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WEALTH TRANSFER IN FORWARD PROPERTY MARKETS

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ABSTRACT. The principal-agent problem arising from asymmetric information in presales of uncompleted properties in forward property markets has been well-recognized. Since buyers are not able to inspect the uncompleted properties when they make the purchases, developers may hide information about the negative aspects of the properties or over-state the quality in order to generate an extra profit in the presales on top of the equilibrium value as if the properties were sold in the spot market. In this regard, the study adapted a forward-spot property repeat sales pricing model to explore the pricing of presale properties compared to that of spot properties in which the principal-agent problem does not exist. The findings suggest that developers were able to impose a wealth transfer from the buyers in pricing presale properties taking the advantage of asymmetric information embedded in forward property markets.

KEYWORDS: Forward property market; Presale properties; Asymmetric information; Wealth transfer; Repeat sales method

1. INTRODUCTION

Presales of uncompleted properties have been popularly used by developers to finance the upfront capital of large-scale developments such as high-rise apartments, condominiums and large housing estates, in particular, in big cities like Hong Kong, Singapore, Toronto and London (Chang and Ward, 1993; Chau et al., 2003; Leung et al., 2007a; Tribune, 2005). However, asymmetric information exists in forward property markets because of the principal-agent problem between developers and presale property buyers. Once a forward contract is executed, the buyer becomes the principal of the uncompleted property and has to rely on the developer, *i.e.* the agent, to finish the construction work in accordance with the terms stated in the forward contract. But this principal-agent relationship, in which the developer possesses more information than the buyer in regard to the construction work, has created a moral hazard problem for the buyer (Chau et al., 2003; Min, 1997). Due to the lack of knowledge and technical expertise, the buyer cannot be sure whether his best interests are served by the developer and whether the quality of the work will be up-kept after the developer has collected the proceeds (Leung et al., 2007a).

It has been evidenced that presale property buyers are exposed to a group of hidden risks arising from asymmetric information. For example, development defaults in the middle of the construction after the presale proceeds had

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been collected were commonly found in both Mainland China and Malaysia (Esha, 2003; Property Times, 2006; Yang, 2001). According to the record of Liaison Office of China, up to June 2004, there were 240 defaulted property sites left unresolved just in Guangtung Province (Kalifa, 2005). Some of the housing estates were even repeatedly sold or mortgaged due to the absence of proper regulations (Leung et al., 2009). In Malaysia, the government was working hard to revive 97 abandoned housing schemes just in 2004 (The Star, 2004). Besides defaults, the problems of "housing scam", late completion and building defects were also severe in Malaysia (Property Times, 2006).

Although housing default is not serious in Hong Kong, other problems are found, for example, quality of uncompleted properties being overstated in presale promotions and exaggeration of presale floor areas (Leung et al., 2007a). Developers tried to disguise the size of the floor areas in the show-flats in presale promotions by using magnifier glass for the fittings, making all furniture into smaller size to make the room look proportional, converting the bay-window as part of sleeping place so that a standard-size bed could be fitted in, and/or setting the height of the sample flat higher than the actual to make the room look spacious (Daily Apple, 2006a). Furthermore, the building quality promised in the presale promotions cannot be guaranteed. A renowned property inspector witnessed that many buyers cried out when they found the quality of the properties that they bought through presales turned out to be so poor. They included uneven flooring and poor plastering, window with more than 50 cracks, curved wall paneling, wooden floor panel creating cracky noises, and water leaking in the bathroom (Next Magazine, 2004).

Unethical tactics have also been used by some unscrupulous developers in presale promotions in order to boost up the prices and the presales volume (Leung et al., 2009). For example, no price list was offered in the presales and the information was selectively released by sales agents, and there were no records found in the Registry on some presale transactions released by developers. As a result, without getting hold of full information of the presale properties, some buyers found that they had paid a price much higher than that of similar units ranging from 11.89% to as high as 15.11% (Apple Daily, 2006b). Despite the regulatory measures taken by the government, a survey conducted by the Political & Economic Risk Consultancy Ltd. (PERC, 2005) reviewed that the forward property market in Hong Kong "has long suffered from poor transparency". As the number of complaints about inadequate and misleading presales information grew, there were increasing calls in the Legislative Council for measures to address the problems (LC, 2004 and 2006). Similar problems have also been found in other countries like Taiwan, Canada and the U.K. (Li, 1998; SCC, 2006).

