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An Empirical Study on the Impacts of Express Rail Link on Property Price – Hong Kong Evidence

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Abstract

This paper studies the effect of compulsory purchase (resumption) of underground strata for the construction of the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link on property price empirically. A local newspaper asserted that the scheme would adversely affect the property price and this assertion is taken as the null hypothesis to be tested. Most of the current literatures focus on the correlation between local transit networks and property price whilst (empirical) studies of the impact of the construction/ scheme of High Speed Rail across borders on property price are relatively rare.

Our sample consists of 267 affected homes in Tai Kok Tsui, which were transacted within one year before or after gazette notice for the scheme was posted. Hedonic Pricing Model is employed to analyze the impacts of the scheme on the prices of the affected homes.

Empirical results show that the scheme has a positive effect (14.7% increases) on the property price in a statistically significant manner, all others being equal. This indicates that the alternative hypothesis is true and betterment instead of damage was caused by the resumption. As a corollary, we find that the operation of another government law (Cap 545) governing the redevelopment process does again have an overwhelming positive effect (85.7% increase) on the property price.

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INTRODUCTION

Hong Kong is one of the places of highest population densities in the world: a population of about seven million in 1,100km^2. Moreover, about three-quarters of Hong Kong's land area is zoned countryside where development is highly restricted People are mostly cramped into small high rise condominium flats. Postwar building activities commenced vigorously in the fifties and sixties to accommodate the rapid increase in population. However, the then building standards and qualities are questionable. Hong Kong has since developed from a refuge port for Chinese refugees of civil war to one of the well established international financial centers and in the past 15 to 20 years, the gateway to the booming Mainland China. Contrary to the usual western practice of developing inter-city air shuttles, China vigorously pursued the alternative ground mode of transport, i.e. the establishment of a nationwide high speed railway network system. [1] Being part of and the southern gateway of China, Hong Kong has to follow and links itself to the national high speed railway network system. The terminus of the proposed Hong Kong section of Guangzhou-Shenzhen-Hong Kong Express Rail Link is situated in west Kowloon and the said Express Rail Link (ExRL) runs entirely underground in Hong Kong territory to the boundary at Huanggang, where it will connect with the Mainland section. More specifically, it will cut through the strata in Tai Kok Tsui, a highly populated residential and commercial area with buildings constructed in the 1960's by underground tunnels.

Government Resumption Notices (GN8022) were gazetted on 28/11/2008 and

[1] According to the International Union of Railways (2010), any railway lines equipped for speeds equal to or greater than 250 km/hr is regarded as 'high speed lines'. As the national high speed rail network targets to run a speed over 250 km/hr, ExRL is considered a high speed line.

5/12/2008 to facilitate the compulsory acquisition of the strata title in connection with the proposed scheme (work) and 18 buildings in Tai Kok Tsui were identified as affected by the works. This is basically a case of compulsory acquisition of landed interests and should be adequately dealt with under the existing legal framework. The interesting point is, however, on the nature of the affected interests: underground strata title. There is no precedent case in Hong Kong and to the best knowledge of the authors, not anywhere in the world either. How to estimate the compensation of the acquired interests/ titles and whether the affected properties would be adversely affected by the works upon redevelopment and if so, by how much? It would be interesting to the appraisal community and may well set precedent for future similar cases.

Subsequent to the gazettal of the resumption notices, the media[2] had covered the issue and alleged that first, the structural soundness of the affected properties might be affected to the extent that they might become dangerous building and suffered from settlement due to the proposed construction works.[3] Secondly, the redevelopment potential of the affected properties would be affected.[4] As such, the current value of the affected properties would be jeopardized.

Whilst the first allegation is unknown not until the actual works being carried out on site, the second allegation can be tested against actual market behavior. Indeed, it forms our

[2] Apply Daily dated the 18th October, 2009

[3] As the affected strata are located between the alluvium, completely decomposed granite (CDG), marine deposits (MD) and rock level, it was alleged that fill and underground water might be losing during the construction period and the affected buildings would thus suffer from settlement.

[4] Hong Kong Geographic Criticism Society has alleged that upon redevelopment, the design, plot ratio and height of buildings on the affected strata will be constrained to six storey developments due to the piling and foundation restrictions imposed under the Railway Ordinance, Chapter 519 Laws of Hong Kong. According to the Practice Notes for Authorized Person (PNAP 77) for Railway Protection issued by Building Department, "the boundary of the railway protection areas is about 30m outside the outer surface of the railway structures or the railway fence/ wall, or from the nearest rail if there is no railway fence/wall, but it encompass the whole of any lot where any part thereof lies within the 30m distance". The PNAP 77 also states that "No pile, foundation, borehole/ drillhole, well, soil, nail, horizontal drain, rock bolt/bowel or other geotechnical installation shall be driven, constructed or installed within a distance of 3m from any point of the underground railway structures"

null hypothesis: the value of the affected properties would be adversely affected by the proposed works of the High Speed Railway.

