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The Nexus between Visitor Arrivals and Residential Property Rents in Hong Kong

by

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The Nexus between Visitor Arrivals and Residential Property Rents in Hong Kong

Alex Yiu and Terence Tai-Leung Chong*

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Abstract: Hong Kong is one of the most expensive places to live in the world. This paper investigates the effects of retail property rents on the rents of small/medium-sized flats in Hong Kong. It is demonstrated that tourism policies such as the Individual Visit Scheme for Mainland residents, which is expected to affect retail property rents, also impact residential property rents in Hong Kong. Furthermore, the effect of the inflow of non-local students is examined in this paper.

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1. Introduction

The rise in residential property prices and rents in Hong Kong has attracted worldwide attention. According to the *Demographia International Housing Affordability Survey* by Cox and Pavletich (2015), Hong Kong was classified as the most unaffordable city to buy a flat among 378 markets in nine countries. The median price for a flat in Hong Kong is 17 times its gross annual median household income, which is the highest ever recorded price in the eleven-year history of the survey. In addition, the city has topped the list for five consecutive years. This phenomenon has piqued the curiosity of the government and researchers, motivating them to examine the housing market and its relationship with various economic factors.

To better understand the residential property market in Hong Kong, this study helps to discover other factors that support the recent growth of residential rents, i.e., an indicator of the cost of living in Hong Kong. Apart from housing prices, retail property rents have also been increasing, which may be caused by the growth of retail sales attributed to the inflow of visitors. This paper tests the effect of visitor arrivals on retail and residential rents, and focuses more on property rents rather than property prices because the latter are more likely to be influenced by speculative activities.

Intuitively, renting a flat or a shop means renting a space for living or conducting retail business. Given the same flats or shops with identical facilities, higher rents reflect higher land values. In this study, we test the hypothesis that tourists have a positive effect on retail rents, thereby increasing the value of land that accommodates both retail shops and residential suites. Residential rents reflect the value of the land where the residential units are located; therefore, if the value of the land is high, *ceteris paribus*, the residential rent is also high.

Some possible ways of realizing the above hypothesis in the real world include the following¹: First, flat owners turn the flats into shops as soon as they discover that the rents of retail properties downstairs or nearby have increased. This type of conversion is often permitted in the lower levels of some tenements and composite

¹ See Section 5 for more details.

buildings in Hong Kong. These retail stores are called “upstairs shops”. Through such conversion, the market supply of residential units is reduced, hence increasing the residential rents. There is also a possibility that flat owners do not alter the use of their properties but raise the residential rents for their properties to compensate for the loss from not renting out the properties as shops. Second, property developers purchase houses for their redevelopment projects as soon as they perceive a higher value of retail businesses. These projects curtail residential supply. Third, flat owners increase residential rents based on the increased retail rents in tenancy agreements, especially when rent statistics are easily accessible from the Internet or ubiquitous branches of property agencies in Hong Kong.

Moreover, official statistics reveal that the number of non-local students continues to increase in Hong Kong. Student hostels offered by universities are often inadequate. Thus, students have to rent flats in the private market. For this reason, another objective of this paper is to demonstrate if the inflow of non-local students stimulates residential rents.

This paper investigates the above-mentioned issues, together with some controlled variables that depict the macroeconomic conditions related to real estate markets. The relationship between the retail property market and the number of visitor arrivals is studied with variables that possibly influence the retail property market. The controlled variables include local consumption expenditure, interest rate, construction cost, and floor area of newly completed commercial buildings. If the relationship is strongly significant, then the number of visitor arrivals can be used as an instrument to study the effect of the retail property market on the residential property market, with controlled variables including income level, interest rate, domestic household number, construction cost, and floor area of newly completed houses.

The causal relationship between retail rents and residential rents is studied with the use of the number of visitor arrivals as an instrument. Our variables of

interest are the rents of small/medium-sized flats.² Luxury flats are not included because they are usually too far away from retail shops for land value to be reflected. The relationship with the controlled variables is tested separately in three geographic areas within Hong Kong: Hong Kong Island, the Kowloon Peninsula, and the New Territories.

The remainder of this paper is organized as follows: Section 2 provides background information on the tourism industry and the entry of non-local students into Hong Kong. Section 3 discusses the relevant literature. Section 4 presents the methodology and the empirical results. Section 5 discusses the findings, and Section 6 concludes the paper and provides suggestions for future research.

2. Background

2.1 Tourism in Hong Kong

The tourism industry is a mainstay of Hong Kong's economy. In 1957, the Hong Kong Tourist Association was established to promote the city to the rest of the world. The association conducted promotions under the theme "The Orient is Hong Kong" in 1964 and launched its famous "red junk" logo in 1970. The visit of US President Richard Nixon to the People's Republic of China in 1972 helped to stimulate global interest in the country and promote Hong Kong as the best place for foreigners to explore the Mainland. In 1984, Mainland residents were allowed to join tours held by the China Travel Service to visit their families and relatives in Hong Kong. Subsequently, Hong Kong was reunited with China in July 1997, and the number of visitors has been increasing rapidly ever since. To facilitate the growth of this industry, the Tourism Commission and the Hong Kong Tourism Board were established in May 1999 and April 2001, respectively.

Several factors are related to the number of visitor arrivals in Hong Kong. First, visa policies affect the ease of visiting Hong Kong, thereby influencing the

² In this paper, a small/medium-sized flat is defined as a flat with a saleable area not larger than 100 square meters, whereas a unit with a saleable area that exceeds 100 square meters is classified as a luxury flat.

number of visitor arrivals. According to the Immigration Department of Hong Kong³, nationals of around 170 foreign countries and territories may visit Hong Kong visa-free for business, social, or pleasure purposes for 7 to 180 days. The immigration policy towards visitors has become increasingly liberalized throughout the years. For instance, visa requirements for visitors from some places, such as Egypt, Latvia, and Poland, were relaxed after 2002. The visa-free visit period for visitors from Bahrain, Kuwait, Qatar, and Saudi Arabia was extended from 14 days to 30 days in 2008. Since September 2012, Taiwan residents have been able to apply for pre-arrival registration through the e-service platform “Pre-arrival Registration for Taiwan Residents (PAR)” on the Hong Kong government website free of charge, which allows them to visit Hong Kong twice for up to 30 days each time. In July 2003, the Individual Visit Scheme (IVS) was introduced under the Closer Economic Partnership Arrangement (CEPA) between Mainland China and Hong Kong to allow Mainland residents of Dongguan, Zhongshan, Jiangmen, and Foshen to come to Hong Kong as individual visitors. At present, the IVS covers 49 Mainland cities, including all 21 Guangdong cities, Beijing, Shanghai, Tianjin, and Chongqing, among others, as shown in Table 1. Prior to the launch of the IVS, Mainland residents could only come to Hong Kong by applying for business visas or joining organized group tours. The IVS relaxes the restrictions, which has significantly increased the number of Mainland residents who visit Hong Kong. Figures 1 and 2 show that ever since the launch of the IVS in 2003 Q3, the number of Chinese visitors has increased from around 2 million per quarter to more than 10 million per quarter, and the proportion of Chinese visitors continues to account for more than 50% of total visitors. Figure 3 also depicts a general upward trend of visitors’ consumption spending in both nominal and real terms after 2003.

Furthermore, the promotion of multi-destination itineraries and the improved transportation benefit the tourism industry in Hong Kong.

The promotion of multi-destination itineraries attracts tourists to come to Hong Kong after they visit neighbouring cities, especially when these cities have been under the global spotlight. Such global events include the Beijing Olympics in 2008, the World Expo 2010 in Shanghai, the Guangzhou 2010 Asian Games, and the

³ See the website of Immigration Department (<http://www.immd.gov.hk>) for more details.

opening of the Dapeng Geological Park in Shenzhen in 2011. Hong Kong also benefits from the visa-free arrangement for Russian travellers to Macau, which has been implemented since September 2012.

Another factor that affects the number of tourists is transportation. Flight capacity has increased on routes from Hong Kong to key destinations, such as Taiwan, Singapore, and other Southeast Asian cities, because of the development of low-cost carriers. The Guangzhou-Shenzhen Express Rail Link also helps draw more visitors to Hong Kong. In the coming years, aside from the completion of the Hong Kong section of the Express Rail Link, the opening of the Hong Kong-Zhuhai-Macao Bridge can strengthen the connection between Hong Kong and Mainland China. Through multi-destination itineraries, overseas visitors can travel to the Mainland via Hong Kong, and vice versa.

Tourists cannot be classified as a demand or supply factor of the residential property. However, their spending contributes to the values of retail sales and rents. Figure 4 shows the possible correlation between the number of visitor arrivals and real retail rental values. Once the fundamental relationship between retail property value and residential property value is established, the indirect influence of the number of tourists on the housing market can be demonstrated.

2.2 Non-Local Students in Hong Kong

Under the current legal system, foreign students can come to Hong Kong to study in private schools registered under the Education Ordinance and the Post Secondary Colleges Ordinance. Since the 1999/00 academic year, Mainland students have been allowed to undertake full-time undergraduate studies in Hong Kong. In 2005, the policy was further relaxed such that students from Mainland China, Macau, and Taiwan can study full time and locally on accredited programmes at the post-secondary level. Effective May 18, 2008, these students can also apply for a visa to enrol on short-term studies offered by Hong Kong higher education institutions with degree-awarding powers if the cumulative duration of short-term studies does not exceed 180 days within any 12-month period. The number of non-local students studying in Hong Kong continues to increase because of the modification of education

admission policies, as reflected by the growing number of student visas issued by the Immigration Department. As declared by the Long Term Housing Strategy Steering Committee (2013), the proportion of non-local students who were not living in student hostels offered by their institutions/universities in the 2011/12 academic year is around 50%, which may have stimulated the rental prices.

3. Literature Review

The macro-determinants of residential property values in Hong Kong have been discussed in several studies. Peng (2002) suggests that macroeconomic and monetary conditions, demographic developments, government housing policies, and speculative bubbles influence property prices. Leung, Chow, and Han (2008) find that GDP per capita, real interest rate, land supply, and the residential investment deflator are long-run determinants, whereas equity price is a short-run determinant. Craig and Hua (2011) mention that real incomes, real domestic credit, construction costs, land supplies, and real interest rates explain the rapid rise in property prices.

With regard to the macro-determinants of retail property values, Tsolacos (1995) and D’Arcy, McGough, and Tsolacos (1997) recognise the effects of GDP and consumer expenditure on retail rental values in the United Kingdom and some European cities. While the case in Hong Kong is seldom discussed, retail sales value is believed to affect retail rents. Cheung (2013) argues that tourists’ expenditure, especially that of Mainland visitors, is a significant contributor to the total retail sales value in Hong Kong, which has led to the recent growth of shop rents⁴. Therefore, tourists’ expenditure in Hong Kong increases the retail property value.

Several studies examine the relationship between tourism and macroeconomic variables. Balaguer and Cantavella-Jordá (2002) apply cointegration and causality tests to investigate the casual relationship between tourism development and economic growth in Spain. Kim, Chen, and Jang (2006) as well as Chen and Chiou-Wei (2009) study this relationship in Taiwan. Tugcu (2014) analyses this relationship in European, Asian, and African countries that border the Mediterranean

⁴ See Financial Secretary’s Office (2013).

Sea. Narayan, Sharma, and Bannigidadmath (2013) examine if the number of visitor arrivals predicts macroeconomic variables, including exchange rates, exports of goods and services, external debts, foreign exchange reserves, gross domestic product, inflation, interest rate, money supply, trade balance, and current account balance in Fiji, the Solomon Islands, Papua New Guinea, Vanuatu, Samoa, and Tonga.

4. Empirical Analysis

4.1 Variables and Methodology

This study covers the time series data from 1998 Q3 to 2014 Q2. Detailed variable descriptions are listed in Section 8.

Equation (1) shows the model of the relationship between the number of visitors and real retail rent. Equation (2) shows the model of the relationship between real retail rent and real residential rents.

$$\begin{aligned}
 &RetailRent_t \\
 &= \alpha_0 + \alpha_1(Visitor_t) + \alpha_2(Consum_t) + \alpha_3(InterestRate_t) \\
 &+ \alpha_4(BuildingCost_t) + \alpha_5(NewRetailArea_t) + \varepsilon_t
 \end{aligned} \tag{1}$$

where *RetailRent* denotes real retail rent.

Visitor denotes number of visitors.

Consum denotes real household consumption expenditure.

InterestRate denotes real best lending rate.

BuildingCost denotes real building works tender price.

