

**Department of Economics and Marketing
Discussion Paper No.24**

**Rent Determination for
Differentiated Retail Space
in Shopping Centres**

*Richard S Tay
Clement K Lau
Marie S Leung*

November 1996

Department of Economics and Marketing
PO Box 84
Lincoln University
CANTERBURY

Telephone No: (64) (3) 325 2811
Fax No: (64) (3) 325 3847
E-mail: tayr@lincoln.ac.nz

ISSN 1173-0854
ISBN 0-877176-01-X

Richard S Tay, Senior Lecturer, Department of Economics and Marketing, Lincoln University, Canterbury, New Zealand.

Clement K Lau, Manager, Hong Kong Development, Hong Kong Land Limited, Hong Kong.

Marie S Leung, graduate student, Faculty of Business Administration, The Chinese University of Hong Kong, Shatin, Hong Kong.

This study was initiated while Richard S Tay was at the Chinese University of Hong Kong. Dr Tay wishes to thank Ira Horowitz and Patrick McCarthy for their helpful comments.

Contents

List of Tables	(i)
1. Introduction	1
2. The Model	2
3. Data	5
4. Estimation Results	6
5. Concluding Remarks	8
References	9

List of Tables

1.	Summary and Description of Variables	10
2.	Estimation Results	11

1. Introduction

The robust economic performance of Hong Kong over the last decade has increased the population's standard of living. As a result, the retail sales in Hong Kong have witnessed a strong growth, with an annual compounded growth rate of 12.79% in the past five years, reaching a total of US\$27 billion in 1995.¹ Furthermore, this growth in the retail sector is accompanied by a shift in the shopping habits of the people from the traditional department stores to shopping centers. After the completion of the first shopping center in Hong Kong, Swire House, in 1960, shopping centers of various sizes were built across the territory. By 1995, the total gross floor area of shopping centers in Hong Kong, with sizes greater than 100,000 sq. ft., amounted to about 26 million sq. ft., with another 11 million sq. ft. scheduled to be completed between 1996 and 2000.²

Despite its increasing importance, relatively little research has been conducted to analyse the rental market for shopping center space in Hong Kong. Empirical studies on the property market, both in Hong Kong and elsewhere, have mainly focused on the office and residential sectors. Few studies, mainly conducted in the United States, have examined the rental market for retail space in shopping malls. In a review of the literature, Eppli and Benjamin (1994) concluded that empirical studies on leasing are scant, probably because data on leasing arrangements are not easily obtainable.

In a recent study, Benjamin *et al.* (1992) developed and estimated a model of rent determination for homogeneous shopping center space. Although valid for analysing shopping malls in the suburban United States, the assumption of homogeneity in retail space within a shopping mall may be inappropriate for analysing the market in Hong Kong and other urban areas. Shopping centers in Hong Kong usually have several floors;³ each with a different level of pedestrian traffic. In addition, shopping centers in Hong Kong are often irregular in design

¹ Source: Hong Kong Monthly Digest of Statistics, various issues. 1US\$ = HK\$7.78

² Source: Brooke Hillier Parker Research. Places with less than 100,000 sq. ft. of retail space are too numerous and not considered as shopping centers.

³ Multi-floors shopping centers are quite common in other urban cities like Singapore, Kuala Lumpur in Malaysia, Bangkok in Thailand, and New York and Chicago in America.

and are inter-connected, either directly or indirectly via footbridges and subways.⁴ Some retail units are therefore more prominently and conveniently located than others. Tenants who are more concerned with these attributes will thus be willing to pay a premium to secure the more desirable retail units.

The purpose of this paper is to estimate a model of rent determination for shopping centers in the Central District of Hong Kong, one that allows for differentiation among retail units. Besides some of the commonly-studied determinants, this analysis will also examine several factors that have received relative little attention in the literature. Some of these influences, such as access by public transport, are more unique to Hong Kong and other densely populated cities where the cost of private vehicular travel is extremely high,⁵ whereas other factors, such as the tenants' demands for the more desirable units, as reflected by the units' location and tenants' business profiles, are quite general.