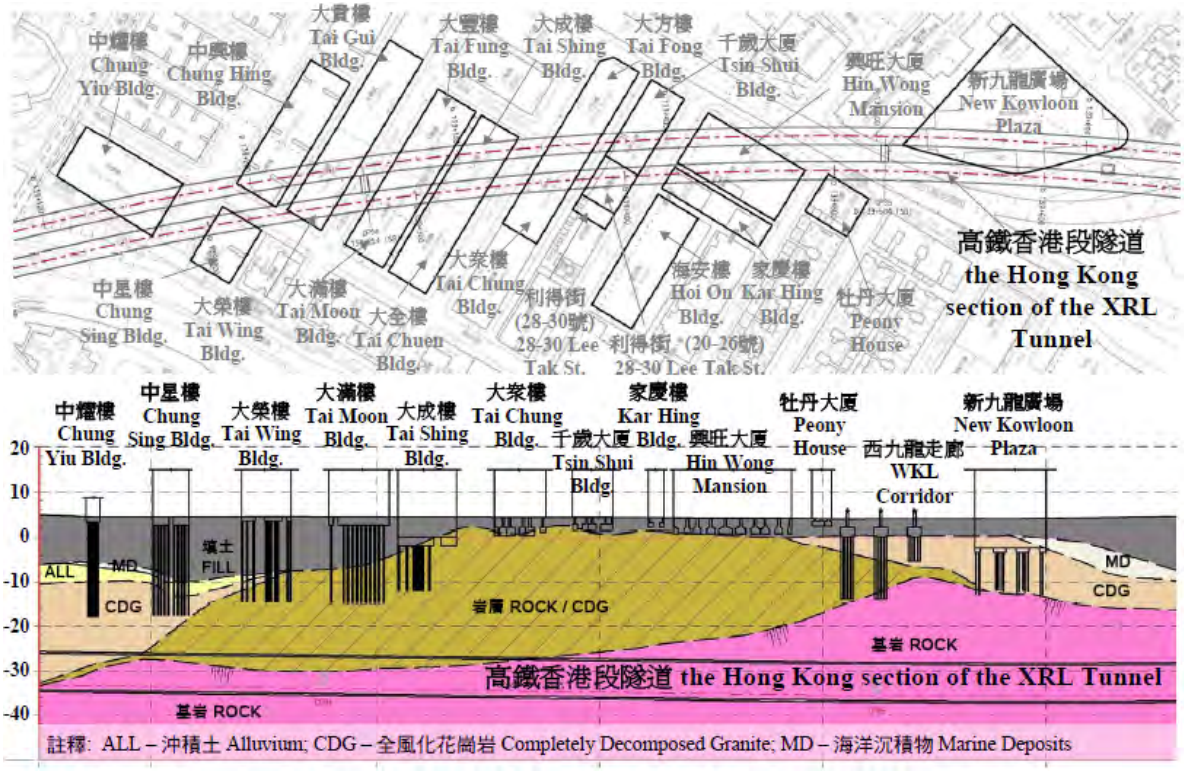

Figure 1 Plan of strata resumption in Tai Kok Tsui required for the XRL (Hong Kong Section) project (including the rock profile) (Source: Legislative Council)

LITERATURE REVIEW

Most land value theories have their root in the work of Von Thunen (Von Thunen, 1830), who tried to explain variations in farmland values. Pollakowski (1982) asserted that housing price was not only determined by the physical attributes and environmental attributes, but more or less by the accessibility attributes.

Although numerous researches (Pendleton 1963, Debrezion et al. 2006, and Preston 2008) argued that higher accessibility could have a positive effect on a property prices,a small proportion of research (Bowes et al. 2001 and Gourvish 2008) showed that the impact is insignificant or even negative. The difference on results may be due to different measurement method or other reasons.

The literature review consists of two parts. The first part concerns how housing price may be affected by different modes of transportation apart from High Speed Railway. The second part relates to how housing prices may be affected by High Speed Railway.

Adkins (1959) found that freeway access had a positive effect on property price. Bone et al. (1959) further reported that property values in Lexington increased 180 percent over the study period compared to control site values that increased only by 85 percent. Pendleton (1963) reported that a one minute decrease in driving time to the CBD adds $63.68 to the price of a house. Gamble et al. (1974) found that an extra $2,950 per property was due to the improvement of highway accessibility and properties within approximately one mile of a freeway right-of-way appreciated 12-15% more than comparable properties that were located beyond a mile from the freeway. However, Reibel et al. (2008) found that homes within 0.4 miles from the freeway are $38,252

more expensive than homes sold right next to the freeway because of noise generated by the freeway traffic after analyzing a total of 5,566 in California from 2000 to 2004 Similar negative externalities[5] on housing prices were also found at very short distance from the freeway due to noise, pollution and greater congestion (Kilpatrick, 2007; Smersh and Smith, 2000).