NewRetailArea denotes new retail internal floor area.

$$\begin{aligned}
Y_t &= \beta_0 + \beta_1(RetailRent_t) + \beta_2(Payroll_t) + \beta_3(InterestRate_t) \\
&+ \beta_4(Household_t) + \beta_5(NewHouseArea_t) + \beta_6(BuildingCost_t) \\
&+ \epsilon_t
\end{aligned} \tag{2}$$

where Y denotes *FlatRentMassHK*, *FlatRentMassKL*, or *FlatRentMassNT*.

FlatRentMassHK denotes real residential rent in the mass segment⁵ of Hong Kong Island.

FlatRentMassKL denotes real residential rent in the mass segment of the Kowloon Peninsula.

FlatRentMassNT denotes real residential rent in the mass segment of the New Territories.

RetailRent denotes real retail rent.

Payroll denotes real payroll index.

InterestRate denotes real best lending rate.

Household denotes number of domestic households.

NewHouseArea denotes new residential usable floor area.

BuildingCost denotes real building works tender price.

In Equation (2), the number of visitors is treated as an instrumental variable for real retail rent. To become a valid instrument, it should satisfy the following conditions:

Condition 1: It is correlated with the endogenous variable, real retail rent.

Condition 2: Its effect on the dependent variable should work exclusively through the endogenous variable.

Figure 5 shows the average length of stay of overnight visitors in Hong Kong.⁶

⁵ The residential units categorized in the mass segment have saleable areas not larger than 100 square meters, whereas the units with saleable areas that exceed 100 square meters are categorized in the luxury segment.

⁶ Owing to the short average length of stay, visitors are assumed not to be one of the demand factors of the residential rental markets. In Hong Kong, under the Hotel and Guesthouse Accommodation Ordinance, Cap. 349, “a ‘hotel’ and ‘guesthouse’ mean any premises being held out in which sleeping accommodation is provided for any person presenting himself who appears able and willing to pay a

Income level is controlled so that the effect of the growth in the number of visitors on the housing market via more income is controlled. Moreover, because the effect of the number of visitors might affect the dependent variable via other channels, the following variables are controlled in addition to the variables suggested in Equation (2).

Real average achieved hotel room rate for all hotels (HotelRoomRate)

The inflow of visitors might have a positive effect on the hotel room rate, which might encourage flat owners or developers to turn flats into hotels or hostels.

Hotel room occupancy rate for all hotels (HotelOccRate)

Similarly, the inflow of visitors might have a positive effect on the hotel room occupancy rate, which might encourage flat owners or developers to turn flats into hotels or hostels.

Real office rent (OfficeRent)

Some office spaces in Hong Kong are furnished to serve visitors, for example, by turning into stores that sell luxury goods and electronic devices. Thus, the rise of office rent might also be a channel of increasing the land value, thereby affecting nearby residential rents.

Real factory rent (FactoryRent)

Similar to the case of office spaces, some factory spaces in Hong Kong are furnished to serve visitors. The rise of factory rent might also increase the land value, which affects nearby residential rents.

Real oil price (OilPrice)

Tourism demand might be affected by oil prices, which is incorporated in air ticket prices. Higher oil prices could tremendously raise the cost of long-haul flights, which might increase the demand from tourists who live nearby for a trip to Hong Kong. The total number of visitors could increase because tourists from East Asia

reasonable sum for the services and facilities provided for a period of less than 28 continuous days.” and “any new establishments must apply for a Licence from the Authority before commencing operation.” Therefore, any premises without the licence cannot serve visitors staying for such a short period.

constitute a large portion of visitors to Hong Kong. Meanwhile, higher oil prices could increase the daily transportation cost. Thus, residents might prefer to rent a flat closer to their workplaces. Higher rental demand increases residential rents.

Real effective exchange rate index for the Hong Kong dollar (ExchangeHKD)

A tourist's choice of destination might be affected by the exchange rate, and cheaper Hong Kong dollar might promote capital inflow into the Hong Kong property market.

Hang Seng Index in real term (HSI)

The sudden growth in tourism might stimulate the performance of the stock market, which affects the wealth of some individuals.

MSCI All Country World Index in real term (MSCI)

On the one hand, good performance of the stock market might encourage individuals worldwide to travel to Hong Kong when they gain in the stock market. On the other hand, good performance of the stock market might be correlated with asset prices in Hong Kong.

Real GDP in China (ChinaGDP)

An improved economy in China might encourage more Chinese visitors to come. Mainland residents constitute a significant portion of visitor arrivals. Thus, the total number of visitors could increase. Concurrently, capital might flow from China to the Hong Kong property market when investors are well off.

In accordance with the Phillips and Perron test results listed in Table 2, most variables are not stationary. Thus, they are made either log-differenced or first-differenced. This modification is shown in Equations (3) and (4). The summary statistics are presented in Table 3.

“ Δ ” is the first difference operator and “ \ln ” is the natural logarithm operator.

$$\begin{aligned} & \Delta \ln(RetailRent_t) \\ &= \alpha_0 + \alpha_1 \Delta \ln(Visitor_t) + \alpha_2 \Delta \ln(Consum_t) + \alpha_3 \Delta(InterestRate_t) \\ &+ \alpha_4 \Delta \ln(BuildingCost_t) + \alpha_5 \Delta \ln(NewCommArea_t) + \varepsilon_t \end{aligned} \quad (3)$$

$$\begin{aligned} & \Delta \ln(Y_t) \\ &= \beta_0 + \beta_1 \Delta \ln(RetailRent_t) + \beta_2 \Delta \ln(Payroll_t) \\ &+ \beta_3 \Delta(InterestRate_t) + \beta_4 \Delta \ln(Household_t) + \beta_5 \Delta \ln(NewHouseArea_t) \\ &+ \beta_6 \Delta \ln(BuildingCost_t) + \beta_7 \Delta \ln(HotelRoomRate_t) \\ &+ \beta_8 \Delta \ln(HotelOccRate_t) + \beta_9 \Delta \ln(OfficeRent_t) \\ &+ \beta_{10} \Delta \ln(FactoryRent_t) + \beta_{11} \Delta \ln(OilPrice_t) \\ &+ \beta_{12} \Delta \ln(EffectiveExchangeHKD_t) + \beta_{13} \Delta \ln(HSI_t) \\ &+ \beta_{14} \Delta \ln(MSCI_t) + \beta_{15} \Delta \ln(ChinaGDP_t) + \varepsilon_t \end{aligned} \quad (4)$$

where Y denotes *FlatRentMassHK*, *FlatRentMassKL*, or *FlatRentMassNT*.

Equation (3) is estimated by ordinary least squares (OLS) regressions, whereas Equation (4) is estimated by two-stage least squares (2SLS) regressions. Heteroskedasticity and autocorrelation consistent (HAC) standard errors of Newey and West (1987, 1994) are used in both regressions. Instrumental variable $\Delta \ln(Visitor)$ is proposed to study the effects of $\Delta \ln(RetailRent)$ on the explained variables in Equation (4).

To verify if the instrument is weak in each case, the F-statistics of the instrument reported in the first stage of 2SLS regressions are compared with the Staiger–Stock (1997) rule of thumb. An F-statistic of a value greater than 10 indicates that the instrument is strong. For the weak instrument, the Anderson–Rubin (1949) test, which is robust to weak instruments, is carried out to show how significant the effects are.

To study the effect of the number of non-local students on real residential rents, the following regression is proposed:

$$\begin{aligned}
&\Delta\ln(Y_t) \\
&= \gamma_0 + \gamma_1\Delta\ln(\text{NonlocalStudent}_t) + \gamma_2\Delta\ln(\text{Payroll}_t) \\
&+ \gamma_3\Delta(\text{InterestRate}_t) + \gamma_4\Delta\ln(\text{Household}_t) + \gamma_5\Delta\ln(\text{NewHouseArea}_t) \\
&+ \gamma_6\Delta\ln(\text{BuildingCost}_t) + \gamma_7\Delta\ln(\text{ChinaGDP}_t) + \gamma_8\Delta\ln(\text{MSCI}_t) \\
&+ \gamma_9\Delta\ln(\text{RetailRent}_t) + \xi_t
\end{aligned} \tag{5}$$

where Y denotes *FlatRentMassHK*, *FlatRentMassKL*, or *FlatRentMassNT*.

NonlocalStudent denotes the number of non-local students in Hong Kong.

MSCI and *ChinaGDP* are controlled because they might be confounding factors that correlate with the number of non-local students and residential value. *MSCI* and *ChinaGDP* are chosen to represent global economic outlook and the income of Chinese citizens. A good outlook might encourage foreign families to let their children study abroad. Meanwhile, more funds might flow into the Hong Kong property market from all over the world. As shown in Figure 6, more than half of the non-local students are Mainland residents.

4.2 Results

As a condition for a valid instrument, whether the growth of the number of visitors is significantly correlated with that of real retail rent needs to be checked first. As shown in Table 4, their correlation is significant. The result remains unchanged with other controlled variables, including real domestic consumption, real interest rate, real building cost, and newly completed retail area. On average, a 1% growth of visitor arrivals increases real retail rent by about 0.05%.

The results of 2SLS regressions are presented in Tables 5 to 8. Table 5 shows the first-stage regression results of the 2SLS regressions. With many controlled variables, the first-stage F-statistic of $\Delta\ln(\text{Visitor})$ against $\Delta\ln(\text{RetailRent})$ is 9.39, which is on the margin of the Staiger–Stock (1997) rule of thumb. This finding means $\Delta\ln(\text{Visitor})$ is a “not too weak but not quite strong” instrument for $\Delta\ln(\text{RetailRent})$.

Table 6 shows the regression results of mass residential property market on Hong Kong Island. On average, a 1% growth of real retail rent increases real residential rent in the mass segment of Hong Kong Island by about 2.35%. The instrument is not strong. Thus, the p-value of weak-instrument-robust Anderson–Rubin Wald test is calculated to check the significance level of the effect of real retail rent on real residential rents. The p-value shows that the effect is significant at 5%. For other controlled variables, the growth in the number of domestic households is positively related to real residential rent, whereas real hotel room rate is negatively related to real residential rent. This finding can be explained by the possibility that higher room rates are caused by more advertisements and services provided by hotel or hostel operators, which worsen the environment of the vicinity and decrease the residential rents.

Table 7 shows the regression results of mass residential property market in the Kowloon Peninsula. Although the estimated value of the effect of real retail rent on real residential rent is positive, it is not significant. The weak-instrument-robust Anderson–Rubin Wald test also shows a consistent result. For other controlled variables, the growth of real payroll, the number of domestic households, real building cost, real oil price, and real Chinese GDP have positive relationships with real rents of small/medium-sized flats in Kowloon. With regard to real payroll and the number of domestic households, citizens with higher incomes might have a higher demand for a suite in Kowloon because the central location of Kowloon in Hong Kong provides residents with the convenience to go everywhere. In addition, Kowloon is a shopping paradise, and living there can provide people with easy access to a wide range of goods. Real building costs might raise the costs of development projects. Higher construction costs lead to higher housing prices, which might stimulate demand from individuals with tight budgets to rent a flat instead of purchasing it. Higher oil price raises daily spending on transportation. Citizens might rent a suite closer to their offices to lessen their transportation expenditure. Kowloon is a favourable choice because of its geographical location. For real Chinese GDP, the demand for residential units as investments might increase with the wealth of Mainland residents. Similar to the case of Hong Kong Island, real hotel room rate has a negative relationship with real residential rent in Kowloon.

Table 8 shows the regression results of mass residential property market in the New Territories. The estimated value of the effect of real retail rent is marginally significant at about 10% significance level. The weak-instrument-robust Anderson–Rubin Wald test shows that this value is significant at the 5% significance level. Therefore, moderate evidence shows the effect of real retail rent on real residential rent in the New Territories. For other controlled variables, similar to the case of the Kowloon Peninsula, the growth of real payroll and real Chinese GDP show positive relationships with real residential rent in the New Territories. The growth of real interest rate, newly completed residential area in one quarter, and hotel room occupancy rate show negative relationships with real residential rent in the New Territories. Lower real interest rates imply lower mortgage costs, thereby boosting the housing prices. Less residential area completion decreases the supply of flats. Higher hotel room occupancy rates might represent a larger inflow of visitors, which might inevitably produce greater noise and make roads or pavements more congested, thereby disturbing neighbouring residential areas.

Table 9 indicates a significant effect of the inflow of non-local students on real residential rents of small/medium-sized flats on Hong Kong Island and in the Kowloon Peninsula. The relationship is not significant in the mass segment of the New Territories as it is not located at the centre of Hong Kong, unlike Hong Kong Island and Kowloon.