2. The Model

The rental rates charged to shopping center tenants are assumed to be dependent on three major influences:

$$\text{Rent} = f(\text{Physical, Business, Lease})$$

where Rent is the rent per square foot of retail space and Physical, Business and Lease are vectors of the physical characteristics of the units, retailers' attributes, and terms of lease, respectively.

Table 1 provides a summary and description of the variables used in this analysis. Consistent with Sirmans and Guidry (1993) and Gatzlaff *et al.* (1994), the dependent variable is defined as the logarithm of the average monthly rent for the retail shop, measured in dollars per square

⁴ A subway in Hong Kong is an underground pedestrian walkway. Many shopping centers in Singapore are also connected by footbridges and subways.

⁵ This is especially significant in Singapore where the price of a private car is more than five times that in the United States and shoppers have to pay an area license (US\$2 per day) to drive into the Central Business District (McCarthy and Tay, 1993 and Tay, 1996).

foot (\$ psf), over the duration of the lease term. For leases that are subject to turnover rent provisions, LRENT is the logarithm of the average rental rates paid by the tenants in 1994.

Benjamin *et al.* (1992) argued that the costs of negotiating and servicing lease contracts per dollar of rent probably decreases as the square footage of a unit increases. Their results showed a negative non-linear relationship between the logarithm of total rent and the size of the retail unit. In this analysis, LSIZE which is the logarithm of the size of the retail shop, measured in sq. ft., is therefore expected to have a negative impact on LRENT.

Gatzlaff *et al.* (1994) and Sirmans and Guidry (1993) argued that large shopping centers have a more diverse portfolio and higher spatial concentration of tenants, which attract proportionately broader customer bases and more comparison shoppers. This effect is captured in the model by LRSIZE, which is the logarithm of the total retail space in the shopping center, and is expected to have a positive influence on LRENT.

Three physical variables were used to differentiate the individual retail units by their perceived desirability due to differences in location and their associated levels of pedestrian flow.⁶ Shops located on the ground floor (GFLOOR) or floors with either connecting footbridges or subways (FBSUB) to other buildings are expected to command higher rents. In contrast, shops located on floors further away from the ground level (ALEVEL) are expected to command lower rents.

The correlation between the rental rates of retail spaces and the accessibility of shopping centers, particularly by public transport, has received relatively little attention in the literature. Accessibility by public transport, however, may be a major consideration for shoppers in such highly urban and congested areas as Hong Kong. Shopping centers with direct access to the Mass Transit Railway (MTR) and taxistands (TAXIST) are expected to be more attractive, and thus will be able to command higher rents. In addition, by providing more parking spaces for private cars in the shopping centers, even though most of them are reserved for season-ticket holders, their accessibility by private vehicular travel may also be increased. CPARK,

⁶ Another important aspect of the retail units is their “Feng-Shui” or geomancy for which data are not available.

which measures the number of parking spaces in a shopping center, is thus expected to have a positive effect on LRENT.

The impact on rental rates of the tenants' differential demands for the heterogeneous spaces within the shopping centers, as reflected by the nature of their businesses, has also received relatively little attention in the literature. Stores dealing in luxury goods (LUX) and fashion-related goods (CLOTH), as well as banks and financial institutions (BANK), are willing and able to pay higher rents to secure more desirable retail units. In particular, prominent and convenient locations in the shopping center are valued more by these tenants, as store image is relatively more crucial to their businesses.

Assuming that retail spaces are homogeneous, Benjamin *et al.* (1990, 1992) argued that national and local chain stores in the United States pay lower rents than single stores, because they provide shopping centers with stability and customer drawing power. Under the alternative hypothesis of heterogeneous retail space, however, the effect on rents of chain operations is ambiguous. Although landlords are willing to accept lower rents from chain stores for the same retail units, chain stores are willing to pay higher premiums to secure the more prominently and conveniently located retail units within the shopping centers.