We next look at the literature studying how heavy real transit may affect housing price. Dewees (1976) found that residents within a one-third mile distance of a subway line experience travel time savings after transportation facility improvements and these travel-time savings were capitalized in residential values. Every additional hour of travel to the subway line would cause to a decrease in property values by $2,370. A positive result was also found by Voith (1991) reporting that residential properties in census tracks served by a commuter rail system had a 4 to 10% premium over homes in census tracks that were not served by a commuter rail system. Nelson (1992) studied the impact of transit on high and low-income household and found that properties in low-income neighborhoods gained value with improved services. It was argued that people living in low-income household were more likely to use transit and experience travel time savings from improved service. Debrezion et al. (2006) found that dwellings very close to a station are on average about 25% more expensive than dwellings at a distance of 15km or more in Netherlands from 1985 to 2001. They concluded that an increase in house value of about 2.5%, ranging from 3.5% for houses close to the station to 1.3% for house far away, has recorded when doubling the frequency of railway service. However, negative effects on house prices were also recognized, due to the crime effect and the noise pollution along the railway line. In sum, most of the studies

[5] A negative externality is defined as a by-product of production or consumption activities that adversely affects third parties not directly involved in the associated market transaction (Nelson, 2008)

supported that heavy rail transportation facilities have a positive effect on property values.

Due to different features of rail transit system, the correlation between access to light rail stations and residential property values may be different from heavy rail transit. Al-Mosaind et al. (1993) found positive land value effects takes place only within a five hundred-meter walking distance. Hess (2007) also supported the findings of Al-Mosaind et al. (1993). His regression results suggested that for every foot closer to a light rail station the average property values increases by $2.31 (using geographical straight-line distance) and $0.99 (using network distance) for homes located in the study area in Buffalo. In order words, a premium of $1,300 - $3,000, or 2.5% of the city's median home value can be earned for a home located within one-quarter of a mile radius of a light rail station.

Highway Speed Railways (HSRs) have been one of the most innovative elements affecting passenger transport since Second World War (Gourvish, 2010). The first country introducting HSRs was Japan, the Shinkansen since 1964. It has been present in Europe for the past three decades, but in the UK only for the past decade (Kamel er al., 2008). HSRs can be found in Asia and European countries[6]. Most of the researches find HSRs have a positive effect on commercial and residential property values.

The ex-post evaluation studies of TGV Sub-Est (Paris-Lyon), the AVE (Madrid – Seville) and the Japanese Shinkansen (Bonnafous, 1987; de Rus and Inglada, 1997; Banister et al., 2000 Nakamura et al., 1989) showed that the presence of HSRs have led to an increase in commercial activities and hence a positive effect on land values around high speed rail stations.

[6] HSR can be found in Japan, South Korea, Taiwan, mainland China, Great Britain, France, Germany, Italy and Spain

Preston et al. (2008) suggest that an increase in property price coincided with the pening of the Ashford International Rail station in 1996. The trends in Ashford Domestic Property Prices and surrounding authorities demonstrate a gradual upward trend. The regression analysis of Ashford property prices also shows that the prices have received an increase over and above the time trend of 26.5% since 1996, while the properties in the South East as a whole have received a stimulus of 23.2%. In order words, an additional 3% increase in the property prices in Ashford over that of the South East as a whole was recorded. Likewise, the opening of the St. Pancras High Speed International Station in 2007 had a positive impact on property price in the borough of Camden from 2006 to 2009. Pagliara et al.(2010) conducted an empirical study over 4,720 residential property transactions from 2001 to 2009 in the London Borough of Camden reported that there had been an increase of house prices by 11.8% in Camden compared to a 10.6% increase for the Inner London boroughs and to that 1.9% of London.).

Due to the opening of a HS railway line in early 2007 in Taiwan, which connects seven metropolitan areas on the west coast and drastically reduced travel times along the west coast, Andersson et al. (2010) found positive effects on land values, especially for commercial land value. Commercial activities have a higher willingness to pay for HSR station proximity because they engage in frequent business meetings with customers or suppliers from other metropolitan regions. They argued that the high valuation in the commercial property market should spill over into housing market. The Chinese HSR is called Express Rail Link (ExRL) and it was constructed only since 2006. As such, empirical researches about ExRL effects on property price are hardly to find, though some media reports that ExRL has a positive effect on the property price.

It is generally argued that HSR stations can provide a safe and regular journey and

enhance the accessibility of an area. Hence, an increase in commercial activity and a commensurate increase in land values are expected. However, Preston et al. (2008) pointed out that much of this activity were transferred from other areas and should not be viewed as a net gain.

Bowes et al. (2001), by using HPM on the Atlanta region data ranging from 1991 to 1994found that properties far from a station, between one to three miles from a station, were of considerably higher value comparing with those father away. However, properties within a quarter of a mile from a rail station were found to sell for 19% less than properties beyond three miles from a station. His results suggested that properties at an intermediate distance were enjoying positive externality effects and benefit from the transportation access provided by the stations whilst houses located very close to a station were suffered from negative externalities effects.

Willigers (2006) concluded that the development plans of HSR did not result in increase in economic activities that was anticipated. According to the research of Lewis (2008), he could only conclude that "HSR tends to contribute to regional economic growth". Bonnafous (1987) and Mannone (1997) concluded that the TGV (Train a Grande Vitesse) was of minor importance for the location decisions of most firms. Haynes (1997) also stated that the HSR accessibility is only one of a number of factors that influence location decisions.