4.3 Robustness

Table 5 shows that the first-stage F-statistic for $\Delta \ln(\text{Visitor})$ in the regression against $\Delta \ln(\text{RetailRent})$ in the period from 1997 Q2 to 2014 Q2 is almost 10. According to Staiger–Stock (1997) rule of thumb, this finding proves that $\Delta \ln(\text{Visitor})$ is a “not weak” instrument that satisfies the relevance conditions. However, the instrument is not strong. Weak-instrument-robust Anderson–Rubin tests are also carried out and show consistent results.

In checking robustness, a dummy variable that indicates the outbreak of severe acute respiratory syndrome (SARS) in Hong Kong is added as a control. *DummySARS* equals 1 for 2003 Q1 and 2003 Q2, and 0 for other periods. According to the SARS

Expert Committee (2003), SARS affected Hong Kong from 2003 Q1 to 2003 Q2. As shown in Figure 3, the number of visitor arrivals in Hong Kong dropped dramatically during that period because of fear of the disease. SARS also undermined investment appetite and local asset prices. Thus, *DummySARS* is introduced to check the robustness of the estimated coefficients of *RetailRent*.

Tables 10, 11, 12, and 13 present the results with the addition of the dummy variable. All the estimated coefficients and their corresponding significance levels are very close to the previous results. However, we notice that the F-statistic of the instrumental variable reduces from 10 to below 9. This result indicates that the instrument is not strong. Therefore, we need to adopt the weak-instrument-robust Anderson–Rubin tests for the estimated coefficients of $\Delta\ln(\textit{RetailRent})$. The p-values of the weak-instrument-robust Anderson–Rubin tests of $\Delta\ln(\textit{RetailRent})$, which show its effects on residential rents in the mass markets on Hong Kong Island, in the Kowloon Peninsula, and the New Territories, are about 0.0442, 0.704, and 0.0369, respectively. The significant results in the cases of Hong Kong Island and the New Territories are consistent with the previous results.

To prove causality, the instrument $\Delta\ln(\textit{Visitor})$ has to work exclusively through $\Delta\ln(\textit{RetailRent})$. To this end, more variables are controlled in addition to those that represent the fundamental demand for and supply of the housing market. First, the instrument $\Delta\ln(\textit{Visitor})$ might affect the income of local people; therefore, $\Delta\ln(\textit{Payroll})$ is controlled to make the instrument uncorrelated with the error term. As discussed in Section 1, the hypothesized land value increase can be realized by converting a flat into a shop to capture the benefits brought by booming tourism. However, the growth of land values may result from flat owners changing their flats to guesthouses. While a sensible assumption is that a small/medium-sized flat is too small for an accommodation business and that it is extremely difficult to transform a small/medium-sized flat into a guesthouse that fulfils the safety requirements of the government, additional controlled variables $\Delta\ln(\textit{HotelRoomRate})$ and $\Delta\ln(\textit{HotelOccRate})$ are introduced. The same can be applied to the rise of office rents and factory rents because some offices and factory rooms have been altered to provide services to tourists. Therefore, $\Delta\ln(\textit{OfficeRent})$ and $\Delta\ln(\textit{FactoryRent})$ are also controlled. Moreover, higher oil prices discourage commuting, which increases the

demand for rental flats in more convenient regions as people seek to reduce daily transportation expenditure. Hence, we incorporate $\Delta\ln(OilPrice)$ into our model. For $\Delta\ln(HSI)$, because tourism is the pillar of Hong Kong, its performance is correlated with the local stock market. Better stock market performance increases the wealth of some individuals. Thus, the demand for residential units as investment might also increase. Meanwhile, the real effective exchange rate index of Hong Kong dollar, the real MSCI All Country World Index, and real Chinese GDP might be confounding factors that on the one hand boost tourism, and on the other hand raise the investment demand in the Hong Kong property market. Therefore, $\Delta\ln(ExchangeHKD)$, $\Delta\ln(MSCI)$, and $\Delta\ln(ChinaGDP)$ are controlled.

While studying the effect of the inflow of non-local students on the local residential property market, $\Delta\ln(MSCI)$ and $\Delta\ln(ChinaGDP)$ are controlled as they might be confounding factors.

5. Discussion

5.1 Discussion of Empirical Results

A significant relationship between the number of visitors and real retail rent is established in the period from 1998 Q3 to 2014 Q2. Property owners may adjust retail rents based on their expectation of future retail sales values and ability of retailers to pay rent. A greater number of visitors raises their expectation. Figure 7 shows that visitor expenditure on shopping contributes to domestic retail sales, which indicates that more visitor arrivals would be conducive to domestic retail sales. Furthermore, Figure 8 shows a possible correlation between retail sales and retail rents. Stipulation of a turnover rent⁷ in a retail property rental agreement is quite common.

The causal relationships between real retail rent and real residential rents on Hong Kong Island and in the New Territories are established by using the number of visitors as an instrument for real retail rent. Tourists' consumption supports the growth

⁷ Turnover rent is a rental cost proportional to the tenant's turnover. Tenants need to pay a higher rent if they have a higher sales value.

of real retail rent. Thus, this effect should be much stronger in major tourist shopping districts in Hong Kong⁸, where tourists spend a lot of money on shopping. Central and Western District on Hong Kong Island and Yau Tsim Mong District in the Kowloon Peninsula have been shopping paradises for years. In the New Territories, North District is close to the Lo Wu Control Point, whereas Yuen Long District and Tuen Mun District are near the Shenzhen Bay Control Point. These districts are the first stops for some Mainland visitors who enter Hong Kong via the land boundary control points. Together with Sha Tin District, which has well-developed shopping facilities, all these districts are popular shopping destinations in the New Territories. A higher real retail rent indicates higher real land value in these districts. Table 14 shows that major tourist shopping districts on Hong Kong Island have almost 50% of the total private residential stock on Hong Kong Island, and those in the New Territories have more than 50% of the total private residential stock in the New Territories. However, shopping districts in the Kowloon Peninsula have merely approximately 30% of the total private residential stock in that area. The compilation of rent statistics by the government is based on rental transaction records. Thus, the lower probability of transactions in major shopping districts might be the reason for the insignificant results in the case of the Kowloon Peninsula.

North District, Tai Po District, Yuen Long District, and Tuen Mun District are areas adjacent to the land boundary control points. Parallel traders would purchase a large amount of goods such as daily necessities from these places and take them to the Mainland for resale. Massive demand for goods supports the retail sales in these areas. Furthermore, according to the Legislative Council (2012), “some parallel trade syndicates have rented and used residential units as warehouses and for distribution of goods.” Renting residential units to store inventory is practical for traders and retailers because the rental cost is lower than the cost of a retail unit. When a large demand for retail sales exists, retailers might rent a residential unit as a warehouse to ensure that their supply of goods can meet the demand, thereby reducing the supply of residential

⁸ Hong Kong is composed of 18 districts. Central and Western District, Wan Chai District, Eastern District, and Southern District are located on Hong Kong Island. Yau Tsim Mong District, Sham Shui Po District, Kowloon City District, Wong Tai Sin District, and Kwun Tong District are located in the Kowloon Peninsula. Kwai Tsing District, Tsuen Wan District, Tuen Mun District, Yuen Long District, North District, Tai Po District, Sha Tin District, Sai Kung District, and Islands District are located in the New Territories.

units. This change of use is a possible way of realizing land value growth.

Another possible way of increasing land value is by converting a residential unit into a retail unit. Hong Kong has a number of tenement buildings and composite buildings that are mostly very old; their approximate number is listed in Table 15. Some parts of these buildings, especially the lower floors, allow both residential and commercial activities. The Kowloon Peninsula, being a major shopping destination in Hong Kong, has been attracting many foreign visitors and local citizens. The demand for retail stores remains high. Thus, many flats inside tenement and composite buildings in the Kowloon Peninsula have already been transformed into shops. By contrast, some flats in the New Territories and on Hong Kong Island are still for residential use. Conceivably, higher retail rents would encourage flat owners to lease their dwellings as retail stores in search of higher returns if they are allowed to do so. This conversion from a flat to a shop would lower the supply of flats for rent, thereby boosting the residential rents.

Hong Kong is small in size and densely populated, with a high scarcity of land resources. Aside from tendering for construction projects from government land auctions, real estate developers would sometimes purchase old buildings for redevelopment projects. For instance, a batch of old residential buildings might be redeveloped and converted into a large shopping mall. Higher retail rents would induce the demand for redevelopment projects. Once developers empty the flats after the purchase, the supply of the residential rental market is trimmed down. The location of the redevelopment site hinges on the planning of the developers. Undoubtedly, numerous shopping malls exist in the Kowloon Peninsula. The New Territories and Hong Kong Island, except central business districts, have high potential for the development of more shopping centres.

The results presented in Section 4 might also be the combined results of the following interactions.

First, from the viewpoint of asset pricing, the value of a retail property increases with the present value of its future return, that is, higher rental revenues increase retail property values. Higher retail property values might deter real estate

investors from investing in the retail property market but encourage them to invest in the housing market. Moreover, retailers, which might be individuals, groups, or institutions, might invest in the housing market to expand their portfolios, especially when their retail properties provide them with high cash inflows and collateral values. When the collateral values increase, the demand for residential properties might be stimulated because the collateral allows retail property owners to borrow at lower costs. This idea is similar to that of Aoki, Proudman, and Vlieghe (2002), which states that the collateral value stimulates the consumption and housing investment that might cause housing prices to grow. Triggered by these additional demands, higher housing prices might hinder individuals or families with constrained budgets from purchasing a flat.

Residential rents would increase as buyers raise their demand for rental flats. As shown in Figure 9, the residential rents of the mass segment in the New Territories are generally low, thereby attracting individuals on a tight budget. After the implementation of the IVS, more large retailers set up branches in the New Territories to capture the spending of Mainland visitors via land boundary control points such as Lo Wu and Lok Ma Chau. The opening of these retail shops, which new towns⁹ relatively lack, is the possible cause of the growth in real retail rents in the New Territories. These retail shops provide easier access to a wider range of goods, which improves the living standards in the New Territories and hence raise the demand for flats. Flat owners might also increase the rents when they think that their properties have geographical advantages in becoming retail stores. Furthermore, the presence of popular stores might attract well-off individuals who are willing to accept higher rents to pick nearby houses.

⁹ According to Civil Engineering and Development Department (2014), as of 2013, Hong Kong had nine new towns to cope with the increasing population. The nine new towns can be divided into three generations. The first generation includes Tsuen Wan, Sha Tin, and Tuen Mun, which were developed in the early 1970s. The second includes Tai Po, Fanling/Sheung Shui, and Yuen Long, which were developed in the late 1970s. The third includes Tseung Kwan O, Tin Shui Wai, and Tung Chung, which were developed in the 1980s and 1990s.

5.2 Implication

The effect of the inflow of non-local students on residential rents is found on Hong Kong Island and in Kowloon, meaning that the number of non-local students affects the property market. This effect should be taken into account in any government policies that concern the cost of living in Hong Kong. Although the effect is not significant in the New Territories, it would still depend on the number of students that various universities admit and the housing market accommodates. For instance, when schools in the New Territories admit more non-local students, the housing market might face a higher demand from students who cannot get into student hostels. The market supply and market prices of rental flats could alter where non-local students live. Therefore, more halls of residence are required to meet the students' demand if schools continue to admit more non-local students.

Illegal parallel trading is one of the contributing factors to the growth of retail rents. Combating illegal traders could help lower the burden on residential rents. For other controlled variables, a negative relationship exists between new housing areas completed and residential rents. The government should consider increasing the supply of houses to reduce residential property prices. Moreover, a positive relationship between construction costs and residential rents is observed. Higher construction costs, which are partly caused by the shortage of workers, are eventually transferred to buyers. Importation of workers from other countries/regions could be a short-term remedy. In the long run, the government should increase its effort in attracting local workers to the construction industry.

6. Conclusion

This paper discovers a significant relationship between the number of visitors and real retail rent. With the launch of the IVS in 2003, the influx of Mainland visitors has increased domestic retail sales and retail rents. With the number of visitors as an instrumental variable, the effects of real retail rent on real residential rents are significant in the small/medium-sized flat market in Hong Kong, specifically on Hong Kong Island and in the New Territories. The possible reasons for this finding are as follows: (i) notable portions of flats are located in major shopping districts; (ii) the flats could be converted for commercial use; (iii) the locations of the flats could be redeveloped; and (iv) potential tenants have budgets and location preferences. The order of importance of these factors is uncertain. Thus, further investigation can be carried out in future work. Furthermore, the inflow of non-local students contributes to the residential rent growth on Hong Kong Island and in the Kowloon Peninsula because of their geographical convenience to students.

