research paper. The reason of choosing from these sites is because it provides abundant transaction data from a short period of time, therefore some undesirable but minor factors, such as the special traits of each individual flat which can hardly be found out and tackled with adjustment of the model, can be flattened out by a large pool of data.

Samples chosen

1) Residential site which the shopping mall is not covering the whole site

For sample used for 1) i.e. the residential site which the shopping mall is not covering the whole site, Taikoo Shing has been chosen for investigation. The reason for this is as follows. Amongst all sites in Hong Kong where shopping mall(s) is/are located underneath only part of the residential blocks, Taikoo Shing and Mei Foo are regarded as the most reputable in Hong Kong. Here is some of the information about the sites.

**Taikoo Shing**

Feature of the site

Size of the site: 3.5 hectares (8.5 acres)

Number of residential towers: 61,

Total number of apartment flats: 12,698

Size of flats: 585 square feet (54.3 m2) to 1,237 square feet (114.9 m2)

Feature of the Shopping mall[1]:

Location: Upon Horizon Garden (1 of the 7 residential phases)

GFA: 1.1 million sq feet

Number of floors: 5

Number of shops: 160 shops

Transportation: direct access to Tai Koo MTR Station

Year of completion for the malls:

Phase 1 – 1982, a separate building from the residential site

Phase 2 – 1987, only phase 2 is incorporated into residential blocks


**Mei Foo Sun Chuen**


Feature of the site


Number of residential towers: 213

Total number of apartment flats: 13,213

Location of the shopping malls: at phases 4 and 7

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[1]http://www.cityplaza.com.hk/NR/rdonlyres/AD961AA4-3D82-462A-BB08-98163A2ED614/18628/FactSheet_Cityplaza_Eng.pdf

Year of completion of the phases:

Phase 1: 10/68-04/69,

Phase 2: 09/71-05/72,

Phase 3: 05/27-07/73,

Phase 4: 01/74-11/74 (with shopping mall),

Phase 5: 11/72-06/73,

Phase 6: 02/74-03/76,

Phase 7: 09/76-03-77 (with shopping mall),

Phase 8: 05/78

Reasons of not choosing Mei Foo

Mei Foo Sun Chuen is not chosen for investigation as there are too

many variables for each flat which are hard to be controlled. For

instance, there are various factors such as the proximity to MTR

Tsuen Wan Line Entrance, MTR West Rail Entrance, school, bus

stations, minibus stations and taxi stand. Carparks are also scattered in

different area of/around the site. Together with the proximity of some

flats to Lai Chi Kok Park and the West Kowloon highway, it becomes difficult to adjust by adding independent variables, since there would be so many variables assigned in order to control these factors, while many of the flats have shared some of these factors which can hardly be delineated.

Reason for choosing TaiKoo Shing

The factors affecting property prices of the residential blocks in TKS can be easily delineated according to different phase of development. The variables can be more easily assigned to the model so that their effects can still be eliminated even when a large amount of price data from different flats from various blocks is used. Hence, TaiKoo Shing has been chosen, and the comparison will be between the building blocks above Cityplaza Two and the rest of the building blocks.

2) Residential sites where the shopping mall is not underneath any residential blocks/covering whole of the site

For samples used for 2), Sceneway Garden and Laguna City have been chosen base on several reasons. There are a lot of similarities in these two developments. The chief reasons are their similar location, their similar quality and also similar building age. As they are very similar in many aspects, it is suitable to compare them together. Here are some of the facts for the two sites.

Feature of the two sites

Location: Lam Tin, Kwun Tong District

Transportation: served by Lam Tin MTR station

- Sceneway Garden: atop MTR station

- Laguna City: 5 to 10 minutes walk to MTR station, free shuttle bus

    services

Developers: both are developed by Cheung Kong Holdings

Building designs: both have similar building designs

Completion: both are at early 1990s

- Sceneway Garden: 1992

- Laguna City: 1991-1994

Scale of development: large

- Sceneway Garden: 17 blocks, 28-34 stories, total 4112 flats

- Laguna City: four phases, 38 blocks, total 8072 flats

Scale of shopping mall: both are regional malls

- Sceneway Plaza: around 500,000 square feet

    Anchor tenants including Parknshop of 28,900 square feet,

Chinese restaurant etc

- Shopping malls at Luguna City: 3 shopping malls of smaller scale

    Anchor tenants such as large Chinese restaurants

Major differences of the sites

By shopping mall locations:

- Sceneway Garden: shopping mall covering the whole development

   site

- Laguna City: shopping malls and residential blocks are separated

By neighbourhood environment:

- Sceneway Garden: located on the Lei Yue Mun Road with rather

    busy traffic, and there are good connections to other estates nearby

- Laguna City: less convenient but more tranquil, with Laguna Park

    nearby and some of the flats, although not so many, enjoy sea view

Price and value relationship

In order to prove whether there is any effect of shopping mall/station

complex underneath on the degree of attractiveness to buyers or

investors, the effect of the existence of such complex on the property

price inside the development sites would be the indicator, which can

best reflect the degree of attractiveness to buyers because the

'premium' of the price, if it really exists, should reflect their

recognition of the utility of enjoyment of shopping mall/station

complex directly underneath.

Data for the previous two year period will be adequate enough to

generate necessary models. As far as the investigation of prices is concerned, they will be adjusted by a price index for time intervals in different months, so that the inflation effect over time in that period will be eliminated. As for the method used for data analysis, Hedonic price model will be adopted to adjust other factors affecting property prices by finding out other variables for these effects.

For the choice of the variables, apart from the shopping mall variable, there are 3 main traits which constitute the independent variables in this investigation. Recalled from the literature review, these traits include 1) structural traits, which is composed of factors like the date of transaction mention above, the age (i.e. the phase) of the buildings, the size and layout of the flats etc; and 2) locational traits, the floor levels of the flat investigated, the distance to other transportation facilities; and also 3) neighbourhood traits, which includes the neighbouring residents and facilities, the availability of sea view, parks, etc.

Choice of variables

Dependent variable is the factor subject to changes by other independent variables. In other words, the transaction price of the properties would be the dependent variable in this research. Yet, the price used will be adjusted before applying on the function, which will be explained in the later part of this chapter.

Independent variables

1. Shopping mall factor

This is the key factor under investigation in this research. A dummy variable would be assigned to classify whether there is any mall below a particular flat. The use of dummy variables is because some housing attributes are unable to be quantified, thus they can be used to incorporate the unquantifiable attributes. Instead of using quantities, 'dummy' with value of 1 or 0 is used. 1 is used to denote the presence

of particular attribute, 0 is used to denote the absence of that particular

attribute. The example here would be that the value of 1 is assigned to

the flats which has the presence of shopping mall right underneath,

while 0 represents that it is not built atop a shopping mall.

2. Structural traits

General structural traits

These are the structural traits which are applicable to both the two sets

of data.

Date of transaction would be a general structural trait for the empirical

study. However, for convenience, 1 price index for each month will be

used to adjust the price rather than adding time variables. This will be

explained in the later section of "Adjustment for price fluctuations" in

this chapter.

Size of the flat, which is in terms of square footage of sellable area,

would be another structural trait. Generally speaking, the larger the

flat, the higher is the price of the flat. Sometimes the price per footage

of a flat ascends or descends with its size. To deal with such situations,

two variables will be assigned. One would be to find out the effect of

the flat size on the property price, and the other one would be to find

out the changing relationship of the footage to its price. The first

variable simply measures linear effects of the size of the flat to the

property price. The second one measures the non-linear effects, and

the rationale behind this is by assigning a square term, it can capture

the increase of something at an increasing rate. The case here would

be two variable terms: 1) size - square footage, 2) square of size – the

square value of square footage.