Based on the above literature review, the effects of HSR on property price is mixed and it may vary from one place to another, depending probably on other local attributes.

Methodology

Hedonic Pricing Model (HPM)

Waugh (1928) was the first to adopt hedonic approach in analyzing agriculture market. The core idea of this approach was further explained by Lancaster (1966) who states that "consumers get utility from the attributes embodied in products". In 1971, HPM was first employed by Griliches (1971) in the study of fixed assets whilst, the first empirical literature of using hedonic modeling in housing attributes analysis was done by Rosen (1974). Following that, scholars tended to use this model to investigate problems in housing studies, for instance racial discrimination, neighborhood change and accessibility of work.

The hedonic price literature assumes that the property price can be described by a vector consisting of continuous and dummy variables. Dummy variables are selected carefully for the relevant attributes. The dependent variable is the natural logarithm of the deflated transaction price and a semi logarithmic specification is adapted. More specifically, the following specification is adopted.

$$\begin{aligned} \mathbf{Ln(PRICE)} = {} & \alpha + \beta_1 \mathbf{FL} + \beta_2 \mathbf{GFA} + \beta_3 \mathbf{AGE} + \beta_4 \mathbf{D1} + \beta_5 \mathbf{D2} \\ & + \beta_6 \mathbf{D3} + \beta_7 \mathbf{PSVIEW} + \beta_8 \mathbf{HIGHWAY} + \beta_9 \mathbf{TIME} \\ & + \beta_{10} \mathbf{CAP545} + \beta_{11} \mathbf{DIVIDED\_UNITS} + \varepsilon \cdots (2) \end{aligned}$$

Where PRICE represents the deflated sale price of a unit; α is the constant; FL represents the floor level; GFA represents the gross floor area of a unit; D1, D2 and D3 represents East, South and East respectively; TIME is a dummy variable distinguishing the date of government resumption notice under Chapter 519 Laws of Hong Kong (Railways Ordinance); CAP545 is a dummy variable representing if a flat is affected by

Chapter 545 Laws of Hong Kong – Land (Compulsory Sale For Redevelopment) Ordinance; DIVIDED_UNITS is a dummy variable representing if a flat is divided into more than one sub-units; ε is the error term.

A wide range of independent variables are included to explain the property price, for instance characteristics of the properties, environmental amenities and accessibility variables that correspond to the affected buildings.

Totally 11 explanatory variables are included in the equation. Each variables are explained in detail in the following section, including dependent variable –PRICE, and independent variable – FL, GFA, AGE, D1, D2, D3, TIME, CAP545 and DIVIDED_UNITS. To have an error term distribution with a mean of zero, the constant team (ε) is added.

A hedonic equation is useful to explain house price in terms of its own characteristics, such as size of the flat, neigbourhood characteristics and accessibility, and each of these attributes is assumed to be implicitly priced. Housing attributes in a hedonic equation may be classified into three traits: Locational (L), Structural (S) and Neigbourdhood (N). The property price (P) can thus expressed as:

$P = f(L, S, N)$…

Locality can include views, aspects and floor level. Structural factors are the size of flat and building age whilst neigbourhood can be classified into proximity and commercial establishment.

Data

The alignment of the proposed GZ-SZ-HK Ex RL compels the compulsory acquisition of the underground strata title of a total of 18 medium rise buildings at Tai Kok Tsui, West Kowloon, constructed in the 1960s and 1970s. This neighborhood is homogenous in terms of location and environment characteristics. A sample of 267 transactions data of flats of this neighborhood, spanning over two years, one year before the relevant date of subject compulsory purchase and one year thereafter, were collected. Housing attributes of the flats belonging to the sample were collected by various means as well.[7] All the affected flats are of sizes less than 700 square feet and are classified as Class A or B residential flats under the categorization of the Rating and Valuation department of the Hong Kong SAR government.[8]. The nominal transaction prices were deflated by the price indexes of respective classes over time.[9]

[7] The basic transaction details were obtained from a database Economic Property Research Centre (EPRC) and floor plans details from Buildings Department. Additional land searches and further investigations including talking with the sellers/ buyers were made on doubtful data.

[8] According to the classification of the Rating and Valuation Department of the Hong Kong SAR government, flats are grouped into Class A (less than 40 sq. m.), Class B (40 to less than 70 sq. m.), Class C (70 to less than 100 sq.m.), Class D (100 to less than 160 sq. m.) and Class E (160 sq. m. or more).

[9] The Rating and Valuation Department publishes a monthly price index for the various classes of residential flats to reflect the market price movement.