Tourism is a mainstay of Hong Kong. Tourists' shopping expenditure contributed around 40% of retail sales value in 2013¹⁰. While policies that strengthen this industry should be supported, their effects on the real estate market cannot be ignored. The government should seek to minimize the possible adverse effects of the growth of tourism on the real estate market and other sectors in society without limiting the growth. Other proposals to soothe the upward pressure on residential rents are discussed in the above section. Such approaches include combating illegal parallel trading activities, increasing the housing supply, and lowering labour costs.

¹⁰ See Figure 7.

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8. Appendix: Variable Descriptions

8.1 Variables for the Effects of Visitors on Retail Rent

To study the effects of the inflow of visitors on retail rent, the following variables are constructed:

Real retail rent (RetailRent)

RetailRent is constructed by the rental indices of retail premises in Hong Kong. Data are sourced from the Rating and Valuation Department in Hong Kong and inflation is adjusted.

Number of visitors (Visitor)

Visitor is constructed based on data on the number of visitor arrivals provided by the Hong Kong Tourism Board¹¹. It describes the number of arrivals of all non-residents to Hong Kong through immigration formalities. Data are extracted from the CEIC Database.

Real household consumption expenditure (Consum)

Consum is constructed based on data on the values of private consumption expenditures (in HK\$ million) offered by the Census and Statistics Department in Hong Kong. According to the department, the value refers to the sum of consumption expenditure of Hong Kong residents on goods and services in the domestic and overseas markets less the expenditure of non-residents in the domestic market. In other words, it is a measure of household overall spending on consumption goods and services purchased locally or outside Hong Kong. Data are extracted from the CEIC Database and inflation is adjusted.

Real best lending rate (InterestRate)

HSBC's best lending rate is chosen as the best lending rate in Hong Kong. It is calculated as the simple average of the three monthly rates in the quarter minus the

¹¹ The number of visitor arrivals has long been an official indicator of the performance of tourism in Hong Kong. See Hong Kong Tourism Board (2008).

inflation rate in the past year. Data are extracted from the CEIC Database.

Real building works tender price (BuildingCost)

Compiled by the Architectural Services Department in Hong Kong, the Building Works Tender Price Index represents the tender price levels of new building works undertaken by the department. It is used to approximate the costs of construction in Hong Kong. Data are sourced from the Architectural Services Department and inflation is adjusted.

New retail internal floor area (NewRetailArea)

The series of “completion of new property by the private sector: other commercial premises” (in thousand square meters), which is offered by the Financial Secretary’s Office, represents the supply of retail space. According to the Financial Secretary’s Office (2014), “retail premises and other premises designed or adapted for commercial use, with the exception of purpose-built offices” are included in the “other commercial premises”, while “car-parking space and commercial premises built by the Hong Kong Housing Authority and the Hong Kong Housing Society” are excluded. Data are extracted from the CEIC Database.

8.2 Variables for the Effects of Retail Rent on Residential Rents on Hong Kong Island, in the Kowloon Peninsula, and the New Territories

The effects of retail rent on residential rents in Hong Kong are studied, with Hong Kong being split into Hong Kong Island, the Kowloon Peninsula, and the New Territories. The following variables are constructed and studied with the explanatory variables listed.

8.2.1 Explained Variables

Real residential rent in the mass segment of Hong Kong Island (FlatRentMassHK)

FlatRentMassHK is constructed by calculating simple mean among (i) the average rent of private domestic premises located on Hong Kong Island and

categorized as Class A by the Rating and Valuation Department¹², (ii) the average rent of private domestic premises located on Hong Kong Island and categorized as Class B by the Rating and Valuation Department¹³, and (iii) the average rent of private domestic premises located on Hong Kong Island and categorized as Class C by the Rating and Valuation Department¹⁴. The data of the average rents are sourced from the Rating and Valuation Department, and inflation is adjusted.

Real residential rent in the mass segment of the Kowloon Peninsula (FlatRentMassKL)

FlatRentMassKL is constructed by calculating the simple mean among (i) the average rent of private domestic premises located in the Kowloon Peninsula and categorized as Class A by the Rating and Valuation Department, (ii) the average rent of private domestic premises located in the Kowloon Peninsula and categorized as Class B by the Rating and Valuation Department, and (iii) the average rent of private domestic premises located in the Kowloon Peninsula and categorized as Class C by the Rating and Valuation Department. The data of the average rents are sourced from the Rating and Valuation Department, and inflation is adjusted.

Real residential rent in the mass segment of the New Territories (FlatRentMassNT)

FlatRentMassNT is constructed by calculating the simple mean among (i) the average rent of private domestic premises located in the New Territories and categorized as Class A by the Rating and Valuation Department, (ii) the average rent of private domestic premises located in the New Territories and categorized as Class B by the Rating and Valuation Department, and (iii) the average rent of private domestic premises located in the New Territories and categorized as Class C by the Rating and Valuation Department. The data of the average rents are sourced from the Rating and Valuation Department, and inflation is adjusted.

¹² The units categorized as Class A by the Rating and Valuation Department have a saleable area of less than 40 square meters.

¹³ The units categorized as Class B by the Rating and Valuation Department have a saleable area of 40 square meters to 69.9 square meters.

¹⁴ The units categorized as Class C by the Rating and Valuation Department have a saleable area of 70 square meters to 99.9 square meters.

8.2.2 Main Explanatory Variable and Other Controlled Variables

(i) Explanatory Variable

Real retail rent (RetailRent) with number of visitors (Visitor) as an instrument

The description is presented in Section 8.1.

(ii) Other controlled variables

Real payroll index (Payroll)

Provided by the Census and Statistics Department, the payroll index indicates the overall movement of average labour earnings, which cover wages and salaries, bonuses and gratuities, commissions, allowances, and cash payments in other forms paid directly to employees in Hong Kong. The real index is obtained after inflation adjustment. Data are extracted from the CEIC Database.

Real best lending rate (InterestRate)

The description is presented in Section 8.1.

Number of domestic households (Household)

Provided by the Census and Statistics Department, the number of domestic households measures the number of groups of people living together and making common provision for essentials for living in Hong Kong.

New residential usable floor area (NewHouseArea)

Provided by the Buildings Department in Hong Kong, the total new residential usable floor area completed in a quarter (in thousand square meters) is used to represent the supply of residential properties in Hong Kong. Data are extracted from the CEIC Database.

Real building works tender price (BuildingCost)

The description is presented in Section 8.1.

8.2.3 Additional Explanatory Variables

The number of visitor arrivals might affect the residential property market through other ways. Therefore, the following variables are controlled so that the effects of real retail rent on real residential rent can be shown using the number of visitor arrivals as an instrument.

Real average achieved hotel room rate for all hotels (HotelRoomRate)

Data provided by Hong Kong Tourism Board are extracted from the CEIC Database. Inflation is adjusted.

Hotel room occupancy rate for all hotels (HotelOccRate)

Data provided by Hong Kong Tourism Board are extracted from the CEIC Database.

Real office rent (OfficeRent)

Data are sourced from the Rating and Valuation Department, and inflation is adjusted.

Real factory rent (FactoryRent)

Data are sourced from the Rating and Valuation Department, and inflation is adjusted.

Real oil price (OilPrice)

The variable is constructed with the price of Brent crude oil. Data are extracted from Datastream, and inflation is adjusted.

Real effective exchange rate index for the Hong Kong dollar (ExchangeHKD)

Data provided by the Bank for International Settlements are extracted from the CEIC Database. The Broad index incorporating 61 economies is chosen to represent the value of the Hong Kong dollar against other currencies, weighted by the trading patterns.

Hang Seng Index in real term (HSI)

Data are extracted from Datastream, and inflation is adjusted.

MSCI All Country World Index in real term (MSCI)

Data are extracted from Datastream, and inflation is adjusted.

Real GDP in China (ChinaGDP)

Data are extracted from the CEIC Database, and inflation is adjusted.

8.3 Variables for the Effects of the Inflow of Non-local Students on Residential Rents on Hong Kong Island, in the Kowloon Peninsula, and the New Territories

The inflow of non-local students might stimulate the growth of residential rents because of the possible inadequacy of student hostels at universities. To check if the effect is significant, the effects of this inflow on flats in the mass segment are tested. This factor is not tested in the case of the luxury segment because we assume non-local students mainly prefer small/medium-sized flats. Explained variables are (i) real residential rent in the mass segment of Hong Kong Island (*FlatRentMassHK*), (ii) real residential rent in the mass segment of the Kowloon Peninsula (*FlatRentMassKL*), and (iii) real residential rent in the mass segment of the New Territories (*FlatRentMassNT*), while controlled variables would be the same as Section 8.2.2, with an additional explanatory variable to show the effect of students coming from other countries/regions.

8.3.1 Main Explanatory Variable

Number of non-local students (Nonlocalstudent)

The variable is mainly constructed based on the annual number of student visas issued by the Immigration Department in Hong Kong. The number of students during an academic year, for instance, the academic year from 2010 Q3 to 2011 Q2, is assumed to remain unchanged. However, the Immigration Department offers the statistics from 2004 to 2013 only. The numbers of non-local students studying in Hong Kong before 2004 are approximated by the non-local student enrolment numbers of the programmes funded by the University Grants Committee (UGC) in

Hong Kong. The UGC continued to subsidize a large amount of tertiary programmes before 2004. Thus, underestimation of total number of non-local students is assumed negligible. Nevertheless, it is not the case after 2004. According to the Legislative Council (2003), the former Secretary for Education and Manpower, Professor Arthur K. C. Li, mentioned that the UGC would withdraw subventions for publicly funded sub-degree and taught postgraduate programmes starting from the academic year 2004/05. Table 16 shows a decrease in the number of taught postgraduate programmes funded by the UGC after the academic year 2003/04. Some of the tertiary programmes have become self-financing, and the statistics on these programmes are generally not disclosed. Referring to the *Key Statistics on Post-Secondary Education* prepared by the Education Bureau (2014), enrolment of non-local students in taught postgraduate programmes is not available before the academic year 2010/11. However, the available data show that the number of non-local students undertaking taught postgraduate programmes constitutes a certain proportion of the total number of non-local students each year. The figures of non-local student enrolments in taught postgraduate programmes in the academic years 2010/11, 2011/12, 2012/13, and 2013/14 are 6,800 (40.8% of the total number of student visas approved in 2010), 8,900 (43.8% of the total number of student visas approved in 2011), 11,300 (46.6% of the total number of student visas approved in 2012), and 13,600 (48.7% of the total number of student visas approved in 2013), respectively. Therefore, the UGC records underestimate the total number of non-local students studying in Hong Kong after 2004. Hence, instead of the figures provided by the UGC, the statistics on student visa approval offered by the Immigration Department are chosen for the analysis from 2004 onwards.

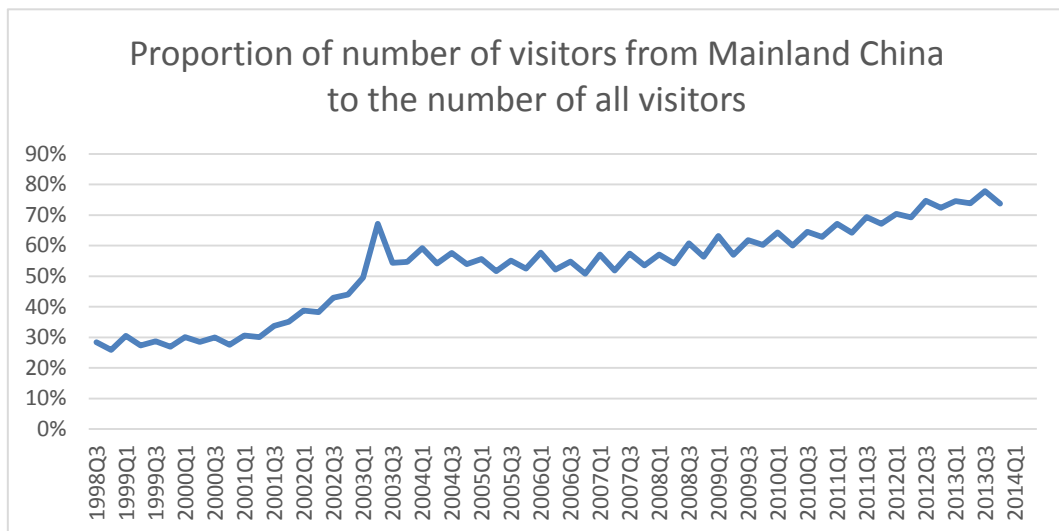
9. Appendix: Figures and Tables

Figure 1 Number of visitor arrivals and number of Mainland China visitors



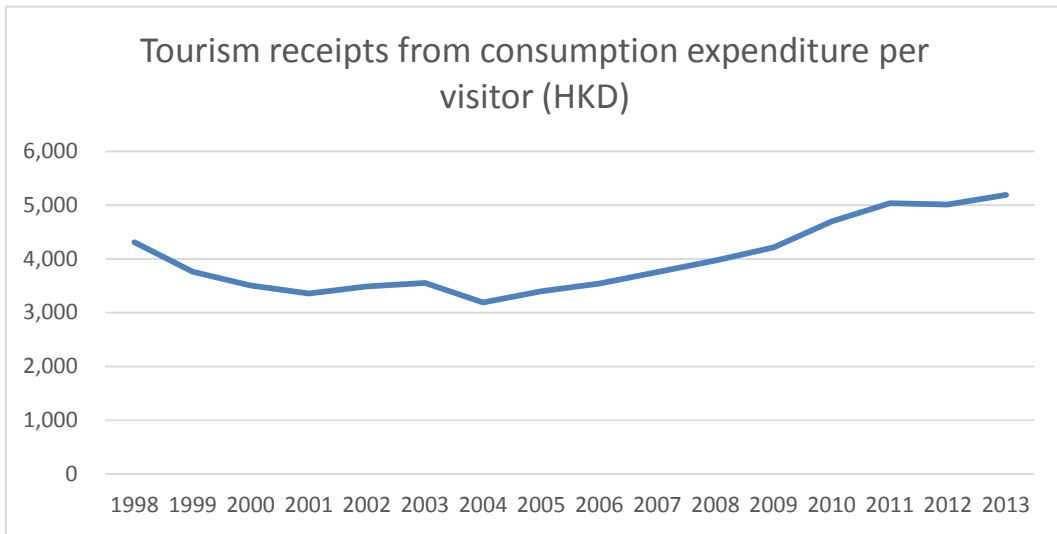
Source: CEIC Database

Figure 2 Proportion of number of visitors from Mainland China to number of all visitors