Building age, although being a general trait in many similar

investigations, is not applicable here as the development period for the

flats are all around 1980s within several years of time even though

they are developed in phases. Till now, they all have about twenty

something years of age, so the differences in age would be minor.

3. Locational traits

General locational traits

A general locational trait applicable to both sets of data includes the floor level in which the flat is located. This is particularly important in examining properties in Hong Kong because the view, air quality and noise received would be different across different floors in high rise buildings. For the variable for the floor level, the number of floor where the flat is located would be used. Similarly, the variable term for the square of floor level will also be added to cater for the non-linearity feature of the floor level effect.

Specific locational traits

One important factor which needed to be adjusted due to its

significant impact on property prices is the proximity to MTR station.

Usually the effective catchment area of an MTR station has a radius of

about 600m. Yet within this range the attractiveness, or not necessarily

an attractiveness due to other impacts like possible higher crime

induced, may affect the property price at different extent when the

distance from the center of measurement changes. This adjustment is

applicable to data of Luguna City and Sceneway garden because they

have different distance between the MTR station entrances. Sceneway

garden was built right atop Lam Tin MTR station while the residents

in Luguna City generally need to spend about 5 to 10 minutes to the

MTR station.


In devising the variables for factor of MTR station, every 200m

distance would be taken as a unit. Several dummies for different

ranges including 0 - 200m, 200m – 400 m, 400m – 600m distances

will be used. The allocation would be as shown in the next page.

- 1$^{st}$ dummy caters for Sceneway (0 - 200m),

- 2$^{nd}$ dummy caters for Laguna City Phase 2 (200m – 400 m),

- 3$^{rd}$ dummy caters for Laguna City Phase 1 and Phase 3 (400m – 600

   m),

Phase 4 of Laguna City falls beyond 600m distance from the MTR,

and is hence not assigned as a variable term, which is denoted to be 0

at all MTR dummies.

4. Neighbourhood traits

Specific neighbourhood traits

The specific neighbourhood trait for Tai Koo Shing would be the

factor of sea view, which is expected to have positive effect on

property prices as proven by many researchers. Specific

neighbourhood trait for Laguna City includes sea view as well. Apart

from this, the view towards the neighbouring factories in Kwun Tong

by some of the flats in Phase 1 and 4 should also be catered for by

adding a dummy variable because they may have negative impact on

property price. For Sceneway garden, the flats having an orientation to

highway, which should have negative effects, will be adjusted by a

dummy variable as well.

Data Sample

In order to collect sufficient data to generate a significant result, data

during the whole year of 2008 and 2009 will be used. By so doing, the

total amount of data entries for TaiKoo Shing during these 2 years

would be over 1500, and those from Sceneway Garden and Laguna

City together would also be over 1500. This would be quite sufficient

to diversify the effect from other undesired factors which have not

been or difficult to be taken into consideration. The data is collected

from the Economic Property Research Center (EPRC) which has

complete transactions records registered in the Land Registry.

Information such as the date of transaction, address, floor level,

transaction price and the size in terms of both the gross floor area and saleable area of the transacted flat, are all available in the data bank.

Adjustment for price fluctuations

However, one pitfall of adopting data over a long time period is that the price levels for similar types of flats do not even have the same price performance owning to the changing Marco-economic conditions. The price of the properties may change subject to a lot of circumstances. The result would be inaccurate if these fluctuated prices are compared with prices of other flats. As a reference to this point, the following shows the Price indices for property market in Hong Kong from 1997 to 2009 produced by the Rating and Valuation Department.

香港 物 業 售 價 指 數
PRICE INDICES FOR HONG KONG PROPERTY MARKET
( 1999 = 100 )
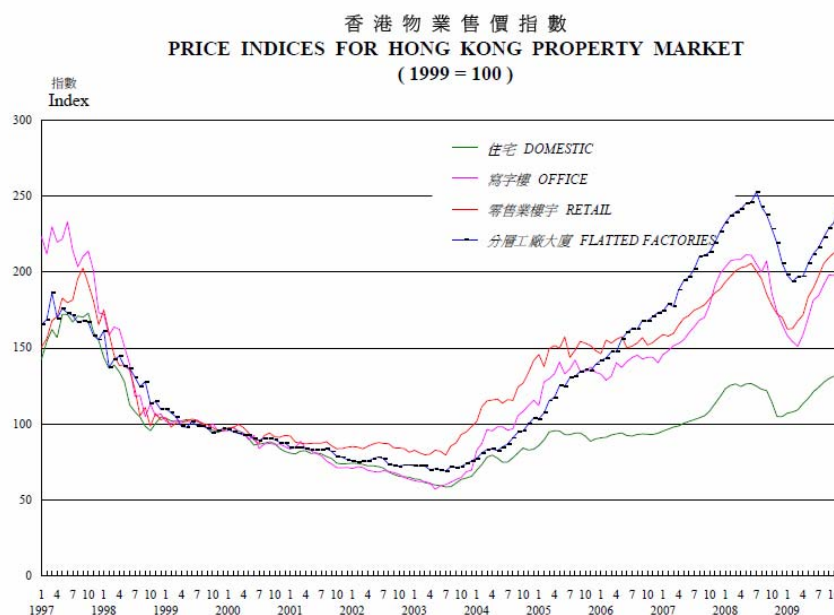
Fig. 4 Price indices for Hong Kong Property Market by Rating and

Valuation Department[2]

The above chart shows an obvious trend of fluctuating property prices

in the previous decade. The property prices experienced fluctuation of

over such a long period due to ups and downs of the market. It is

especially worthwhile to pay attention to the price fluctuations during

2008 to 2009, which are the previous two years which is also the time

period when data are collected for this research. There has been a

[2] http://www.rvd.gov.hk/en/doc/statistics/graph2.pdf

drastic decline in property prices due to the Global Financial Tsunami

occurred in late 2008. Market downturn started at the 4$^{th}$ quarter of

2008, and financial crisis has led to loss of confidence in various

kinds of investment, including real estate properties. Recovery started

to occur in the 2$^{nd}$ quarter of 2009. People resumed their investment

and speculation may also be intensified during and after the crisis

period. Hence, the price went up very quickly in 2009. If no measures

are adopted to treat this, data within the two years which may have

very huge price differences will be compared altogether and would

cause inaccuracy in the result.

Traditionally, there are two ways to deal with this problem. The first

one is to add time variables. The second way is to adjust by price

indices. In the first approach, time dummies are allocated to data of

each month, which means altogether there will be 24 time variables.

The second approach is to divide the price of each month by the price

index of that residential site for every month, thereby obtaining an

adjusted price as the dependent variable. In this research the second

approach is chosen since the price indices are available in the

centaline or by self calculation, while at the same time this can reduce

the amount of data handled from interpreting the results from the large

number of time variables.

# CHAPTER FOUR

# HYPOTHESIS

As suggested in the Literature review, the shopping malls have both positive and negative impacts on property price in foreign researches for the reason of probable convenience and crime brought to the neighbouring residents. Yet the negative factor, although having huge significance, diminishes very quickly as the distance between the mall and the flat increase. The situation in Hong Kong is expected to be so different that the huge development density has encouraged compact developments and people here are used to living in mixed use sites.