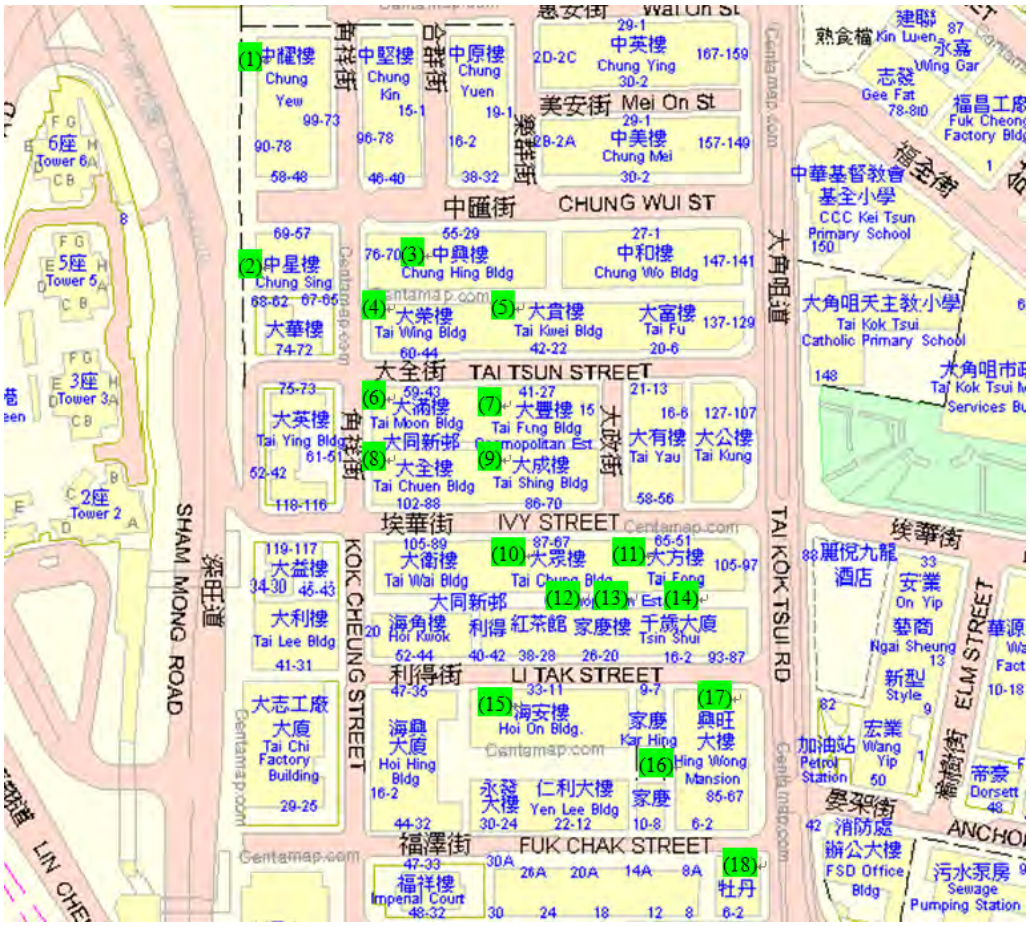

Figure 2 Location of affected buildings in Tai Kok Tsui (Source: Centamap)

Figure 7 Layout of other affected buildings (Source: Centamap)

Independent Variables

Short	Definition of variables
FL	is the floor level of affected buildings
GFA	is the square feet of gross floor area of a unit
AGE	is age of the affected buildings
D1	is a dummy variable equal to 1 if the affected buildings facing East; 0 for otherwise
D2	is a dummy variable equal to 1 if the affected buildings facing South; 0 for otherwise
D3	is a dummy variable equal to 1 if the affected buildings facing West; 0 for otherwise
TIME	is a dummy variable distinguishing the date of government resumption notice under Chapter 519 Laws of Hong Kong (Railways Ordinance), 1 if the transaction took place after date of gazette notice one year; 0 for otherwise.
CAP545	is a dummy variable distinguishing if a flat is affected by Chapter 545 Laws of Hong Kong (Land (Compulsory Sale For Redevelopment) Ordinance), 1 if a flat was acquired by a redevelopment company; 0 for otherwise.
DIVIDED_ UNITS	is a dummy variable distinguishing if a flat is sub-divided, 1 if sub-divided units are found; 0 for otherwise.

Table 1 Definition of independent variables

Expected Sign

All the explanatory variables in the equation, their definitions and expected sign are summarized as below:

Explanatory variables	Definition of variables	Expected Sign
FL	Floor level	+
GFA	Gross floor area (square feet)	+
AGE	Building age	-
D1	A flat facing east	+
D2	A flat facing south	+
D3	A flat facing west	-
TIME	Date of government resumption notice	?
CAP545	A flat is to be acquired by a redevelopment company	+
DIVIDED	A flat is divided into more than one sub-units	+

Table 2 List of variable, their definition and expected sign

Data Analysis and Interpretation

Descriptive statistics of the sample data are as follows:

Descriptive Statistics

Variable	Minimum	Maximum	Mean	Std. Deviation
LnPRICE	12	14	13.91	0.340
FL	1	14	6.20	4.098
GFA	290	780	491.25	106.09
AGE	34.06	48.92	40.13	5.94
D1	0	1	0.13	0.34
D2	0	1	0.36	0.48
D3	0	1	0.15	0.35
TIME	0	1	0.64	0.48
CAP545	0	1	0.13	0.33
DIVIDED	0	1	0.25	0.43
N = 267				