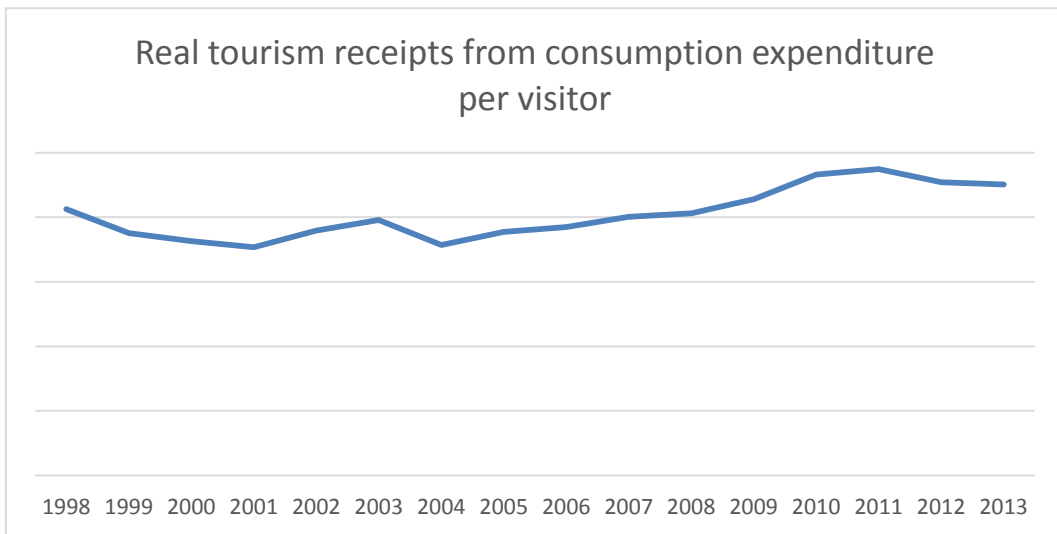


Source: CEIC Database

Figure 3 Tourism receipts from consumption expenditure per visitor (HKD)

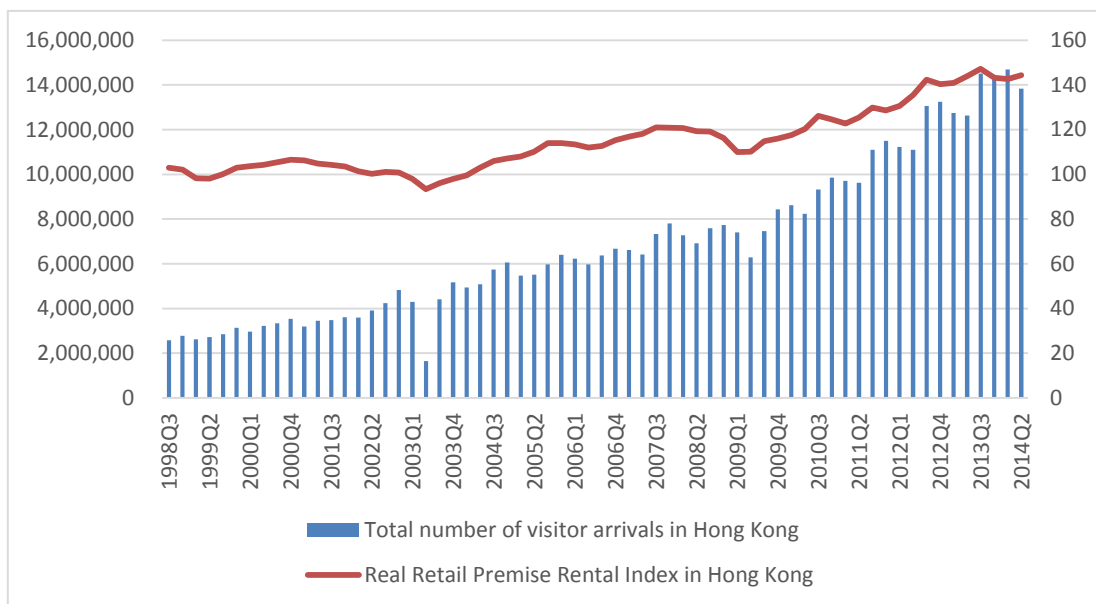
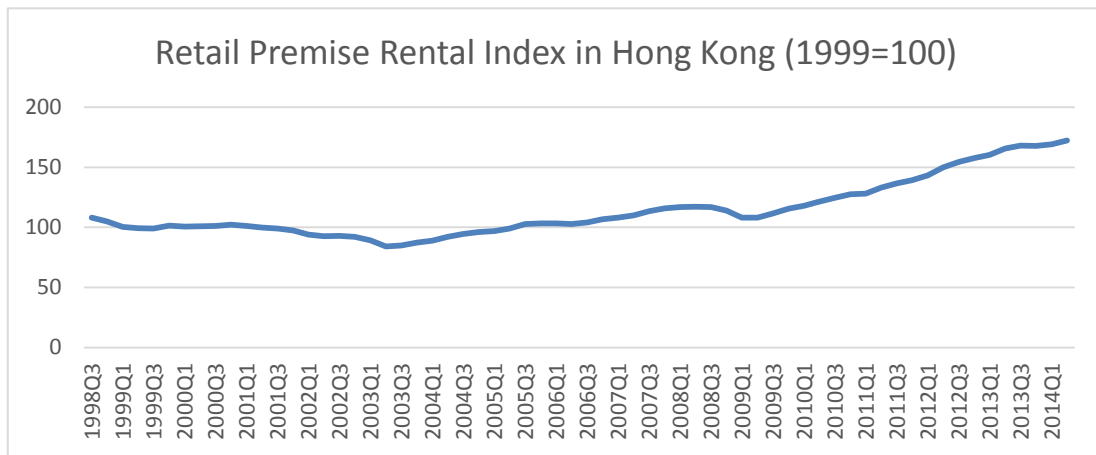
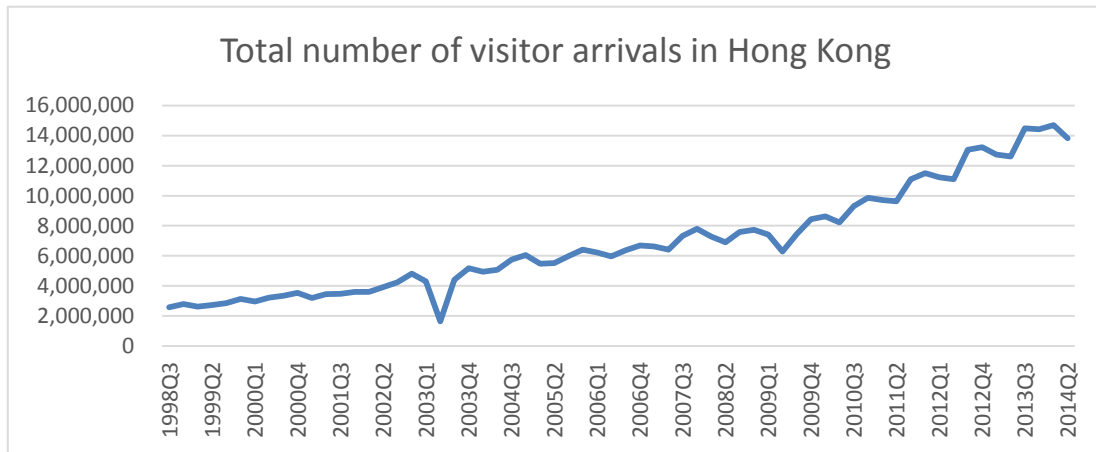


Source: CEIC Database



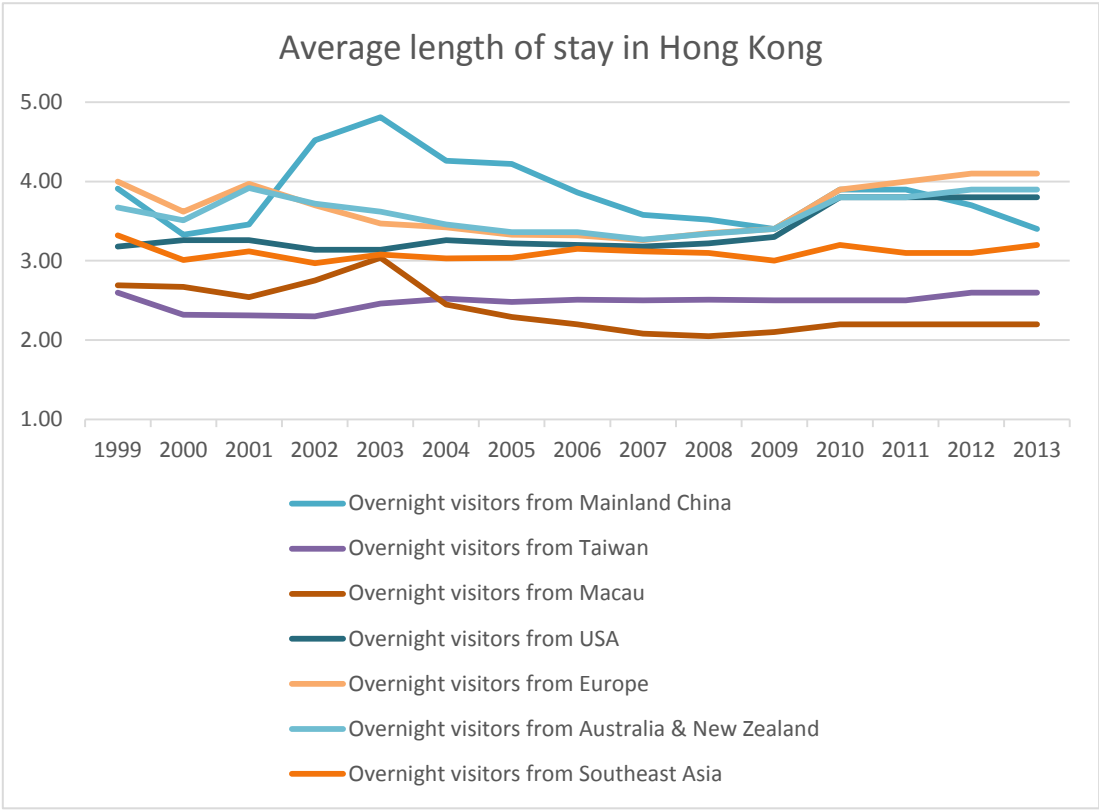
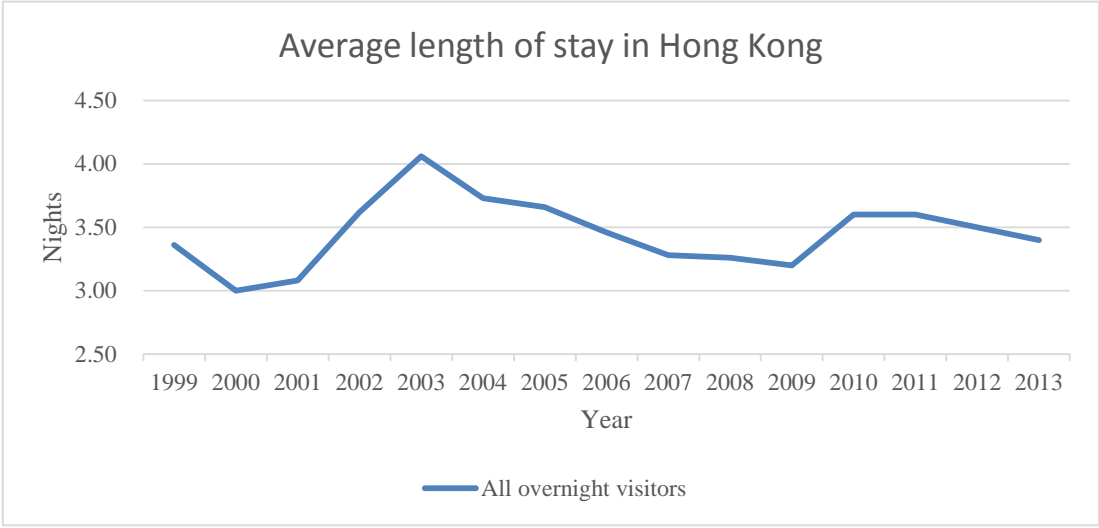
Source: CEIC Database, Census and Statistics Department