Placing shopping mall inside a site is already not a new practice here in Hong Kong and its benefit has been proven by a lot of local researchers. Previous study (Lee, 2006) has already found that the provision of a shopping mall inside a residential development in Hong Kong has significant positive effect on property prices. Yet, the factor of direct accessibility to shopping mall has not been investigated.

If the model form foreign research was to be used to interpret this study, the effect of placing shopping mall right below the residential blocks is equivalent to the effect of the shopping mall to the closest surrounding flats, which means probably there would be a negative impact on property price. However, in reality many high grade residential properties are developed atop some regional shopping malls. Besides, placing residential towers atop the shopping mall should incur higher building cost to developer, although it is not so significant. Hence, the hypothesis to this study is that there should be certain positive effects of direct accessibility to the shopping mall to the above residential flats. It is suggested that the reason to build residential towers on top of a shopping mall is not sole due to the developer's intention to build more residential flats within the limited site boundary, as this may be achieved by building less towers but with more floor levels around the shopping mall to achieve the same number of flats.

# CHAPTER FIVE

# EMPIRICAL MODEL, RESULT AND ANALYSIS

Price Model

As a summary to Chapter 4, the hedonic price equation would be a function of the following equation, which consists of Structural Traits (S), Locational Traits (L), Neighbourhood Traits (N) and also the effect of direct accessibility to mall (MALL) on the property prices above.

P=f(S, L, N, MALL)

The details of the respective Structural Traits, Locational Traits and Neighbourhood Traits for the two sets of data have been further discussed in the Chapter 4. This chapter will illustrate the equations for the two sets of data, data analysis method, the result generated and the interpretation of the results.

Hedonic Regression Equation

1. Equation for Taikoo Shing Data

$$AP = a_0 + a_1 GFA + a_2 GFA^2 + a_3 FL + a_4 FL^2 + a_5 MALL + a_6 SV + \varepsilon$$

Where,

AP = Adjusted Price

GFA = Gross Floor Area

FL = Floor Level

MALL = Mall dummy

SV = Sea View

$a_i$ = coefficients

$\varepsilon$ = error term

2. Equation for Data of Laguna City and Sceneway Garden

$$AP = b_0 + b_1 GFA + b_2 GFA^2 + b_3 FL + b_4 FL^2 + b_5 (M\ ALL + MTR_1) +$$

$$b_6 MTR_2 + b_7 MTR_3 + b_8 SV + b_9 FV + b_{10} HW + \varepsilon$$

Where,

AP = Adjusted Price

GFA = Gross Floor Area

FL = Floor Level

MALL = Mall dummy

$MTR_1 = 0 - 200m$ distance around MTR station

$MTR_2 = 200 - 400m$ distance around MTR station

$MTR_1 = 400 - 600m$ distance around MTR station

SV = Sea View

HW = Highway View

$b_i$ = coefficients

$\varepsilon$ = error term

Analysis Method

In Hedonic Price Model, the most common method used in regression analysis is the Ordinary Least Squares (OLS) technique. This technique assumes a linear regression model, which means the true unobservable relationship between the regressand (or the dependent variable) and the independent variables are in linear form. The independent variables are linearly independent of one another. This means no linear relationship exist among them, hence reducing the complexity in result interpretation.

In a regression equation, a constant term is used to minimize the residual sum of squares, which is the sum of the squares of the differences between the actual and the forecast values of the dependant variable. This value would be represented by the term y-intercept in the equation. At the end of the equation, the term ε is the stochastic or error term of the equation. In every price model, there must be some other random variables for each independent flat which

cannot be identified or adjusted. The errors which cannot be adjusted

will be included into this error term ε.

Beta coefficient

The beta coefficient attached to each independent variable measures

the relative importance of that independent variable. This would be

useful in determining whether a particular variable has a positive or

negative impact on the dependant variable by judging its sign. If its

value is positive, it means that factor has a positive effect on the value

of the regressand. Likewise, if the sign is negative, then the factor will

be a determent to the dependant variable.

t-statistics

The accuracy of the results can be verified with the help of some

statistical values. One of such tools is the t-statistics. T-statistics test

the significance of the effect of the independent variable on the

dependent variable. It depends on the hedonic regression coefficient of the independent variables ($a_i/b_i$) and the stand error ($Sa_i/Sb_i$) of that particular coefficient. In general, the larger the value of t-statistics, the more accurate the estimate will be. In a price model, it is used to illustrate the likelihood that the price is affected by a particular factor. Thus, it measures the 'significance' rather than the 'magnitude' of an independent variable.

P-value

Apart from t-statistics, P-value can also be used to measure the significance of a particular factor. P-value is the probability of obtaining a test statistic at least as extreme as the one that was actually observed, in order words, the chance that the estimated coefficient is equal to zero. It is used to report the probability of type-1 error when it is 95% sure that $a_i/b_i$ is non zero. P-value is usually smaller than zero. The lower the p-value, the less likely that it equals zero, and hence the more 'signigicant' the result.

Adjusted R square

The coefficient of determination, R square, is used to indicate the proportion of variance of the dependent variable explained by the variation in the independent variables. It measures the goodness of fit of the data to the estimated curve. Its value ranges from zero to one. The closer of the value to 1, the better fit of the data on the curve. R square increases as more independent variables are added to the equation irrespective of whether they are significant or not. Hence, a modification called Adjusted R square is used. Unlike R square, the adjusted R square increases only if the new term improves the model more than would be expected by chance. This will be used during the construction of the equation rather than during the result analysis stage to measure the agreement between observed and modelled values. By adding meaningful variable terms and adjusting the form of equation by trial and error, the regression line can approximate the real data points, which is reflected by an adjusted R square with a value closer to 1.

Expected Outcome

For data of Taikoo Shing

| Independent Variables | Expected Signs |
| --- | --- |
| GFA | Positive |
| $GFA^2$ | Positive |
| Floor Level | Positive |
| Floor Level$^2$ | Unknown |
| Mall | Positive |
| Sea View | Positive |

Table 2 Expected signs of coefficients for independent variables for

Taikoo Shing

GFA

The price of the flats must be proportional to their gross floor area.

This is trivially true in the sense that the construction costs and land price increase with the construction floor area. Moreover, the size of a flat is one of the most obvious factors which can be spotted by the buyers when looking for new flats and hence it becomes an objective factor for comparison. Therefore, the coefficient of the GFA is expected to have a positive sign. Moreover, it is further assumed that people are willing to pay more to buy a larger flat. The prices for the flats will increase to a larger extent when the sizes of the flats increase further. This is reflected in the $GFA^2$ that the estimated sign will be positive.

Floor Level

The floor level is another factor commonly considered by buyers when buying flats. Although less obvious than the factor of GFA, the floor level on property price do show a pattern when the number of floor level increase. Generally speaking, the flats at a higher level obtain wider and better views, there is less noise at higher levels, and

the air is generally cleaner due to the larger distance from the road

traffic. Therefore, the coefficient of the floor level factor should be

positive. However, whether this factor has an increasing or decreasing

trend when the floor level ascends should be unpredictable depending

on the environment around the building block. Thus, the sign for the

square term of floor level is unpredictable as well.

Mall

As discussed in the hypothesis, the factor of the direct accessibility of

mall in Hong Kong is assumed to have a positive externality to

residential flats because of the convenience brought to the residents.

Based on this assumption, the factor of the direct accessibility to the

mall should have a positive sign in the both cases (i.e. the Taikoo

Shing case and the case for Laguna City and Sceneway Garden).