Table Descriptive Statistics (2007-2009)

Based on the equation specification described above, the results of the regression exercise are as follows:

Dependent Variable: LNP
Method: Least Squares
Date: 12/24/11 Time: 18:55
Sample: 1 267
Included observations: 267
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.64936	0.106225	128.4951	0.0000
FLOOR	0.010307	0.003477	2.964074	0.0033
GFA	0.001167	0.000165	7.070181	0.0000
AGE	-0.015256	0.003030	-5.035413	0.0000
D1	0.070169	0.040628	1.727117	0.0853
D2	0.006480	0.024423	0.265318	0.7910
D3	0.057560	0.037885	1.519351	0.1299
TIME	0.140367	0.026222	5.352940	0.0000
CAP545	0.852306	0.041251	20.66163	0.0000
DIVIDED	0.082078	0.037838	2.169223	0.0310

R-squared	0.737857	Mean dependent var	13.91299
Adjusted R-squared	0.728677	S.D. dependent var	0.339691
S.E. of regression	0.176940	Akaike info criterion	-0.589275
Sum squared resid	8.046123	Schwarz criterion	-0.454921
Log likelihood	88.66819	Hannan-Quinn criter.	-0.535306
F-statistic	80.37567	Durbin-Watson stat	1.567283
Prob(F-statistic)	0.000000		

Conclusion

Consequential to the proposed Hong Kong section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (ExRL), a total of 18 medium rise buildings in Tai Kok Tsui, built in the sixties, were affected. Media reported that the alignment of the ExRL has an adverse effect on the property price of the 18 affected buildings. One of the reasons is that the resumed strata will be protected by Railway Ordinance (Cap. 519) and hence the future development of the affected properties will be restricted. Another possible reason is that the construction work might affect the structural soundness and stability of the existing buildings. The latter allegation is however unknown until the works actually carry out in the future.

As it happens, two ordinances that may affect property price are in operation concurrently in the district. The subject district is an old, mixed use district and some developers or their agents begin to actively assemble land under the Land (Compulsory Sale For Redevelopment) Ordinance (Chapter 545) of Laws of Hong Kong. The main purpose of this study is to test how the market behaves as a result of the proposed resumption under the Railways Ordinance (Chapter 519). Our null hypothesis is that as proposed by the media, i.e. the proposed resumption will adversely affect the housing price. In addition, it provides the opportunity of observing how governmental intervention (resumption efforts) and market forces (land assembly efforts) affect property prices and to what extent. To carry out the empirical investigations, data was collected for two years of housing (flat) sales one year before and one year after the gazette notice of resumption.

The operation of market driven land assembly action, as measured by the variable CAP545, indicates that it has a great positive impact (85% increase) on the housing prices in a statistically significant way. Developers or their agents are hungry of housing units in this area and are willing to pay a high premium to snap them up.

Our regression results indicate that the proposed resumption has a positive effect on the housing price by 14% in a statistically significant way. This means that the proposed express rail link has a betterment instead detrimental effect on the affected properties. The alternative hypothesis is true and the allegation put forward by the media is therefore unfounded.

One corollary of this study is that strong investment demand will drive up housing price. As government tolerates the sub-division of legal housing units into several small ones, investors take advantage of this governmental inaction on building regulation enforcement, causing an increase by 8% in housing price, in a statistically significant way.

All the above three features are related to changes in government regulations, or changes in institutions in the phraseology of the New Institutional Economics (NIE). Market, through its own interpretations of the changes in institutions will respond correspondingly. Government should carefully assess the consequences if it proposes to make changes of its current rules/ regulations, otherwise unintended consequences may follow.

References

Adkins, W. (1959). Land Value Impacts of Expressways in Dallas Houston and San Antonio Texas. Highway Research Board Bulletin 277: 51-65.

Al-Mosaind, Musaad, A., Kenneth, J., Dueker and James, G. (1993). Light-rail transit stations and property values: A hedonic price approach. Transportation Research Record 1400: 90-94.

Andersson, D.E., Shyr, O. F. and Fu, J. (2010). Does High-speed Rail Accessibility influence residential property prices? Hedonic Estimates from Southern Taiwan. Journal of Transport Geography 18: 166-174.

Apple Daily. (2009, October 18). The Alignment of Express Rail Link: 2,000 residential units may become dangerous buildings.

Armstrong, R. (1994). Impacts of commuter rail service as reflected in single-family residential family residential property values. Transportation Research Record 1466: 88-98.

Bajic, V. (1983). The effects of subway line on housing prices in metropolitan Toronto. Urban Studies 20, 2: 147-158.

Banister, D. and Berechman, J. (2000). Transport Investment and Economic Development.

Bone, A.J., and Martin Wohl. (1959). Massachusetts Route 128 impact study. Highway Research Board Bulletin 227: 21-49.

Bonnafous, A. (1987). The Regional Impact of the TGV. Transportation 14: 127-137.