Figure 4 Number of visitor arrivals and retail premise rental index in Hong Kong



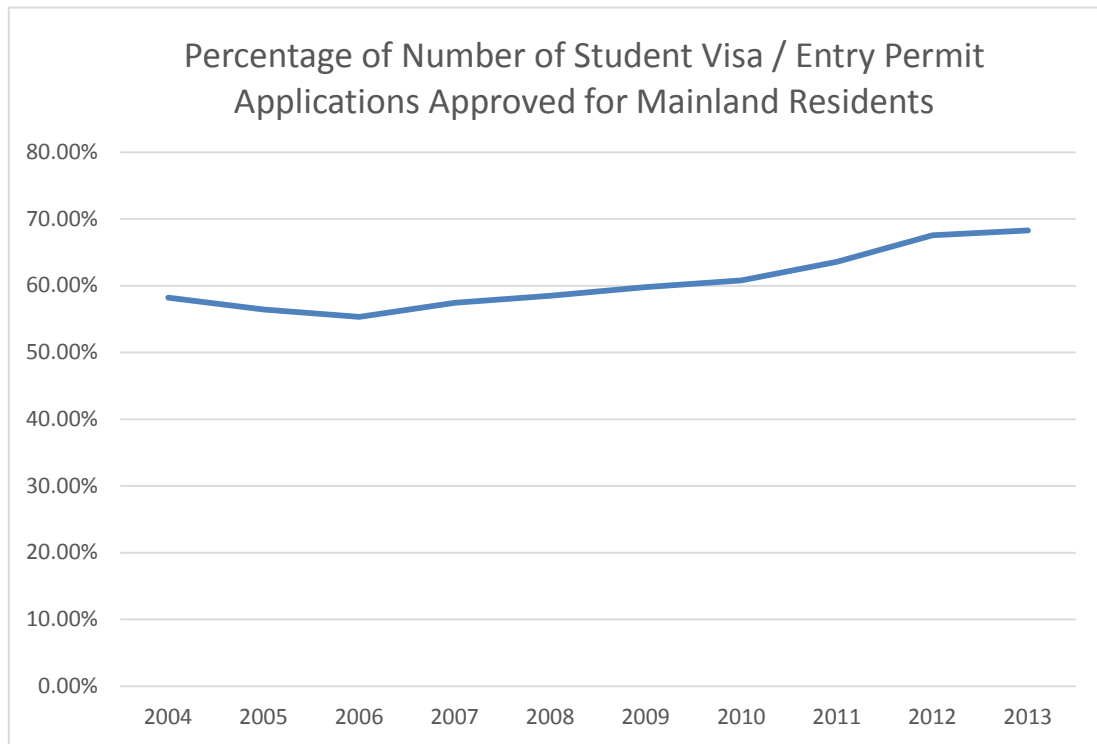
Source: CEIC Database

Figure 5 Average length of stay in Hong Kong of all overnight visitors and overnight visitors from some regions



Source: CEIC Database

Figure 6 Percentage of number of student visa/entry permit applications approved for Mainland residents



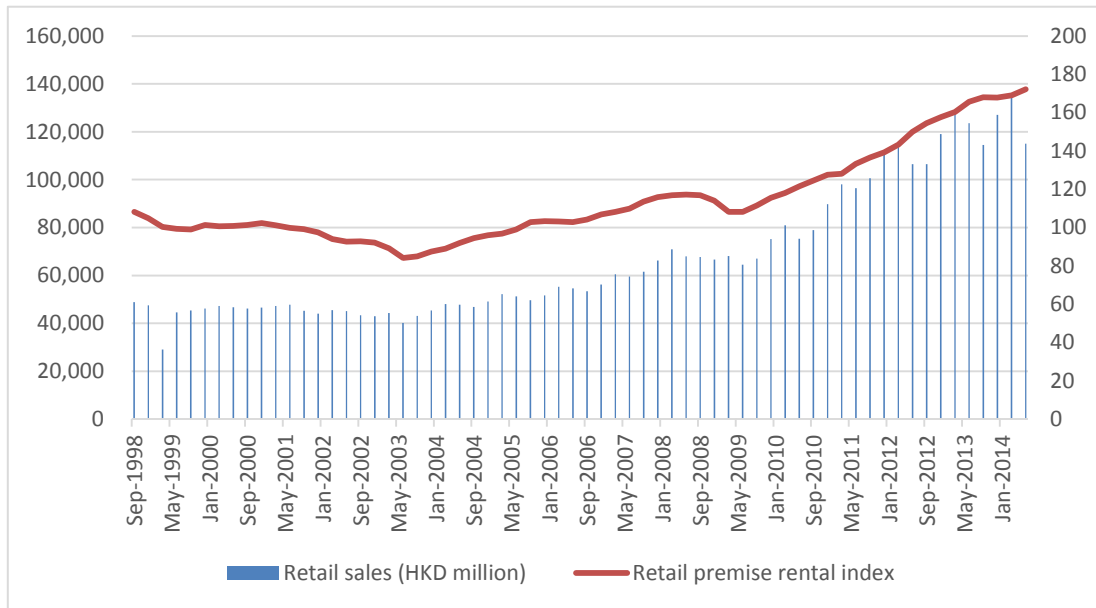
Source: Immigration Department

Figure 7 Percentage of visitor spending on shopping against total retail sales in Hong Kong



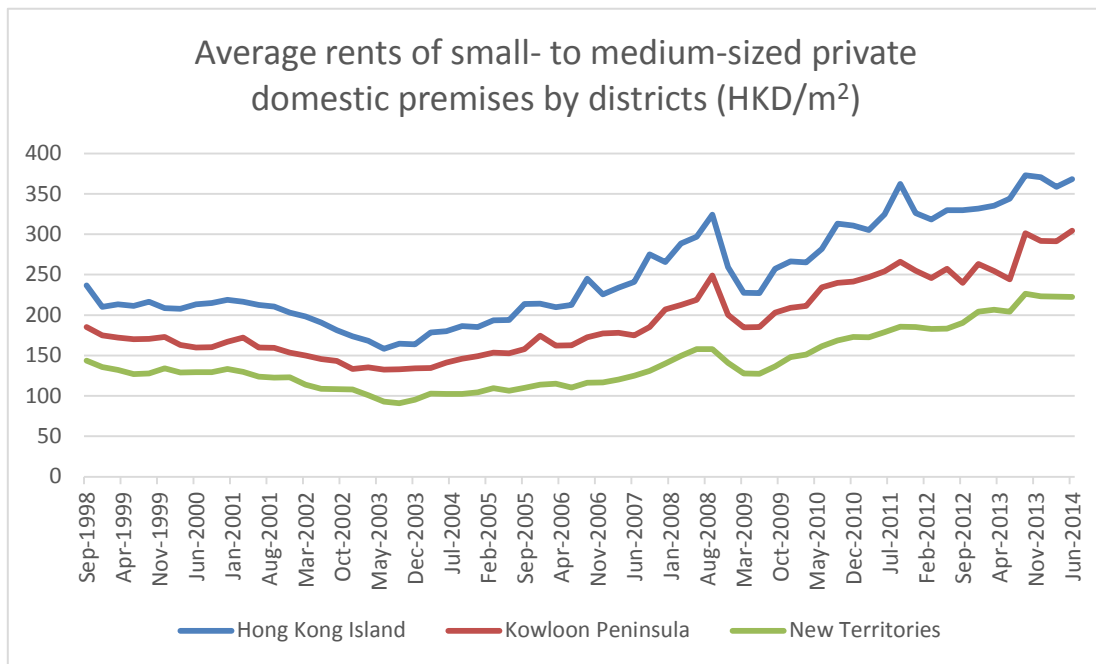
Source: CEIC Database, Census and Statistics Department

Figure 8 Retail sales and retail premise rental index



Source: Census and Statistics Department, Rating and Valuation Department

Figure 9 Average rents of small- to medium-sized private domestic premises by districts (HKD/m²)



Sources: Rating and Valuation Department

Table 1 Timeline of opening up 49 Mainland cities from July 2003 to January 2007 under the IVS

Date of opening	Cities opened under the IVS
28 July 2003	Guangdong Province: Dongguan, Zhongshan, Jiangmen, Foshan
20 August 2003	Guangdong Province: Guangzhou, Shenzhen, Zhuhai, Huizhou
1 September 2003	Municipalities directly under the Central Government: Shanghai and Beijing
1 January 2004	Guangdong Province: Shantou, Chaozhou, Meizhou, Zhaoqing, Qingyuan, Yunfu
1 May 2004	Guangdong Province: Zhangjiang, Shaoguan, Heyuan, Maoming, Yangjiang, Jieyang, Shanwei
1 July 2004	Fujian Province: Fuzhou, Xiamen, Quanzhou; Jiangsu Province: Nanjing, Suzhou, Wuxi; Zhejiang Province: Hangzhou, Ningbo, Taizhou
1 March 2005	Municipalities directly under the Central Government: Tianjin and Chongqing
1 November 2005	Shenyang, Dalian, Jinan, Chengdu
1 May 2006	Changsha, Nanchang, Nanning, Kunming, Guiyang, Haikou
1 January 2007	Shijiazhuang, Changchun, Hefei, Zhengzhou, Wuhan

Source: Commerce and Economic Development Bureau (2013)

Table 2 Unit root tests (Phillips and Perron tests for data from 1998 Q3 to 2014 Q2)

	Z(t)	p-value		Z(t)	p-value
RetailRent	0.44	0.98	$\Delta\ln(\text{RetailRent})$	-5.49	0.00
Visitor	0.83	0.99	$\Delta\ln(\text{Visitor})$	-14.36	0.00
Consum	-0.20	0.94	$\Delta\ln(\text{Consum})$	-18.09	0.00
InterestRate	-1.26	0.65	$\Delta(\text{InterestRate})$	-6.11	0.00
BuildingCost	-0.59	0.87	$\Delta\ln(\text{BuildingCost})$	-5.88	0.00
NewRetailArea	-8.56	0.00	$\Delta(\text{NewRetailArea})$	-19.78	0.00
FlatRentMassHK	-1.05	0.73	$\Delta\ln(\text{FlatRentMassHK})$	-8.74	0.00
FlatRentMassKL	-0.68	0.85	$\Delta\ln(\text{FlatRentMassKL})$	-9.32	0.00
FlatRentMassNT	-0.28	0.93	$\Delta\ln(\text{FlatRentMassNT})$	-5.81	0.00
Payroll	-5.25	0.00	$\Delta\ln(\text{Payroll})$	-35.03	0.00
Household	-1.80	0.38	$\Delta\ln(\text{Household})$	-8.56	0.00
NewHouseArea	-4.91	0.00	$\Delta\ln(\text{NewHouseArea})$	-17.45	0.00
HotelRoomRate	-1.90	0.33	$\Delta\ln(\text{HotelRoomRate})$	-15.31	0.00
HotelOccRate	-6.06	0.00	$\Delta\ln(\text{HotelOccRate})$	-15.32	0.00
OfficeRent	-0.14	0.95	$\Delta\ln(\text{OfficeRent})$	-3.78	0.00
FactoryRent	0.35	0.98	$\Delta\ln(\text{FactoryRent})$	-4.66	0.00
OilPrice	-1.45	0.56	$\Delta\ln(\text{OilPrice})$	-5.88	0.00
ExchangeHKD	-3.06	0.03	$\Delta\ln(\text{ExchangeHKD})$	-6.70	0.00
HSI	-2.55	0.10	$\Delta\ln(\text{HSI})$	-6.12	0.00
MSCI	-2.17	0.22	$\Delta\ln(\text{MSCI})$	-4.72	0.00
ChinaGDP	-0.31	0.92	$\Delta\ln(\text{ChinaGDP})$	-31.11	0.00
NonlocalStudent	4.59	1.00	$\Delta\ln(\text{NonlocalStudent})$	-11.73	0.00