Sea View

Sea View is regarded as a luxury accompanying residential flats. This is reflected by the fact that many of the advertisements for flats with sea views must have promoted sea view as one of the major attractive point for the property. Previous studies have also found out that sea view has a positive effect on property prices, so the sign for sea view is expected to be positive.

For data of Laguna City and Sceneway Garden

| Independent Variables | Expected Signs |
|---|---|
| GFA | Positive |
| GFA$^2$ | Positive |
| Floor level | Positive |
| Floor level$^2$ | Unknown |
| Mall + MTR | Positive |
| MTR 200m - 400m | Positive |
| MTR 400m - 600m | Positive |
| Sea View | Positive |
| Factory View | Negative |
| Highway | Negative |

Table 3 Expected signs of coefficients for independent variables for

Taikoo Shing

MTR

The factor of MTR is the most difficult to be dealt with. Special care

must be taken to interpret the result of distance to MTR station. As

explained in the Chapter 4, there are 3 dummies assigned according to

the different distance from the flat to the MTR station. The flats will

be fallen into one of the group: 1) MTR 0m – 200m, 2) MTR 200m -

400m and 3) MTR 400m - 600m. While for building blocks beyond

600m distance, they will be belong to none of the above groups and is

treated as 0 for the above dummies. As mentioned in the methodology,

one difficulty in devising variables here is the complete overlapping

of the factors of mall and MTR station which cannot be delineated.

Thus, they are combined to a single variable. In view of this,

coefficients of the 3 variable terms concerning MTR factor should be

compared for their magnitude apart from their signs. As for the effect

for the MTR alone, it is predicted that there is a positive effect on

property prices as it brought about the convenient transport to the

residents above. Yet the possibility that negative effects such as

security or noise problems cannot be neglected and may also be

reflected in its negative effect on the property price. If both the MTR

factor and mall factor are positive, then to prove the effect of

shopping mall, the coefficient of the Mall + MTR factor must be far

greater than the rest of the other 3 coefficients, and it must also show

a far greater significance when comparing their t-statistics or p-values.

Factory View

The flats of Laguna City which face the old factory district of Kwun

Tong may be affected by the poorer view although most of the

factories do not produce externality such as noise and pollution as

most of the industries have gone. With this assumption, the sign of the

coefficient of Factory View is estimated to be negative.

Highway

The flats in Sceneway Garden which are directly facing the

intersection of Kwun Tong Bypass and the Lee Yue Mun Road may be

affected by the noise pollution of the road traffic. This will be a

detriment to their property prices and thus the expected sign of the

Highway factor is negative.

Results and Analysis

The following is the result for data of Taikoo Shing:

Export Brief

| Regression Statistics | |
|---|---|
| Multiples of R | 0.911108 |
| R square | 0.830118 |
| Adjusted R square | 0.829506 |
| Standard deviation | 0.614711 |
| No. of observations | 1673 |

ANOVA

| | DOF | SS | MS | F | SV |
|---|---|---|---|---|---|
| Regression | 6 | 3076.158 | 512.6931 | 1356.8 | 0 |
| Residual | 1666 | 629.5301 | 0.377869 | | |
| Sum | 1672 | 3705.689 | | | |

| | Coefficient | Standard deviation | t statistics | P-value |
|---|---|---|---|---|
| Intercept | 1.707636 | 0.536381 | 3.183628 | 0.001481 |
| GFA | -0.00222 | 0.001343 | -1.65199 | 0.098725 |
| GFA ^ 2 | 6E-06 | 8.29E-07 | 7.241848 | 6.73E-13 |
| Floor Level | 0.050613 | 0.008693 | 5.822026 | 6.96E-09 |
| Floor Level ^ 2 | -0.00075 | 0.00028 | -2.67436 | 0.00756 |
| Mall | 0.410177 | 0.042337 | 9.688448 | 1.24E-21 |
| Sea View | 0.159985 | 0.142114 | 1.125755 | 0.260431 |

Fig. 5 Export Brief for the result for data of Taikoo Shing

After fitting in the abovementioned variables in this set of data, the

Adjusted R square has achieved a value of 0.83, which is quite

satisfactory as it approaches 1. This means that the results of about

83% of the data can be explained by the selected independent

variables. Further adjustment of the form of equation is thus

unnecessary.

As seen from the result in the table, apart from the variables of GFA,

Floor level$^2$ and Sea View which has a t-statistics value lower than 3

in absolute value, the rest of the data have obtained high t-statistics as

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well as low p-values. This shows that the rest of the independent

variables have significant effect on the property price. Besides, the

small value of GFA and Floor level$^2$ can be explainable by the fact

that the terms GFA$^2$ and Floor level dominate the increase in property

prices when the GFA and Floor level increase. As for the coefficient of

the variables, only the GFA and Floor level$^2$ have negative coefficients.

Again, since they have shown little significance and their impact are

overwhelmed by their counterpart square term/ordinary term factors,

the result is reasonable. Overall, the property price of Taikoo Shing

can be concluded to be affected by four major factors, which are the

GFA and floor level of the flats, the mall factor and also a weaker

factor of sea view.

Interpretation for direct accessibility of shopping mall in Taikoo Shing

Data

The interpretation of data for Taikoo Shing is much easier as it is more

straightforward. Examining the mall factor alone, its t-statistic is the

highest amongst all, which have a value of 9.7. The p-value is also the lowest, which is $1.2^{-21}$. It is of high confidence to conclude that it shows a significant impact on the property price. When considering the beta coefficient, the positive sign matches our prediction of the result, and its magnitude is the highest of all. The explanation for this is that the direct accessibility to City Plaza shopping mall contributes significantly on the increase of property price. The data result shows that within the same development site which have block with and without direct accessibility to shopping mall, the building blocks which have shopping mall directly underneath can enjoy a higher price premium.

The following is the result for data of Laguna City and Sceneway

Garden:

Export Brief

| Regression Statistics | |
| --- | --- |
| Multiples of R | 0.878818 |
| R square | 0.772322 |
| Adjusted R square | 0.770954 |
| Standard deviation | 0.309249 |
| No. of observations | 1676 |

| | Coefficient | Standard deviation | t statistics | P-value |
| --- | --- | --- | --- | --- |
| Intercept | -0.44292 | 0.190279 | -2.32772 | 0.020046 |
| GFA | 0.003134 | 0.000465 | 6.734524 | 2.26E-11 |
| GFA ^ 2 | 6.39E-07 | 2.79E-07 | 2.293932 | 0.021918 |
| Floor level | 0.024415 | 0.003585 | 6.81089 | 1.35E-11 |
| Floor level ^ 2 | -0.00027 | 0.00012 | -2.29271 | 0.021989 |
| Mall + MTR | 0.106538 | 0.023966 | 4.445323 | 9.36E-06 |
| MTR 200m - 400m | -0.2026 | 0.026856 | -7.54402 | 7.45E-14 |
| MTR 400m - 600m | -0.19033 | 0.021452 | -8.87252 | 1.8E-18 |
| Sea View | 0.213904 | 0.027665 | 7.731898 | 1.82E-14 |
| Factory View | -0.24868 | 0.04587 | -5.42141 | 6.78E-08 |
| Highway | -0.07772 | 0.054007 | -1.43902 | 0.150334 |

ANOVA

|  | DOF | SS | MS | F | SV |
|---|---|---|---|---|---|
| Regression | 10 | 540.1421 | 54.01421 | 564.7944 | 0 |
| Residual | 1665 | 159.2326 | 0.095635 |  |  |
| Sum | 1675 | 699.3746 |  |  |  |

Fig. 6 Export Brief for the result for data of Laguna City and

Sceneway Garden

As for the data for Luguna City and Sceneway Garden, the Adjusted R

square also achieved a satisfactory value of 0.77 in the linear form of

equation. No further adjustment is needed for the equation and further

investigation of the performance of each independent variable can be

continued.