Besides being considered as "magnet shops" that are able to draw customers into the shopping centers, restaurants (REST) in Hong Kong often occupy relatively larger areas that are located in less prominent positions. Landlords are, therefore, willing to give discounts to attract restaurants to take up these less desirable spaces and create higher pedestrian flows for the surrounding shops.

Three variables were used to capture the effects on rental rates of the different terms of lease and management expertise. The dummy variable RENEW is used to reflect any systematic differences between the rental rates charged to new tenants and existing tenants at lease renewal. Fisher and Lentz (1990) argued that the difference in rent found between these two parties reflects payments for business enterprise value that is extracted from the tenants by the mall owner.

In tandem with the size effect, the greater the number of retail units (UNITS) incorporated in a lease, the greater the negotiating power a tenant has in concluding a deal with the landlord. The effect on rent of service charge levied on tenants by the management, however, is ambiguous. Although service charges add to the total occupation cost, an increase in service charges, is usually associated with better maintenance, management, and promotion of the shopping center, which increases the demand for its retail space.

Finally, to control for the fluctuations in the market rental rates over the period, the Jones Lang Wootton Retail Property Rental Index for the Central District (RINDEX) is incorporated into the model.⁷

3. Data

Our sample consists of 405 retail shops, in nine prime shopping centers located in the central business district of Hong Kong, whose leases were entered between 1991 and 1994.⁸ Approximately 60% of the rents were determined at the renewal of lease and the mean rent during that period was US\$19.55 per sq. ft. The average tenancy ran for about 34 months, with a rent-free period of 0.35 month.

An average shopping center in the sample was 21 years old and had a retail space of about 140,000 sq. ft. An average retail shop, however, had a lettable area of about 1,364 sq. ft. with a frontage of 27 ft. A quarter of the shops were located on the ground floor and over half of the units were located on floors with either connecting footbridges or subways.

Most of the tenants were private companies (84%), based in Hong Kong (89%) and more than half (70%) were chain operations. The most common types of business were stores selling clothing, shoes, and other fashion related products (45%), followed by luxury-goods stores selling antiques, jewellery, and leather goods (16%).

⁷ Consistent with Sirmans and Guidry (193), the index was used as an independent variable rather than a conversion factor for the rent. Subsequent estimates using $\log(\text{rent}/\text{rindex})$ as the dependent variable yielded results that are qualitatively and quantitatively very similar.

⁸ Since all the shopping centers in the sample are in the Central Business District, this would effectively control for the effect of distance from the CBD on rents.

4. Estimation Results

The estimation results are presented in Table 2. Overall, the model fitted the data quite well, with an R-square of 0.7744 and an F-statistic that strongly rejected the null hypothesis of no explanatory power. Furthermore, 98.5% of the predicted rents fell within $\pm 15\%$ of the actual values and 79.5% were within $\pm 5\%$ of the actual rents.⁹

Consistent with expectations, the rental rate of a retail unit is negatively related to its size. This result may be explained by the real estate companies' practice of granting quantity discounts to their bigger tenants. Besides the economies of scale in leasing, as suggested by Benjamin *et al.* (1992), this practice may also be a result of the larger tenants having greater bargaining power in rent negotiations. Furthermore, by letting to large space users, landlords can economise on the use of space by allocating less space for public circulation. Also, consistent with the hypothesis of heterogeneous retail space, landlords in Hong Kong may also be willing to accept lower rents to attract the larger tenants to take up the less prominent spaces.

As expected, *ceteris paribus*, retail units located in larger shopping centers commanded higher. Furthermore, shops on the ground floor, or floors that were connected by footbridges or subways to other buildings, commanded a premium, whereas units located on floors further away from the ground floor enjoyed a discount in the rental rates. The latter results are inconsistent with the assertions made by Benjamin *et al.* (1992) that shopping spaces are mostly homogeneous in that they are typically subdivisions of a larger structure.