Table 3 Summary statistics for data from 1998 Q3 to 2014 Q2

	Mean	S.D.	Min	Max
$\Delta\ln(\text{RetailRent})$	0.005	0.022	-0.056	0.05
$\Delta\ln(\text{Visitor})$	0.027	0.19	-0.961	0.987
$\Delta\ln(\text{Consum})$	0.008	0.046	-0.092	0.087
$\Delta(\text{InterestRate})$	-0.001	0.012	-0.025	0.029
$\Delta\ln(\text{BuildingCost})$	0.005	0.053	-0.164	0.139
$\Delta\ln(\text{NewRetailArea})$	-0.032	1.429	-3.466	3.106
$\Delta\ln(\text{HouseRentMassHK})$	0.005	0.065	-0.224	0.137
$\Delta\ln(\text{HouseRentMassKL})$	0.006	0.06	-0.217	0.219
$\Delta\ln(\text{HouseRentMassNT})$	0.005	0.043	-0.114	0.11
$\Delta\ln(\text{Payroll})$	0.004	0.08	-0.147	0.106
$\Delta\ln(\text{Household})$	0.003	0.003	-0.006	0.012
$\Delta\ln(\text{NewHouseArea})$	-0.006	0.745	-2.378	1.651
$\Delta\ln(\text{HotelRoomRate})$	0.008	0.115	-0.18	0.29
$\Delta\ln(\text{HotelOccRate})$	0.002	0.222	-1.203	1.194
$\Delta\ln(\text{OfficeRent})$	0.006	0.039	-0.111	0.069
$\Delta\ln(\text{FactoryRent})$	0.003	0.025	-0.072	0.042
$\Delta\ln(\text{OilPrice})$	0.028	0.147	-0.712	0.301
$\Delta\ln(\text{ExchangeHKD})$	-0.007	0.023	-0.079	0.07
$\Delta\ln(\text{HSI})$	0.015	0.108	-0.371	0.253
$\Delta\ln(\text{MSCI})$	0.002	0.078	-0.35	0.129
$\Delta\ln(\text{ChinaGDP})$	0.029	0.207	-0.359	0.306
$\Delta\ln(\text{NonlocalStudent})$	0.048	0.1	0	0.557

Table 4 Regression results of the relationship between the number of visitor arrivals in Hong Kong and real retail rents

Data for the period from 1998 Q3 to 2014 Q2

VARIABLES	$\Delta \ln(\text{RetailRent})_t$
$\Delta \ln(\text{Visitor})_t$	0.0522*** (0.0108)
Constant	0.00398 (0.00268)
Observations	63
R-squared	0.209

Heteroskedasticity-autocorrelation consistent (HAC) standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

VARIABLES	$\Delta \ln(\text{RetailRent})_t$
$\Delta \ln(\text{Visitor})_t$	0.0475*** (0.00772)
$\Delta \ln(\text{Consum})_t$	0.0701* (0.0371)
$\Delta \ln(\text{InterestRate})_t$	-0.0169 (0.198)
$\Delta \ln(\text{BuildingCost})_t$	0.141*** (0.0543)
$\Delta \ln(\text{NewRetailArea})_t$	-0.000352 (0.000721)
Constant	0.00284 (0.00196)
Observations	63
R-squared	0.342

Heteroskedasticity-autocorrelation consistent (HAC) standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 5 First-stage regression results of the 2SLS regression for the relationship between real retail rents and real residential rents in Hong Kong

Data for the period from 1998 Q3 to 2014 Q2

VARIABLES	$\Delta \ln(\text{RetailRent})_t$	(Continued) VARIABLES	$\Delta \ln(\text{RetailRent})_t$
$\Delta \ln(\text{Payroll})_t$	-0.000675 (0.0288)	$\Delta \ln(\text{FactoryRent})_t$	0.491*** (0.124)
$\Delta(\text{InterestRate})_t$	0.207** (0.0840)	$\Delta \ln(\text{OilPrice})_t$	0.00180 (0.0144)
$\Delta \ln(\text{Household})_t$	0.171 (0.339)	$\Delta \ln(\text{ExchangeHKD})_t$	0.0357 (0.0457)
$\Delta \ln(\text{NewHouseArea})_t$	0.000462 (0.00110)	$\Delta \ln(\text{HSI})_t$	0.0399** (0.0193)
$\Delta \ln(\text{BuildingCost})_t$	-0.0352* (0.0203)	$\Delta \ln(\text{MSCI})_t$	-0.00551 (0.0335)
$\Delta \ln(\text{HotelRoomRate})_t$	-0.0485*** (0.0124)	$\Delta \ln(\text{ChinaGDP})_t$	0.0233** (0.0112)
$\Delta \ln(\text{HotelOccRate})_t$	-0.0884*** (0.0320)	$\Delta \ln(\text{Visitor})_t$	0.130*** (0.0426)
$\Delta \ln(\text{OfficeRent})_t$	0.142** (0.0675)	Constant	-0.00121 (0.00153)
Observations	:	63	
First-stage F-stat for $\Delta \ln(\text{Visitor})$:	9.39	

Heteroskedasticity-autocorrelation consistent (HAC) standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 6 Second-stage regression results of the 2SLS regression for the relationship between real retail rents and real residential rents in the mass segment of Hong Kong Island

Data for the period from 1998 Q3 to 2014 Q2

VARIABLES	$\Delta \ln(\text{FlatRent MassHK})_t$	(Continued) VARIABLES	$\Delta \ln(\text{FlatRent MassHK})_t$
$\Delta \ln(\text{RetailRent})_t$	2.348* (1.172)	$\Delta \ln(\text{OfficeRent})_t$	-0.0270 (0.269)
$\Delta \ln(\text{Payroll})_t$	0.0781 (0.104)	$\Delta \ln(\text{FactoryRent})_t$	-0.314 (0.588)
$\Delta(\text{InterestRate})_t$	-0.605 (0.524)	$\Delta \ln(\text{OilPrice})_t$	0.0280 (0.0634)
$\Delta \ln(\text{Household})_t$	3.922* (2.084)	$\Delta \ln(\text{ExchangeHKD})_t$	-0.201 (0.371)
$\Delta \ln(\text{NewHouseArea})_t$	-0.0153* (0.00881)	$\Delta \ln(\text{HSI})_t$	-0.139 (0.132)
$\Delta \ln(\text{BuildingCost})_t$	0.211 (0.130)	$\Delta \ln(\text{MSCI})_t$	0.206 (0.143)
$\Delta \ln(\text{HotelRoomRate})_t$	-0.249** (0.110)	$\Delta \ln(\text{ChinaGDP})_t$	0.0593 (0.0645)
$\Delta \ln(\text{HotelOccRate})_t$	-0.00424 (0.0243)	Constant	-0.0217*** (0.00806)

Observations : 63

R-squared : 0.607

p-value of Anderson-Rubin Wald test for : 0.0406

$\Delta \ln(\text{RetailRent})$ under F-Distribution

Heteroskedasticity-autocorrelation consistent (HAC) standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7 Second-stage regression results of the 2SLS regression for the relationship between real retail rents and real residential rents in the mass segment of the Kowloon Peninsula

Data for the period from 1998 Q3 to 2014 Q2

VARIABLES	$\Delta \ln(\text{FlatRent MassKL})_t$	(Continued) VARIABLES	$\Delta \ln(\text{FlatRent MassKL})_t$
$\Delta \ln(\text{RetailRent})_t$	0.410 (1.079)	$\Delta \ln(\text{OfficeRent})_t$	-0.0732 (0.417)
$\Delta \ln(\text{Payroll})_t$	0.288*** (0.107)	$\Delta \ln(\text{FactoryRent})_t$	0.547 (0.546)
$\Delta(\text{InterestRate})_t$	-1.042 (0.712)	$\Delta \ln(\text{OilPrice})_t$	0.0948* (0.0561)
$\Delta \ln(\text{Household})_t$	4.044* (2.037)	$\Delta \ln(\text{ExchangeHKD})_t$	0.257 (0.332)
$\Delta \ln(\text{NewHouseArea})_t$	-0.00412 (0.0104)	$\Delta \ln(\text{HSI})_t$	0.0324 (0.0951)
$\Delta \ln(\text{BuildingCost})_t$	0.200*** (0.0703)	$\Delta \ln(\text{MSCI})_t$	0.00867 (0.144)
$\Delta \ln(\text{HotelRoomRate})_t$	-0.231*** (0.0736)	$\Delta \ln(\text{ChinaGDP})_t$	0.156*** (0.0579)
$\Delta \ln(\text{HotelOccRate})_t$	-0.0338 (0.0338)	Constant	-0.0183** (0.00791)

Observations : 63

R-squared : 0.462

p-value of Anderson-Rubin Wald test for : 0.714

$\Delta \ln(\text{RetailRent})_t$ under F-Distribution

Heteroskedasticity-autocorrelation consistent (HAC) standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8 Second-stage regression results of the 2SLS regression for the relationship between real retail rents and real residential rents in the mass segment of the New Territories

Data for the period from 1998 Q3 to 2014 Q2

VARIABLES	$\Delta \ln(\text{FlatRent MassNT})_t$	(Continued) VARIABLES	$\Delta \ln(\text{FlatRent MassNT})_t$
$\Delta \ln(\text{RetailRent})_t$	1.205 (0.740)	$\Delta \ln(\text{OfficeRent})_t$	-0.0730 (0.189)
$\Delta \ln(\text{Payroll})_t$	0.196*** (0.0570)	$\Delta \ln(\text{FactoryRent})_t$	0.272 (0.384)
$\Delta(\text{InterestRate})_t$	-0.772* (0.388)	$\Delta \ln(\text{OilPrice})_t$	0.0429 (0.0299)
$\Delta \ln(\text{Household})_t$	0.690 (0.977)	$\Delta \ln(\text{ExchangeHKD})_t$	-0.110 (0.0884)
$\Delta \ln(\text{NewHouseArea})_t$	-0.00679** (0.00297)	$\Delta \ln(\text{HSI})_t$	-0.0796 (0.0612)
$\Delta \ln(\text{BuildingCost})_t$	0.0805 (0.0589)	$\Delta \ln(\text{MSCI})_t$	0.119 (0.0875)
$\Delta \ln(\text{HotelRoomRate})_t$	-0.0601 (0.0660)	$\Delta \ln(\text{ChinaGDP})_t$	0.0796** (0.0331)
$\Delta \ln(\text{HotelOccRate})_t$	-0.0242* (0.0139)	Constant	-0.00904* (0.00520)
Observations	:	63	
R-squared	:	0.707	
p-value of Anderson-Rubin Wald test for: $\Delta \ln(\text{RetailRent})_t$ under F-Distribution	:	0.0226	

Heteroskedasticity-autocorrelation consistent (HAC) standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 9 Regression results for the relationship between non-local students and real residential rents in Hong Kong

Data for the period from 1998 Q3 to 2014 Q2

VARIABLES	$\Delta \ln(\text{FlatRent MassHK})_t$	$\Delta \ln(\text{FlatRent MassKL})_t$	$\Delta \ln(\text{FlatRent MassNT})_t$
$\Delta \ln(\text{NonlocalStudent})_t$	0.173* (0.101)	0.113** (0.0540)	-0.00735 (0.0484)
$\Delta \ln(\text{Payroll})_t$	-0.0665 (0.0629)	0.124** (0.0574)	0.149** (0.0578)
$\Delta(\text{InterestRate})_t$	-0.543 (0.404)	-1.224** (0.527)	-1.018*** (0.218)
$\Delta \ln(\text{Household})_t$	4.216*** (1.349)	4.778** (2.304)	1.511* (0.815)
$\Delta \ln(\text{NewHouseArea})_t$	-0.0170* (0.00981)	-0.00823 (0.0103)	-0.00864* (0.00456)
$\Delta \ln(\text{BuildingCost})_t$	0.320*** (0.0983)	0.344*** (0.0781)	0.159** (0.0733)
$\Delta \ln(\text{MSCI})_t$	0.111** (0.0539)	0.130* (0.0708)	0.0887*** (0.0291)
$\Delta \ln(\text{ChinaGDP})_t$	-0.0528 (0.0320)	0.0461 (0.0383)	0.0442** (0.0173)
$\Delta \ln(\text{RetailRent})_t^{15}$	1.071*** (0.268)		1.052*** (0.186)
Constant	-0.0237*** (0.00735)	-0.0205*** (0.00753)	-0.00929** (0.00409)
Observations	63	63	63
R-squared	0.654	0.378	0.677

Heteroskedasticity-autocorrelation consistent (HAC) standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

¹⁵ $\Delta \ln(\text{RetailRent})$ is not controlled in the case of Kowloon because of its insignificant result found in Table 7.