When examining the Structural traits, the results for GFA and floor

level matches the previous expectations. The variables for $GFA^2$ and

Floor level$^2$ have positive and negative coefficients respectively but

have t-statistics lower than 3, which shows that the

increasing/decreasing effect of ascending GFA/Floor level on property

price are not significant. Yet, the GFA and Floor Level variables have high t-statistics as high as over 6, so the ordinary GFA and Floor level factors dominate. With their positive coefficients, it can be conclude that the proportional relationship between GFA/floor level and property price for this data set is highly relevant.

The results for neighbourhood traits including sea view, factory view and highway view have also fallen into the expectation. The positive coefficient for Sea View variable and negative coefficients for Factory View and Highway View matches the previous predictions. However, the Highway View does not have a very significant negative impact on property prices as its t-statistics is just 1.4 in absolute value. That for sea and factory views reaches 5.4 and 7.7 respectively which are very significant.

Interpretation of shopping mall and MTR factor in the data of Laguna

City and Sceneway Garden

The interpretation for the MTR factor is a bit complicated but by and

large the result is satisfactory. The signs for the 3 variables are

different from predicted outcome. But they all show high significance

by achieving high t-statistics and low p-values. Yet for the coefficients,

apart from the Mall + MTR variable, the other two which are MTR

200m - 400m and MTR 400m - 600m show negative coefficient. That

is to say, when compared to the building blocks beyond 600m distance

from MTR station, the rest of the blocks (with the exception of those

having 'Mall + MTR' factor) are affected negatively by the closer

distance to MTR. This suggests that probably the closer distance to

the MTR station in this case is not favoured by the residents due to

possible reason of crowdedness, noise (since it is built overground

unlike the situation for Taikoo Shing) and poorer security. For the

building blocks atop the shopping mall and MTR station, it is assumed

that the negative effects by MTR do exist in this case. Then the Mall +

MTR factor are driven by 2 opposite forces, one is the negative effect

from MTR station, the other one must be from the positive effect from

direct accessibility from shopping mall, and thus giving rise to the

result that the coefficient is positive, as it override the negative effect

of MTR. This indirectly proves that the property prices for Sceneway

Garden which has shopping mall directly attached underneath is

generally higher than the Luguna City which has malls separated from

the building blocks.

# CHAPTER SIX

# CONCLUSION

This study examined a relationship between shopping mall and residential development in Hong Kong. Having a huge difference from the foreign development, the shopping malls in Hong Kong do not show a great effect of some negative impacts on the nearby residential developments in people's mind. Not only this, people on the contrary even regard a shopping mall nearby as a convenience. This is why the mixing of residential and retail components can be successfully achieved as a solution to satisfy the high density development in Hong Kong. Their importance in residential area has been entrenched by many examples of the residential developments which have shopping mall incorporated inside.

To further examine the mix of shopping mall and residential development, it can be seen that a further integration of the two exists where a shopping mall right underneath some residential towers can

provide 'seamless' design to achieve direct accessibility by the

residents above. This is a special phenomenon in Hong Kong and the

nearby regions in Asia but is rare elsewhere in the Western countries.

Although becoming more and more common in Hong Kong, the

adoption of this seamless design is not a necessary approach for

residential sites with shopping malls, and this can be proven by

numerous other exceptional cases where malls are separated from the

residential blocks.

Now that there are shopping malls which are either directly or

indirectly accessible by the nearby residents, whether to adopt the

directly accessible design becomes a locational design decision. The

main focus of decision would be to evaluate whether one of which

would be more effective to enhance the convenience of the customers.

As this usually occur in large development sites where a huge

population is housed and that the volatility of property price in Hong

Kong is always easily subjected to some favourable and unfavourable

factors, this research hence serve to examine the effect of direct

accessibility to shopping mall from residents' point of view. The effect

may be reflected in property price and as a result this research

measures indirectly the convenience to the residents atop, and

ultimately and directly, the economic benefit to developers.

Summary of Findings

In order to study the respective effectiveness of these locational

designs, this study compared three types of shopping malls in

residential sites which have direct or indirect accessibility. The first

type of site is the residential site with full mall coverage, which means

there is complete direct accessibility offered to all residents in the site.

The second type of site is a site where the shopping mall is located

underneath part of the building blocks, and therefore the direct

accessibility is enjoyed by those residents living atop of the shopping

mall only while the rest of the residents would have only indirect

access to the mall. The third type is a site where shopping mall and

residential buildings are totally separated so that no residents are able

to enjoy direct accessibility to shopping mall.

The purpose of this research is to find out whether direct accessibility of shopping mall will affect the property price. Hence, the second type of site can be compared within itself as there are both direct and indirect accessibility. The first type of site is compared with the third type for the similar purpose. The empirical result found that the previous prediction is correct. In the second type of site those flats in the building blocks which have direct accessibility to the shopping mall do have a higher property price. In the comparison between the first and third type of sites, the same phenomenon has been shown. This means the result from the empirical study matches the previous hypothesis that direct accessibility to shopping mall poses a positive effect on the property prices above.

In summary, in a site where shopping mall is located underneath part of the building blocks, the blocks which are right atop the mall have a higher price on average. While across different sites, full coverage of

mall can bring a higher price premium to property above when compared to site with separately located mall.

Practical Implications

The result of the finding shows that direct accessibility of shopping mall is economically viable. This economic viability can be applicable in two aspects. As aforementioned, there are direct economic benefits to the developers. As a consequence, from the building design point of view, direct accessibility to shopping mall would be a better option as it brings a higher price to above properties. This higher property price would be a premium earned by the developer by developing the residential towers atop the shopping mall. Thus malls underneath residential building blocks, whether covering whole site or not, would be a more appropriate design when compared to isolated shopping mall.

Another economic viability is applicable to the developed sites rather

than sites to be developed which can be interpreted from marketing

strategy point of view. Shopping mall which is underneath the

building blocks can be a point of promotion by real estate agents. On

the other hand, for those sites which have a shopping mall underneath

some of the residential towers; when bargaining for transaction prices,

the seller of a flat or the agent can set a higher price if there is direct

accessibility to mall.

The above practical examples are mainly focused on economic

benefits for different parties. In fact, apart from economic viability,

the direct accessibility to shopping mall would create convenience to

the nearby residents. From urban planning point of view, this would

be appreciated as enjoyment of the people has enhanced with literally

the use of the same land resources. Now that it is good to the society,

the onus would be on the developer to provide such facility. Hence,

the economic benefits gained by the developer would be the largest

motivation for such provision.

Responses to research aim, objectives and hypothesis

The result of the research has satisfied the research aim on the whole. This has been achieved by covering basically all types of large scale residential development which has shopping mall with different layout design. They include site providing direct and indirect assessibility to its residents, and also sites which offer its residents either direct or indirect accessibility. After all, an adequate amount of data has been used to generate a result which is found to be significant.

For individual research objectives stated in Chapter 1, they have also been successfully reached throughout the course of conducting this research. First of all, after determined the sites to be investigated, major property price determinants have been identified for each particular site based on their individual unique characteristics under the typical classification of structural, locational and neighbourhood traits in Chapter 3.

As for the classification of shopping malls, a detail research has been conducted to examine different types of malls by scale in Chapter 2, and the sites chosen in this research all have the similar type of malls.