Accessibility by public transport, particularly the Mass Transit Railway system, increases the customer drawing power of the shopping centers, and hence the rental rates charged. The existence of taxi-stands, in contrast, had an unfavourable impact on the shopping centers. In Hong Kong, taxi-stands in shopping centers are often located on the ground level when the latter is used as a bus depot. Besides losing premium spaces on the ground floor, these

⁹ According to Mr. D. R. Stevenson, Rating Advisor, Rating and Valuation Department of Hong Kong, an estimate that falls within $\pm 15\%$ of the actual value is considered as a very good estimate. In the 1994/5 General Revaluation exercise conducted the department, about 50% of the estimates produced by the departments' computer models were revaluated manually.

shopping centers also have lower image and status. In shopping centers without bus depots, taxi-stands are usually located on the side streets. As most buildings in Hong Kong have very narrow pavements, the waiting queue would encourage pedestrians to bypass the shops surrounding the taxi-stands, thus reducing the demand for these units.

In contrast to the findings of Benjamin *et al.* (1992), chain stores in Hong Kong, especially international chain stores, are found to pay a premium in rent. Since these stores, as argued by Benjamin *et al.* (1992), have lower probabilities of default, they should enjoy a discount from the landlord for occupying the same types of retail spaces as single stores. As rational consumers, the management of these stores will therefore pay higher premiums only if they can secure retail units that are more prominently and conveniently located within the shopping centers than those occupied by single stores. Similarly, banks, fashion boutiques and luxury goods dealers also pay higher premiums for these more desirable units. Restaurants, however, enjoy a discount for occupying the less desirable spaces.

Consistent with the findings of Fisher and Lentz (1990), retail tenants in Hong Kong who were renewing their lease with the landlords paid higher rental rates than new tenants. Rather than attributing this premium to business value, as suggested by Fisher and Lentz (1990), premiums in Hong Kong are more likely to be extracted from the tenants' savings in removal and renovation costs. In addition, by renewing their leases, existing tenants can avoid incurring search cost and other transaction costs associated with relocation. Tenants who occupied multiple retail units in the shopping center, however, paid lower rental rates than their counterparts, probably because of their greater negotiating power in concluding deals with the landlords.

An increase in the service charges levied by management was found to be positively related with rental rates in the shopping centers. This result indicates that tenants' cost concerns may be compensated sufficiently by the higher level of service provided by the management in promoting and maintaining the image and status of the shopping centers. Finally, consistent with the findings of Sirmans and Guidry (1993), fluctuations in the general conditions of the real estate market, as reflected by the retail rental index, was found to be significant in determining the rental rates.

5. Concluding Remarks

Despite the increasing importance of shopping centers, empirical analysis on the determinants of shopping center rents has been rather scarce. In one of the few studies, Benjamin *et al.* (1992) developed and estimated a model of rent determination for homogeneous retail space in shopping centers. Although plausible, the assumption of homogeneity is quite restrictive, especially for shopping malls in urban areas.

This paper estimated a model of shopping center rents, allowing for differentiated retail units. The results showed that tenants, particularly those who were more concerned about the location of stores within the shopping centers, were willing to pay higher premiums for the units that were more prominently and conveniently located. Specifically, retail units located on the ground floor or floors with connecting footbridges or subways were found to command higher rents. These selective spaces were often secured by chain stores, financial institutions, fashion boutiques, and luxury-goods dealers.

References

- Benjamin J.D., Boyle G.W. and Sirmans C.F. (1992). Retail Leasing: The Determinants of Shopping Center Rents, *AREUEA Journal*, 18(3): 302-12.
- _____ (1992). Price Discrimination in Shopping Center Leases. *Journal of Urban Economics*, 32: 299-317.
- Brooke Hillier Parker Research (1996). Survey of Shopping Centers in Hong Kong. Research report submitted to Hong Kong Land Limited, Hong Kong.
- Census and Statistics Department (various dates). Hong Kong Monthly Digest of Statistics.
- Eppli M.J. and Benjamin J.D. (1994). The Evolution of Shopping Center Research: A Review and Analysis. *Journal of Real Estate Research*, 9(1): 5-32.
- Fisher J.D. and Lentz G.H. (1990). Business Enterprise Value in Shopping Malls: An Empirical Test. *Journal of Real Estate Research*, 5(1): 167-75.
- Gatzlaff D.H., Sirmans G.S. and Diskin B.A. (1994). The Effect of Anchor Tenant Loss on Shopping Center Rents. *Journal of Real Estate Research*, 9(1): 99-110.
- Jones Lang Wotton Research & Consultancy (1996). JLW Property Index, Hong Kong: The Market as at April 1996.
- McCarthy P and Tay R (1993). Economic Efficiency vs Traffic Restraint: A Note on Singapore's Area Licensing Scheme. *Journal of Urban Economics*, 34: 96-100.
- Sirmans C.F. and Guidry K.A. (1993). The Determinants of Shopping Center Rents. *Journal of Real Estate Research*, 8(1): 107-15.
- Tay R (1996). Alleviating Traffic Congestion in Singapore: A Review of Demand Management. In Lim C Y (ed.) *Economic Policy Management in Singapore*, Singapore: Addison Wesley Publishing Company.