In fact, there has been a saying in the property market that developers might be able to earn an extra profit from the presale properties higher than the equilibrium market price as if they were sold in the spot market taking the advantage of the asymmetric information (SCMP, 2005; Lai, 2006), in particular, when the demand of properties was high in the market. On the other side, buyers might have accepted the extra cost imposed on the presales in order to get the developments with the attributes they desired (Yang, 2001). The study, therefore, was conducted to investigate empirically whether an extra profit, on top of the equilibrium prices of the properties, has been imposed by developers in pricing presale properties taking the advantage of the asymmetric information.

2. LITERATURE REVIEW

A number of studies have been conducted to investigate the moral hazard problem arising from asymmetric information inherent in various forward markets. Akerlof (1970) proposed that if asymmetric information exists and thus the provision of 'Lemons' is possible in the market, bad products will drive out good products and no market can exit. Only with the use of guarantees and licensing through government intervention to control the product quality, then the market can work. This happens in property presales markets in many countries which have taken both administrative policies and self-regulatory measures to control the quality of presale properties and mitigate the negative impacts arising from the asymmetric information. These measures are able to maintain the presale markets with the provision of "average goods" (Akerlof, 1970), but it seems they are not able to ensure that the features of the units upon completion are as "good" as what have been promised by the developers. In a series of studies conducted by Ong and Gwin on building defects, warranties and project financing on presale properties (Ong, 1997 and 1999; Gwin and Ong, 2000), they found that builders made little effort in the construction after the proceeds had been collected. This resulted in more building defects on presale properties upon completion compared to those sold in the spot market. Yang (2001) found that poorly-built properties derived not only from the use of substandard building materials but also from mismatch between the decoration and what had been promised in presale promotions (Yang, 2001). Leung et al. (2007b) studied the impact of the hidden presale risks arising from asymmetric information on the pricing of presale properties. They found that an extra profit had been imposed by developers on presale property prices in the forward property market in which asymmetric information was embedded.

Following the findings of Leung et al. (2007b), further investigation has been conducted to study how the asymmetric information can help generate an extra profit transferred from presale property buyers to developers. According to Leland and Pyle (1977), asymmetric information undermines the direct transfer of information between market players and, therefore, whoever possesses the information is thus able to generate substantial rewards from exaggerating the positive qualities of the products. Gardner (2003) also pointed out that if the information is biased towards some players, the deal will be unfair to those who do not possess the information. Farrell (2003) investigated the principal-agency risk in project finance. The study proposed that developers, *i.e.* the agents, are able to transfer wealth from the unwary principals of the project to themselves through the use of actions which are unobservable by the principals. Weimer and Vining (2005) showed that when there are situations where the amount of information about the characteristics of a good varies between the buyer and the seller, then inefficiency in the trade of that good occurs due to the asymmetric information, and transfer of an additional wealth may happen.

The wealth transfer from buyers to developers on a property presale can be explained by the economic theory of transfer of consumer surplus with asymmetric information (Weimer and Vining, 2005). In Figure 1, D_U represents the quantities of the good that a consumer would buy at various prices in the absence of full information about its quality, *i.e.* with asymmetric information, and it is known as the consumer's uninformed demand schedule. D_I represents the amounts of the good that

would be purchased at various prices if the consumer possessed full information about its quality, and this is known as the consumer's informed demand schedule.

The quantity purchased by the uninformed consumer is determined by the intersection of D_U with the supply schedule, S. This amount, Q_U, is greater than Q_I, the amount at which the consumer would have purchased if fully informed about the quality of the good. The darkly shaded area *abc* equals the deadweight loss in consumer surplus resulting from the over-consumption. That is, for each unit purchased beyond Q_I, the consumer pays more than its marginal value as measured by the height of the informed demand schedule. This excess consumption also results in a higher equilibrium price, P_U, which transfers surplus (wealth) equal to the area $P_U ba P_I$ from consumers to producers of the good. Weimer and Vining (2005) also stated that it is an incentive for producers to hide information about the true quality of the good from buyers. When producers hide the information about the negative aspects of the good, consumers may over-estimate the quality, and this will maximize the difference between P_U and P_I, so the wealth will be transferred from the buyers to the producers.