In Chapter 4 and 5 the concept of Hedonic price model has been applied in real examples to find out the effect of direct accessibility to shopping mall on the above property prices. The result has affirmed the hypothesis that there is a general price premium for the residential flats which has such direct accessibility.

The result obtained has been interpreted in different ways afterwards. Their statistical implications have been interpreted in Chapter 5 in which the meanings of the statistical figures of, not only the shopping mall factor, but also the other factors have been explained. Then in this chapter, the practical implications of the result have been clearly illustrated. This also includes the author's subjective opinion on how different sectors in the real estate industry can be benefited by using the result of this research.

Limitations of the Study

This study has some limitations in a number of areas. First, it cannot

compare whether direct shopping mall accessibility limited to

particular blocks or full shopping mall coverage in the whole site is

better as this would be hard to measure in reality. Even there are

similar samples of these two types of sites which is able to be

compared fairly, the benefit of direct accessibility gained from the full

coverage of shopping mall, if there really is, may be offset by the

lowered retail rental income due to the decentralisation effect in which

the shops may be spread over a large site if the mall has full site

coverage.

This shortcoming above also points out another limitation of this study.

That is, the study only tried to focus on the effect on residential price

but not the retail yield on the shopping mall which would be another

source of income to the developer. Yet, a logical prediction would

suggest that the rental income to shopping mall would also be higher,

or at least staying at the same level, as the retail income is determined by the population flow inside the mall, and the direct accessibility would bring convenience to potential shoppers.

Another pitfall of this study is very common in quantitative analysis. This research roughly defined different types of shopping mall by their scales and sites with a similar scale of shopping malls were chosen for comparison. However, there are many other specific traits inside a shopping mall. These may add different extent of attractiveness to the site, and hence they may pose different effects on the price properties above.

Other limitations of this research include the unavailability to measure the magnitude of the examined effect. In order words only a positive price premium can be shown on those examined properties with direct accessibility to mall but their size of the premium is unknown. Again, this would also be varied by the different traits of the shopping malls below. Lastly, there may be other considerations beyond economic

returns when deciding whether to place the building blocks atop, such as technical or geographical restrictions.

Area of Future Study

The limitation of this research has left some room for future studies. Possible research may be conducted to draw comparison between those malls having full coverage of the site and those occupying a part of the site by some qualitative methods. The purpose of this is to find out the best design layout among the three types of shopping mall locational design as suggested by this paper. On the other hand, future studies may be needed to investigate the economic profit to the mall, in other words the rental yield, by the effect of building residential blocks above the mall. If the result is also positive, then it can further strengthen the idea that direct accessibility to shopping mall by residents above are economically beneficial to the developers and the shoppers.

Appendix 1: Common classification of shopping mall by types

| Classification System | Area (Sq.ft.) | Type of Shopping Centre |
|---|---|---|
| **Shopping Centre Development Handbook (1985)** | 30000-100000 | Neighbourhood Centre |
| | 100000-300000 | Community Centre |
| | 300000-500000 | Regional Centre |
| | 500000-1.5 million | Super regional Centre |
| **ICSC (2004)** | 30000-150000 | Neighbourhood Centre |
| | 10000-35000 | Community Centre |
| | 25000-60000 | Power Centre |
| | 40000-80000 | Regional Centre |
| | 80000 or more | Super regional Centre |
| **Wee & Tong (2005)** | <50000 | Convenience Store |
| | 50000-15000 | Neighbourhood Centre |
| | 15000-40000 | Community Centre |
| | 40000-1000000 | Regional Centre |
| | >1000000 | Super regional Centre |
| | >2600000 | Megamall |
| | 250000-700000 | Power Centre |

Appendix 2: Trend of recent CDA applications

## NUMBER OF TOTAL AND SUCCESSFUL APPLICATIONS BY YEAR OF PLANNING APPLICATION FOR USES IN CDA ZONES

| Year | Approvals | Total | Success Rates % |
|---|---|---|---|
| 1980 | 1 | 1 | 100.0% |
| 1981 | 2 | 2 | 100.0% |
| 1982 | 1 | 3 | 33.3% |
| 1983 | 1 | 5 | 20.0% |
| 1984 | 6 | 7 | 85.7% |
| 1985 | 7 | 7 | 100.0% |
| 1986 | 7 | 8 | 87.5% |
| 1987 | 7 | 10 | 70.0% |
| 1988 | 10 | 14 | 71.4% |
| 1989 | 9 | 12 | 75.0% |
| 1990 | 16 | 18 | 88.9% |
| 1991 | 6 | 19 | 31.6% |
| 1992 | 12 | 26 | 46.2% |
| 1993 | 12 | 17 | 70.6% |
| 1994 | 31 | 40 | 77.5% |
| 1995 | 22 | 26 | 84.6% |
| 1996 | 34 | 45 | 75.6% |
| 1997 | 46 | 60 | 76.7% |
| 1998 | 60 | 78 | 76.9% |
| 1999 | 78 | 83 | 94.0% |
| 2000 | 99 | 104 | 95.2% |
| 2001 | 56 | 74 | 75.7% |
| 2002 | 97 | 106 | 91.5% |
| 2003 | 77 | 90 | 85.6% |
| 2004 | 55 | 59 | 93.2% |
| 2005 | 64 | 80 | 80.0% |
| **Total** | **816** | **994** | **82.1%** |

# Appendix 3: Notes in an Outline Zoning Plan

## COMPREHENSIVE DEVELOPMENT AREA

| Column 1<br>Uses always permitted | Column 2<br>Uses that may be permitted with or<br>without conditions on application<br>to the Town Planning Board |
|---|---|
| | Ambulance Depot |
| | Commercial Bathhouse/Massage Establishment |
| | Eating Place |
| | Educational Institution |
| | Exhibition or Convention Hall |
| | Flat |
| | Government Refuse Collection Point |
| | Government Use (not elsewhere specified) |
| | Hospital |
| | Hotel |
| | House |
| | Information Technology and<br>Telecommunications Industries |
| | Institutional Use (not elsewhere specified) |
| | Library |
| | Market |
| | Off-course Betting Centre |
| | Office |
| | Petrol Filling Station |
| | Pier |
| | Place of Entertainment |
| | Place of Recreation, Sports or Culture |
| | Private Club |
| | Public Clinic |
| | Public Convenience |
| | Public Transport Terminus or Station |
| | Public Utility Installation |
| | Public Vehicle Park (excluding container vehicle) |
| | Recyclable Collection Centre |
| | Religious Institution |
| | Research, Design and Development Centre |
| | Residential Institution |
| | School |
| | Shop and Services |
| | Social Welfare Facility |
| | Training Centre |
| | Utility Installation for Private Project |

Planning Intention
(Please see next page)