Table 10 First-stage regression results of the 2SLS regression for the relationship between real retail rents and real residential rents in Hong Kong, with a dummy variable for the SARS epidemic outbreak

Data for the period from 1998 Q3 to 2014 Q2

VARIABLES	$\Delta \ln(\text{RetailRent})_t$	(Continued) VARIABLES	$\Delta \ln(\text{RetailRent})_t$
$\Delta \ln(\text{Payroll})_t$	0.000800 (0.0302)	$\Delta \ln(\text{OilPrice})_t$	0.00392 (0.0179)
$\Delta(\text{InterestRate})_t$	0.205** (0.0881)	$\Delta \ln(\text{ExchangeHKD})_t$	0.0360 (0.0474)
$\Delta \ln(\text{Household})_t$	0.125 (0.299)	$\Delta \ln(\text{HSI})_t$	0.0398** (0.0192)
$\Delta \ln(\text{NewHouseArea})_t$	0.000477 (0.00109)	$\Delta \ln(\text{MSCI})_t$	-0.00928 (0.0393)
$\Delta \ln(\text{BuildingCost})_t$	-0.0363* (0.0210)	$\Delta \ln(\text{ChinaGDP})_t$	0.0234** (0.0113)
$\Delta \ln(\text{HotelRoomRate})_t$	-0.0482*** (0.0124)	$\Delta(\text{DummySARS})_t$	-0.00337 (0.00614)
$\Delta \ln(\text{HotelOccRate})_t$	-0.0894*** (0.0316)	$\Delta \ln(\text{Visitor})_t$	0.129*** (0.0442)
$\Delta \ln(\text{OfficeRent})_t$	0.137** (0.0611)	Constant	-0.00109 (0.00159)
$\Delta \ln(\text{FactoryRent})_t$	0.502*** (0.115)		
Observations	:	63	
First-stage F-stat for $\Delta \ln(\text{Visitor})$:	8.58	

Heteroskedasticity-autocorrelation consistent (HAC) standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 11 Second-stage regression results of the 2SLS regression for the relationship between real retail rents and real residential rents in the mass segment of Hong Kong Island, with a dummy variable for the SARS epidemic outbreak

Data for the period from 1998 Q3 to 2014 Q2

VARIABLES	$\Delta \ln(\text{FlatRent MassHK})_t$	(Continued) VARIABLES	$\Delta \ln(\text{FlatRent MassHK})_t$
$\Delta \ln(\text{RetailRent})_t$	2.384** (0.920)	$\Delta \ln(\text{FactoryRent})_t$	-0.382 (0.497)
$\Delta \ln(\text{Payroll})_t$	0.0711 (0.101)	$\Delta \ln(\text{OilPrice})_t$	0.0179 (0.0680)
$\Delta(\text{InterestRate})_t$	-0.604 (0.537)	$\Delta \ln(\text{ExchangeHKD})_t$	-0.204 (0.359)
$\Delta \ln(\text{Household})_t$	4.135*** (1.510)	$\Delta \ln(\text{HSI})_t$	-0.140 (0.113)
$\Delta \ln(\text{NewHouseArea})_t$	-0.0153* (0.00778)	$\Delta \ln(\text{MSCI})_t$	0.224 (0.163)
$\Delta \ln(\text{BuildingCost})_t$	0.217 (0.134)	$\Delta \ln(\text{ChinaGDP})_t$	0.0581 (0.0780)
$\Delta \ln(\text{HotelRoomRate})_t$	-0.249* (0.125)	$\Delta(\text{DummySARS})_t$	0.0159 (0.0210)
$\Delta \ln(\text{HotelOccRate})_t$	0.00390 (0.0259)	Constant	-0.0223*** (0.00718)
$\Delta \ln(\text{OfficeRent})_t$	-0.00803 (0.248)		

Observations : 63

R-squared : 0.604

p-value of Anderson-Rubin Wald test for : 0.0442

$\Delta \ln(\text{RetailRent})$ under F-Distribution

Heteroskedasticity-autocorrelation consistent (HAC) standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 12 Second-stage regression results of the 2SLS regression for the relationship between real retail rents and real residential rents in the mass segment of the Kowloon Peninsula, with a dummy variable for the SARS epidemic outbreak

Data for the period from 1998 Q3 to 2014 Q2

VARIABLES	$\Delta \ln(\text{FlatRent MassKL})_t$	(Continued) VARIABLES	$\Delta \ln(\text{FlatRent MassKL})_t$
$\Delta \ln(\text{RetailRent})_t$	0.425 (1.068)	$\Delta \ln(\text{FactoryRent})_t$	0.518 (0.640)
$\Delta \ln(\text{Payroll})_t$	0.285** (0.112)	$\Delta \ln(\text{OilPrice})_t$	0.0905 (0.0711)
$\Delta(\text{InterestRate})_t$	-1.042 (0.723)	$\Delta \ln(\text{ExchangeHKD})_t$	0.256 (0.334)
$\Delta \ln(\text{Household})_t$	4.135* (2.178)	$\Delta \ln(\text{HSI})_t$	0.0320 (0.0976)
$\Delta \ln(\text{NewHouseArea})_t$	-0.00416 (0.0106)	$\Delta \ln(\text{MSCI})_t$	0.0164 (0.182)
$\Delta \ln(\text{BuildingCost})_t$	0.203*** (0.0654)	$\Delta \ln(\text{ChinaGDP})_t$	0.155** (0.0586)
$\Delta \ln(\text{HotelRoomRate})_t$	-0.231*** (0.0739)	$\Delta(\text{DummySARS})_t$	0.00682 (0.0340)
$\Delta \ln(\text{HotelOccRate})_t$	-0.0304 (0.0448)	Constant	-0.0186** (0.00781)
$\Delta \ln(\text{OfficeRent})_t$	-0.0650 (0.455)		

Observations : 63

R-squared : 0.461

p-value of Anderson-Rubin Wald test for : 0.704

$\Delta \ln(\text{RetailRent})$ under F-Distribution

Heteroskedasticity-autocorrelation consistent (HAC) standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 13 Second-stage regression results of the 2SLS regression for the relationship between real retail rents and real residential rents in the mass segment of the New Territories, with a dummy variable for the SARS epidemic outbreak

Data for the period from 1998 Q3 to 2014 Q2

VARIABLES	$\Delta \ln(\text{FlatRent MassNT})_t$	(Continued) VARIABLES	$\Delta \ln(\text{FlatRent MassNT})_t$
$\Delta \ln(\text{RetailRent})_t$	1.115 (0.738)	$\Delta \ln(\text{FactoryRent})_t$	0.438 (0.422)
$\Delta \ln(\text{Payroll})_t$	0.213*** (0.0675)	$\Delta \ln(\text{OilPrice})_t$	0.0674** (0.0281)
$\Delta(\text{InterestRate})_t$	-0.775* (0.388)	$\Delta \ln(\text{ExchangeHKD})_t$	-0.104 (0.102)
$\Delta \ln(\text{Household})_t$	0.169 (0.927)	$\Delta \ln(\text{HSI})_t$	-0.0775 (0.0601)
$\Delta \ln(\text{NewHouseArea})_t$	-0.00658** (0.00262)	$\Delta \ln(\text{MSCI})_t$	0.0752 (0.0891)
$\Delta \ln(\text{BuildingCost})_t$	0.0650 (0.0671)	$\Delta \ln(\text{ChinaGDP})_t$	0.0824** (0.0371)
$\Delta \ln(\text{HotelRoomRate})_t$	-0.0609 (0.0692)	$\Delta(\text{DummySARS})_t$	-0.0389** (0.0155)
$\Delta \ln(\text{HotelOccRate})_t$	-0.0441*** (0.0156)	Constant	-0.00768* (0.00449)
$\Delta \ln(\text{OfficeRent})_t$	-0.119 (0.180)		
Observations	:	63	
R-squared	:	0.727	
p-value of Anderson-Rubin Wald test for: $\Delta \ln(\text{RetailRent})$ under F-Distribution	:	0.0369	

Heteroskedasticity-autocorrelation consistent (HAC) standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 14 Private residential stock on Hong Kong Island, in the Kowloon Peninsula, and the New Territories, respectively

Hong Kong Island

Year	Total stock on Hong Kong Island	Stock in the major tourist shopping district of Hong Kong Island ¹⁶	Proportion
2004	316,198	151,788	48%
2005	320,805	152,809	48%
2006	322,004	154,111	48%
2007	323,043	155,041	48%
2008	323,037	154,340	48%
2009	322,728	154,108	48%
2010	323,210	154,157	48%
2011	323,346	154,098	48%
2012	323,252	153,909	48%
2013	323,023	153,839	48%

The Kowloon Peninsula

Year	Total stock in the Kowloon Peninsula	Stock in the major tourist shopping district of the Kowloon Peninsula ¹⁷	Proportion
2004	332,583	103,906	31%
2005	336,294	104,890	31%
2006	341,855	107,148	31%
2007	343,435	107,962	31%
2008	345,542	108,549	31%
2009	346,554	108,997	31%
2010	349,548	109,897	31%
2011	350,234	110,359	32%
2012	352,700	111,457	32%
2013	352,763	111,125	32%

¹⁶ The major tourist shopping district of Hong Kong Island is defined as Central and Western District.

¹⁷ The major tourist shopping district of the Kowloon Peninsula is defined as Yau Tsim Mong District.

Table 14 (Continued)

The New Territories

Year	Total stock in the New Territories	Stock in the major tourist shopping districts of the New Territories ¹⁸	Proportion
2004	386,190	199,223	52%
2005	396,147	202,801	51%
2006	405,039	204,719	51%
2007	412,765	208,050	50%
2008	417,343	210,140	50%
2009	421,332	213,771	51%
2010	430,151	220,291	51%
2011	436,981	224,377	51%
2012	441,980	226,970	51%
2013	447,847	230,902	52%

Source: Rating and Valuation Department

¹⁸ The major tourist shopping districts of the New Territories are defined as Tuen Mun District, Yuen Long District, North District, and Sha Tin District.

Table 15 Approximate number of private buildings aged 40 years or above of three storeys or more as of 31 December 2013

District	Approximate number of buildings
Hong Kong	
Central and Western	1,460
Wan Chai	1,140
Eastern	580
Southern	440
Kowloon	
Yau Tsim Mong	1,860
Sham Shui Po	1,200
Kowloon City	1,580
Wong Tai Sin	280
Kwun Tong	370
New Territories	
Kwai Tsing	120
Tsuen Wan	300
Tuen Mun	30
Yuen Long	150
North	190
Tai Po	80
Sha Tin	60
Sai Kung	30
Islands	20

Source: Legislative Council (2014)

**Table 16 Number of taught postgraduate programmes funded by
the University Grants Committee**

College* / Academic Year	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
CityU	26	12	5	1	1	4
HKBU	9	6	2	1	1	1
LU	0	0	0	0	0	0
CUHK	25	13	4	4	4	5
HKIEd	4	4	6	6	6	4
PolyU	18	14	9	3	0	6
HKUST	6	13	3	3	0	1
HKU	35	16	9	9	7	10
Total	123	78	38	27	19	31

College* / Academic Year	2009/10	2010/11	2011/12	2012/13	2013/14
CityU	3	1	1	1	1
HKBU	1	1	1	1	1
LU	0	0	0	0	0
CUHK	5	5	5	5	5
HKIEd	4	4	4	4	6
PolyU	4	3	2	3	1
HKUST	0	0	0	0	0
HKU	10	10	10	10	10
Total	27	24	23	24	24

* CityU stands for City University of Hong Kong; HKBU stands for Hong Kong Baptist University; LU stands for Lingnan University; CUHK stands for The Chinese University of Hong Kong; HKIEd stands for the Hong Kong Institute of Education; PolyU stands for the Hong Kong Polytechnic University; HKUST stands for the Hong Kong University of Science and Technology; HKU stands for the University of Hong Kong.

Source: University Grants Committee (2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014)