Bowes, D. and Ihlandfeldt, K. (2001). Identifying the Impacts of Rail Transit Stations on Residential Property Values.

Bruyne, K.D. and Hove, J.V. (2006). Explaining the Spatial Variation in Housing Prices: An Economic Geography Approach.

Buildings Department (2011). Building Information Centre.
CB Richard Ellis (2009). Market View – Hong Kong Luxury Residential.

Chambers, John, Cleveland, W. Kleiner, B. and Tukey, P. (1983). Graphical Mehtods for Data Analysis, Wadsworth.

Centaline Property (2011). Transactions in Property Market. Retrieved 14 February, 2011, from http://www.centadata.com/ptest.aspx?type=2&code=MMXNIHLYHT

Cheng, C.K (2009). The Effects of Railway: Enhancement of the Property Prices in Central China. Capital Weekly.

Cheng,W. (2009).The Effects of Railway: Enhancement of the Property Prices in Central China. Capital Weekly.

Choy, H.T., Mak, W.K. and Ho, K.O. (2007). Modeling Hong Kong real estate prices. Journal of Housing and Built Environment, 22, 359-368.

Debrezion, G., Pels, E. and Rietveld, P. (2006). The Impact of Rail Transport on Real Estate Prices: An Empirical Analysis of the Dutch Housing Markets.

Debrezion, G., Pels, E. and Rietveld, P. (2007). The Impact of Railway Stations on Residential and Commercial Property Value: A Meta-analysis. Journal of Real Estate Finance Economics 35:161-180.

Department of Justice Laws Information System, Chapter 1 Interpretation and General Clause Ordinance.

Dewees, D.N. (1976). The Effects of a Subway on Residential Property Values in Toronto. Journal of Urban Economics 3,4: 357-369.

Dictionary.com. (2011). Define Walk-up at Dictionary.com. Retrieved March 11, 2011, from http://dictionary.reference.com/browse/walk-up.

Freeman, A.M. (1979). The Hedonic Price Approach to Measure for Neighbourdhood Characteristics. The Economics of Neigbourdhood. Academic Press. New York. 191-218.

Gakei.com. (2011). West Kowloon Reclamation near Tai Kok Tsui. Retrieved March 1, 2011, from http://www.gakei.com/wkr/wkrt.htm.

Gamble, H., Owen, S., and John, L. (1974). Adverse and Beneficial Effects of Highways on Residential Property Values. Transportation Research Record 508:37-48.

Gibbons, S. and Machin, S. (2008). Valuing School Quality, Better Transport, and Lower Crime: Evidence from House Prices. Oxford: Oxford University Press.

Gines de Rus and Vicente Inglada (1997). Cost-benefit Analysis of the High-speed Train in Spain. The Annals of Regional Science 31:175-188.

Givoni, M. (2006). Development and Impact of the Modern High-speed Train: A Review, Transport Reviews, 26:5, 593-611.

Gourvish, T. (2008). British's Railways 1997-2005: Labour's Strategic Experiment. Oxford.

Gourvish, T. (2010). The High Speed Rail Revolution: History and Prospects.

Government Logistics Department (2010). Government Gazette. Retrieved October 11, 2010, from http://www.gld.gov.hk/cgi-bin/gld/egazette/gazettefiles.cgi?lang=e&year=2008&month=11&day=28&vol=12&no=48&gn=8022&header=1&part=0&df=1&nt=gn&newfile=1&acurrentpage=12&agree=1&gaz_type=mg.

Griliches, Z. (1971). *Price indexes quality change: studies in new methods of measurements*. Cambridge: Harvard University Press. 15: 3-15.

Haynes, K.E. (1997). Labor Markets and Regional Transportation Improvements: The Case of High Speed Trains, An Introduction and Review. The Annuals of Regional Science 31: 57-76.

Hess, D.B., (2007). Impact of proximity to light rail rapid transit on station-area property values in Buffalo, New York. Urban Studies 5(6): 1041 1068.

Highways Department. (2010). Road & Rail Networks. Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link – Underground Strata Resumption Plans. Retrieved March 19, 2011, from http://www.hyd.gov.hk/eng/major/road/rail/xrl/gazettal/scheme/doc/gn6682/usr.htm

Hong Kong SAR Electoral Affairs Commission (2010). Map of Yau Tsim Mong East. Retrieved March 18, 2011, from http://www.eac.gov.hk/pdf/distco/2007dc/dc2007e.pdf.

Kamel, K. and Mattewman, R. (2008). The Non-Transport Impacts of High Speed Trains on Regional Economic Development: A Review of the Literature.

Kilpatrick, J.A., Throupe, R.L., Carruthers, J.I., Krause, A. (2007). The Impact of Transit Corridors on Residential Property Values. Journal of Real Estate Research 29: 303 -302.

Komei Sasaki, Tadahiro Ohashi and Asao Ando (1997). High-speed Rail Transit Impact on Regional Systems: Does the Shinkansen Contribute to Dispersion?. The Annals of Regional Science 31:77-98.

Lancaster, K.J. (1966). A New Approach to Consumer Theory. Journal of Political Economy, 74: 132-157.