Appendix 4: Average monthly transaction prices of TaiKoo Shing in 2008-2009



Average monthly transaction prices of TaiKoo Shing in 2008-2009
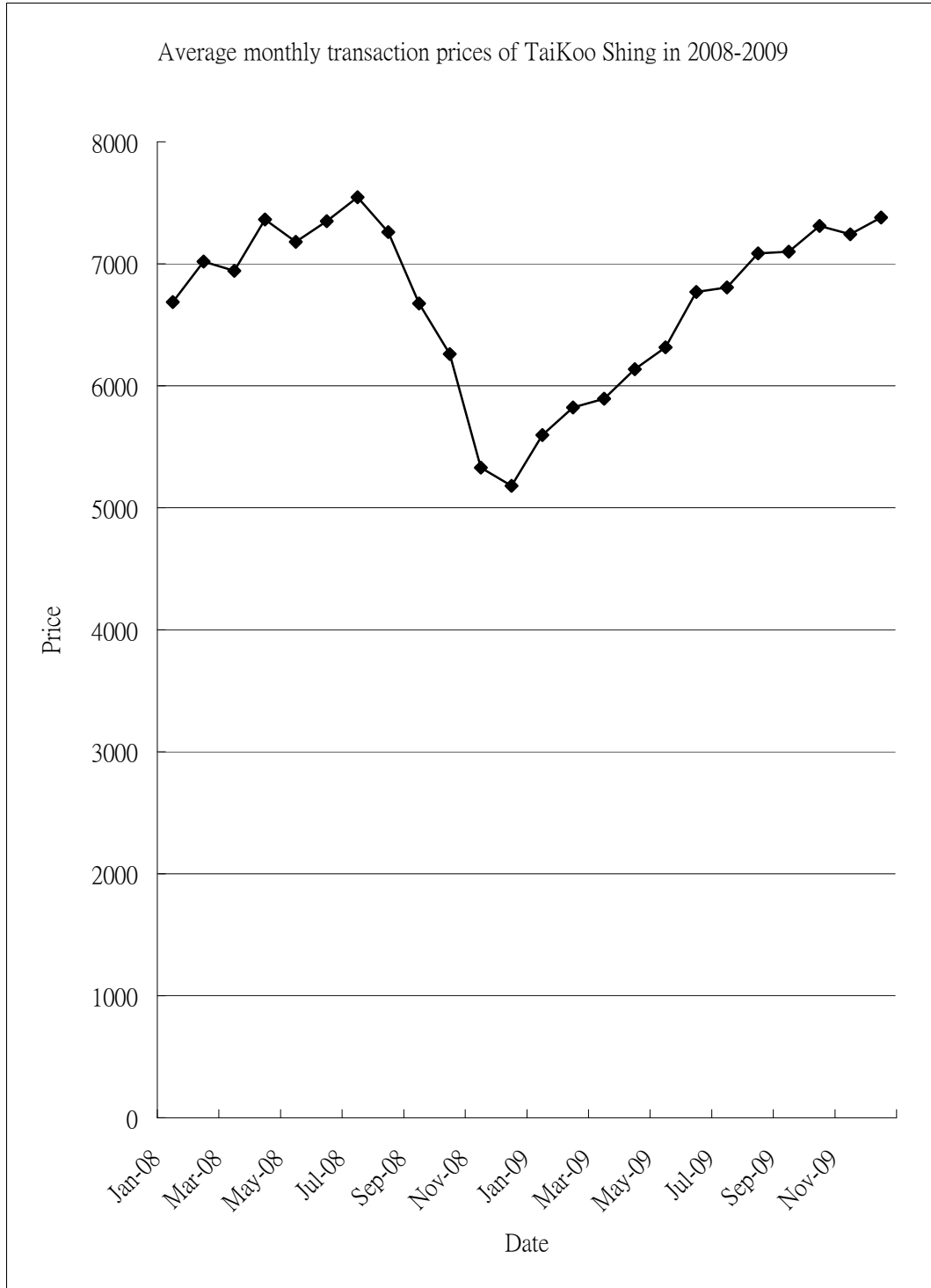
Appendix 5: Average monthly transaction prices of Luguna City in 2008-2009



Average monthly transaction prices of Luguna City in 2008-2009
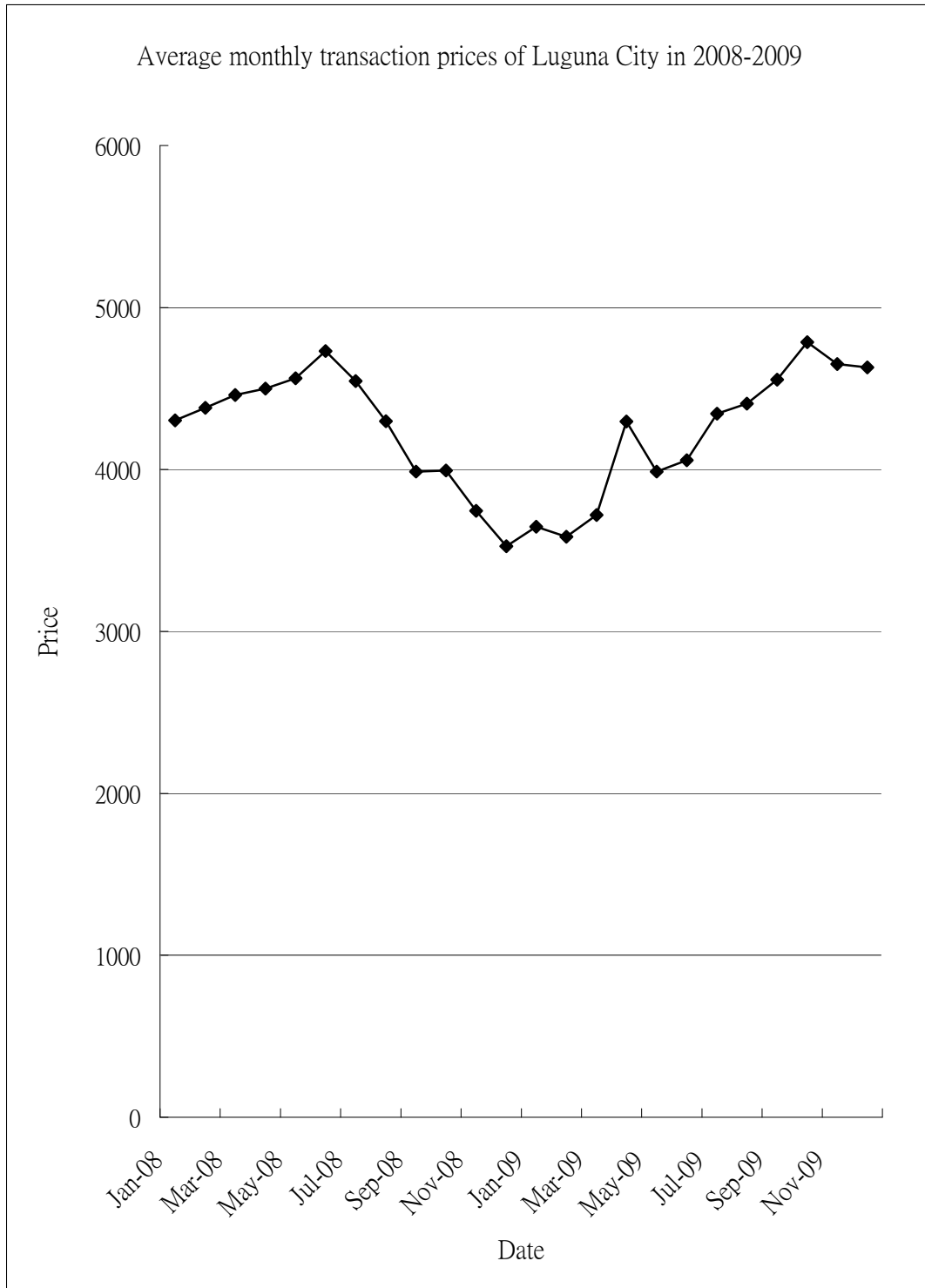
Appendix 6: Average monthly transaction prices of Sceneway Garden in 2008-2009