Table 1
Summary and Description of Variables

Variable	Mean	Std. Dev.	Definition
<u>Dependent</u>			
LRENT	4.80	0.70	Logarithm of monthly rent in HK\$ per sq.ft.
<u>Independent</u>			
LSIZE	6.68	0.95	Logarithm of size of retail shop in sq.ft.
LRSIZE	11.69	0.65	Logarithm of the retail space in shopping center in sq. ft.
ALEVEL	1.29	1.11	Number of levels away from the ground floor.
GFLOOR	0.25	0.43	Shop on ground floor = 1, otherwise = 0.
FBSUB	0.54	0.50	Footbridge or subway on same floor = 1, otherwise = 0.
CPARK	44.58	55.47	Number of car parking spaces in the shopping center.
MTR	0.88	0.33	MTR entrance at shopping center = 1, otherwise = 0.
TAXIST	0.12	0.32	Taxi stand in the shopping center = 1, otherwise = 0.
BANK	0.03	0.18	Banks and financial institutions = 1, otherwise = 0.
CLOTH	0.45	0.50	Boutiques and sports stores = 1, otherwise = 0.
LX	0.16	0.36	Antiques, jewellery and leather goods = 1, otherwise = 0.
REST	0.07	0.26	Restaurants = 1, otherwise = 0.
ICHAIN	0.18	0.39	International chain = 1, otherwise = 0.
RENEW	0.59	0.49	Renewal of existing lease = 1, otherwise = 0.
UNIT	1.13	0.50	Number of retail shops incorporated in a single lease.
SERVC	5.86	1.11	Monthly service charge in HK\$ per sq. ft.
RINDEX	310.25	23.73	Jones Lang Wootton Central Retail Property Rental Index.

Table 2
Estimation Results

Number of Observations: 405
R-Square: 0.7744
F-Statistics: 73.602

Variable	Coefficients	Standard Error	T-Statistics	Prob > T
INTERCEP	2.300081	0.62279907	3.693	0.0003
LSIZE	-0.165901	0.02395803	-6.925	0.0001
LRSIZE	0.128148	0.05152614	2.487	0.0133
GFLOOR	0.884446	0.08115473	10.898	0.0001
ALEVEL	-0.061320	0.02685304	-2.284	0.0229
FBSUB	0.402232	0.05420920	7.420	0.0001
MTR	0.516434	0.10869231	4.751	0.0001
CPARK	0.002653	0.00082808	3.203	0.0015
TAXIST	-0.183044	0.10742053	-1.704	0.0892
BANK	0.191741	0.11005664	1.742	0.0823
CLOTH	0.155986	0.04810492	3.243	0.0013
LX	0.185732	0.05789426	3.208	0.0014
REST	-0.299428	0.08462813	-3.538	0.0005
SINGLE	-0.167322	0.04853659	-3.447	0.0006
ICHAIN	0.089861	0.05224448	1.720	0.0862
RINDEX	0.002174	0.00073323	2.965	0.0032
RENEW	0.061970	0.03610549	1.716	0.0869
UNIT	-0.091013	0.03772356	-2.413	0.0163
SERVIC	0.092290	0.02923584	3.157	0.0017