Lee, C.Y. (2010). Effect of Harbour View on Condominium Price.

Lewis, A. (2008). Effects of Investment in High Speed Rail in Infrastructure. Transport & Travel Research Ltd.

Mannone, V. (1997). Gares TGV et Nouvelles Dynamiques Urbaines en Centre Ville: Le cas des villes desservies par le TGV Sub-Est. Les Cahiers Scientifiques du Transport 31: 71-97.

McMillen, D.P. and McDonald, J. (2004). Reaction of House Prices to a New Rapid Transit Line: Chicago's Midway Line, 1983 -1999. Real Estate Economics 3: 463-486.

Mok, M.K., Chan, P.K. and Cho, Y.S. (1995). A Hedonic Price Model for Private Properties in Hong Kong. Journal of Real Estate Finance and Economics. 10: 37-48.

Nash, C. (1991). The case for high speed rail. ITS Working Paper 323.

Nelson, A. (1992). Effects of Elevated Heavy-Rail Transit Stations on House Prices With Respect to Neighborhood Income. Transportation Research Record 1359:127-132.

Nelson, J.P., (2008). Hedonic Methods in Housing Markets. Pricing Environmental Amenities and Segregation. Switzerland: Springer.

Pagliara, F., Barrasso, C. and Preston, J. (2010). High-Speed Rail Accessibility Impact on Property Prices: Evidence From St Pancras International Station in London.

Pendleton, W. (1963). Relation of Highway Accessibility to Urban Real Estate Values. Highway Research Record 16: 14-23.

Pollakowski, H.O. (1982). Urban Housing Markets and Residential Location, D.C. Health and Company, Lexington, MA.

Preston, J., Larbie, A. and Wall, G. (2008). The Impact of High Speed Trains on Socio-Economic Activity: The Case of Ashford (Kent).

Rating and Valuation Department (2010). Property Market Statistics. Private Domestic – 1979-2009 Price Indices by Class (Territory-wide). Retrieved February 1, 2011, from http://www.rvd.gov.hk/en/doc/statistics/his_data_4.pdf.

Reibel, M., Chernobai, E. and Carney, M. (2008). House Price Change and Highway Construction: Spatial and Temporal Heterogeneity.

Rpsen. S. (1979). Hedonic Prices and Implicit Marlets: Product Differentiation in Pure Competition. Journal of Political Economy. 82: 34-35.

Ryan, S. (1999). Property Values and Transportation Facilities: Finding the Transportation –Land Use Connection. Journal of Planning Literature 1999 13:412

Sands, B. (1993). The Development Effects of High-speed Rail Stations and Implications for California. Built Environment 19(3/4): 257-284.

Smersh, G.T., Smith, M. T. (2000). Accessibility Changes and Urban House Price Appreciation: A Constrained Optimization Approach to Determining Distance Effects. Journal of Housing Economics 9:187-196.

So. H.M., Tse, R.Y.C. and Ganesan, S. (1996). Estimating the Influence of Transport on House Prices: Evidence from Hong Kong.Hournal of Property Valuation & Investment 15: 40-47.

Tang, F.T. (1975). Detection and Estimation of Transportation Impoct with Models of Urban Residential Property Sales Prices, Institute of Economics: Academia Sinica, Taipei.

Tang, B.S., Chiang, Y.H., Baldwin, A.N. and Yeung, C.W. (2004). Study of Integrated Rail-property Development Model in Hong Kong. Hong Kong: The Hong Kong Polytechnic University.

The Hong Kong University of Science Technology. (2010). Guides to Resources. Legal Information Hong Kong SAR. Retrieved 19 March 2010, from http://library.ust.hk/guides/legal/hk.html#hkgovtgazLS.

The Land Registry (2011). Integrated Registration Information System Online Services. Search Unposted Memorial Information. Retrieved March 15, 2011, from https://www2.iris.gov.hk/eservices/umi/search.jsp.

Tse, Y.C. and Love, E.D. (2000). Measuring residential property values in Hong Kong. Property Management, 18(5), 366-374.

Voith, R. (1991). Transportation, Sorting, and House Values. American Real Estate and Urban Economics Association Journal 19, 2: 117-137.

Waugh, F.V. (1928). Quality Factors Influencing Vegetable Prices. *Journal of Farm Economics*. Vol. 10: 185-196.

Williggers, J. (2006). Impact of High Speed Railway Accessibility on the Location Choices of Office Establishments. PhD Thesis, University Utrecht, the Netherlands.

Workman, S.L. and Daniel, B. (1997). Measuring the Neighborhood Benefits of Rail Transit Accessibility. Report no. 97-1371. Washington, DC: Transportation Research Board.

Yau, S.M. (2009). History is right on track. South China Morning Post.

YPMAP. (2011). Location Search. Retrieved March 2, 2011, from http://www.ypmap.com/en/viewer.asp?mapService=LocationMap.

Yu, S.M., Han, S.S. and Chai, C.H. (2006). Modeling the value of view in high rise apartments: a 3D GIS approach, Environment and Planning B. 34: 139-153