Average monthly transaction price of Sceneway Garden in 2008-2009
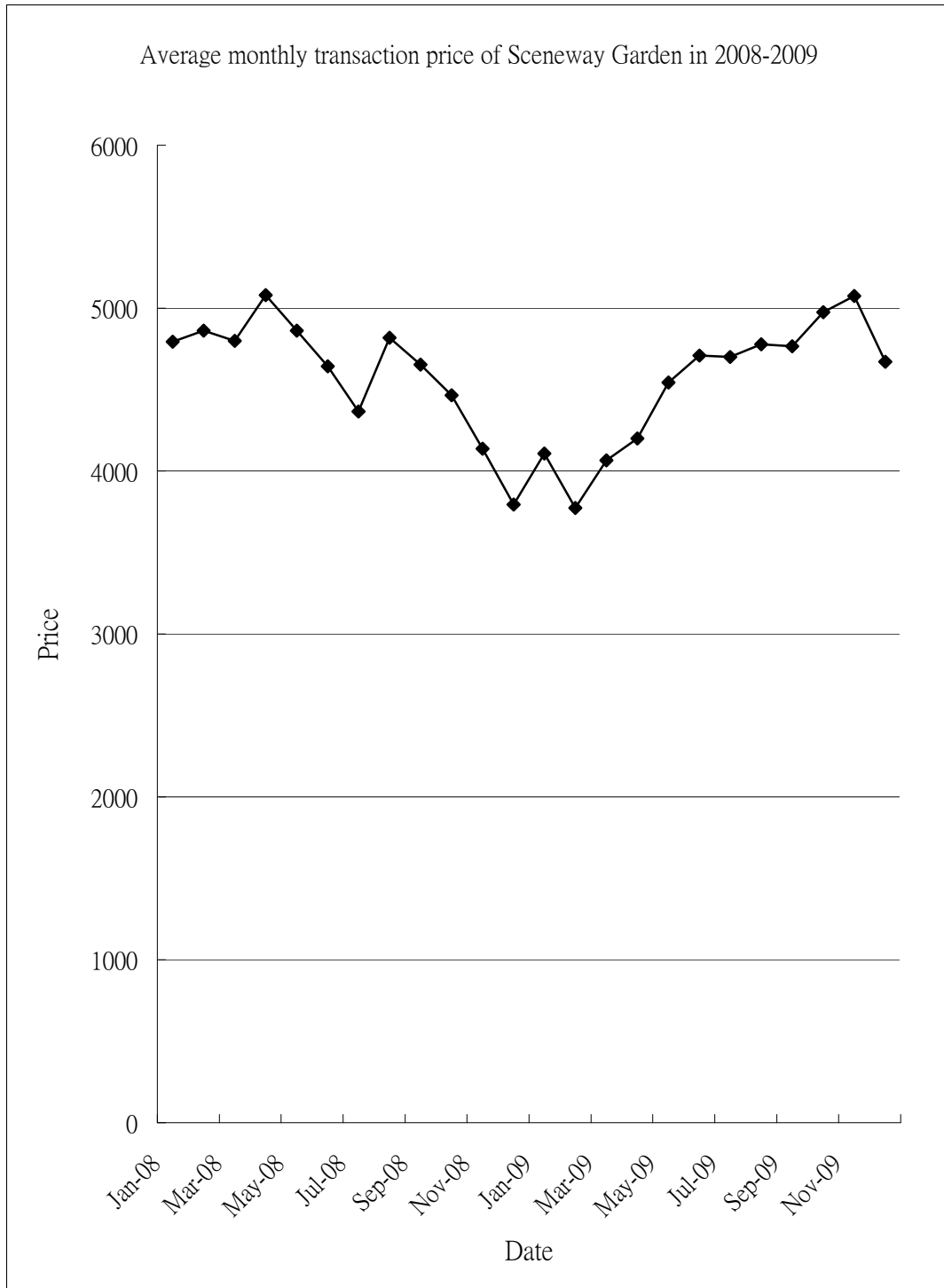
# BIBLIOGRAPHY

Balachandran M. 1976. *Malls and Shopper Centers.* Council of Planning Librarians.

Calabi, Donatella. 2004. *The market and the city: square, street and architecture in early modern Europe.* Ashgate Publishing.

Chu, W. S. 2009. *The role of Shopping Centre in community development in Hong Kong. Master Diss.* University of Hong Kong.

Crawford, Margaret. 1992. 'The World in a Shopping mall.' *Variations in a Theme Park, edited by Michael Sorkin.* New York: Hill and Wang.

Des Rosiers François, Lagana Antonio, Thériault Marius, Beaudoin Marcel. 1995. *The effect of size and proximity of shopping centers on residential values: an ampirical investigation using hedonic modeling.*

Gordon Mathews,Tai-Lok Lui,Dale Lü. 2001. *Consuming Hong Kong.* Hong Kong University Press.

Harris R. N. S., Trolley, G. S. and Harrell, C. 1968. "The Residential Site Choice." Review of Economics and Statistics: 241-247.

Hong Kong Government. 1998. *Town Planning Board Annual Report Hong Kong.* Town Planning Board, Hong Kong: 64-65.

Hong Kong Government. 1999. *Town Planning Board Guidelines for designation of "Comprehensive Development Area" (CDA) zones and Monitoring the Progress of "CDA" Development.* Town Planning Board, Hong Kong.

Hong Kong Government. 2003. *Town Planning Board Guidelines for submission of master layout plan under section 4A(2) of The Town Planning Ordinance.* Town Planning Board, Hong Kong.

Hong Kong Government. 2003. TPB PG-No. 27. *Town Planning Board Guidelines.* Town Planning Board, Hong Kong.

Jacobs, Jane. 1992. *Death and Life of Great American Cities.* New York : Vintage Books.

James Stevens Curl. 2000."bazaar, bazar." A Dictionary of Architecture and Landscape Architecture. *Encyclopedia.com.* http://www.encyclopedia.com/doc/1O1-bazaarbazar.html

Kowinski, William Severini. 1985. *The Malling of America.* New York: William Morrow.

Marshall, Stephen. 2005. *Streets & patterns: the structure of urban geometry.* New York: Spon.

Peter F. Colwell, Surinder S. Gujral and Christopher Coley. 1985., *The impact of a shopping center on the value of surrounding properties.* Real Estate Issues, Spring/Summer.

Prendergast, Gerard; Marr, Norman; Jarratt, Brent. 1996. *International Journal of Retail & Distribution Management: An exploratory study of tenant-manager relationships in New Zealand's managed shopping centres.* (September 01). http://www.accessmylibrary.com/article-1G1-18916369/exploratory-study-tenant-man ager.html

Segel, Rick. 2008. *Retail Business Kit For Dummies.* Wiley Publishing.

Southworth, Michael. Eran, Ben-Joseph. 2003. Streets and the shaping of towns and cities. Island Press.


"Shopping Center Definitions." *International Council of Shopping Centers.* 1977. International Council of Shopping Centers Online. http://www.icsc.org/srch/lib/SCDefinitions.php


"shopping centre." Encyclopædia Britannica. 2010. *Encyclopædia Britannica Online.* http://www.britannica.com/EBchecked/topic/541570/shopping-centre


Sturtevant, Edgar H. 1956. *An Introduction to Linguistic Science.* Yale University Press.


Wallar, Michelle. 1988. *How to Create a Pedestrian Mall.* http://www.culturechange.org/issue14/pedestrianmall.html


Waugh, F. V. 1928. "Quality Factors Influencing Vegetable Prices." Journal of Farm Economics 10.

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