It is suggested in forward property markets that developers might have charged a price (P_U) on the housing attributes higher than the expected market price at equilibrium (P_I) by the time they offered the presales taking advantage of the asymmetric information (Lai, 2006; SCMP, 2005). On the other side, buyers might have to accept the higher price imposed on presales in order to get the developments with the housing attributes that they desired, which resulted in an additional wealth transfer from P_U and P_I .

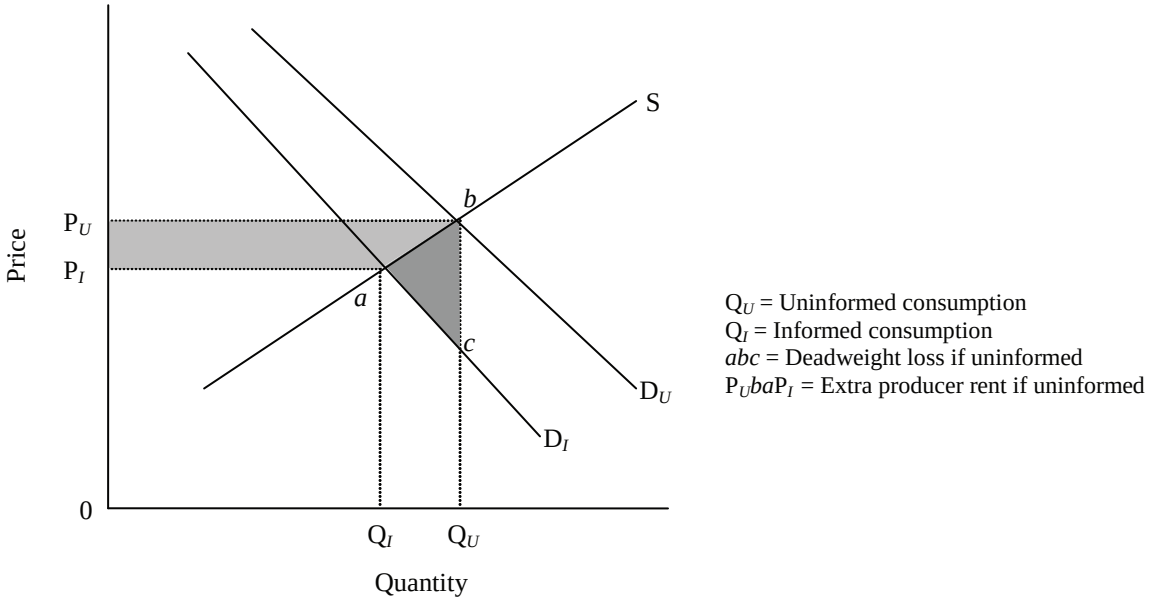

Figure 1. Transfer of wealth with asymmetric information
Source: Policy Analysis – Concepts and Practices (Weimer and Vining, 2005)

3. RESEARCH METHODOLOGY

Among the limited research studying presale properties, Shiller (1993) proposed the use of a hedonic Repeated Sales Method (RSM) to estimate the property values traded in forward markets. Lai et al. (2004) modeled a property presale decision in a real-option framework and suggested that developers achieve risk-sharing purpose by selling their projects before their completion dates. Chang and Ward (1993) priced presale properties in Taiwan as a forward asset with carrying charge. Chau et al. (2003) set up a price discovery function by the use of the Forward Contract Repeat Sales (FCRS) method for constructing a forward property price index in Hong Kong. However, none of these researches has accounted for the hidden presale risks contained in the forward property market. Choy et al. (2006) used a pooled cross-sectional analysis to study the mispricing between presale and spot properties. However, the findings are limited to the pricing of the few selected housing attributes like view and size of the presale properties without considering the impacts of the other hidden presale risks.

3.1. Conceptual framework for pricing properties

Leung et al. (2007b) developed a forward-spot tracking index (FSIT) model for measuring the extra profit imposed by developers on pricing presale properties in the forward market in which the hidden presale risks were found. According to the conceptual framework of the FSIT, the equilibrium prices of spot properties is a function of a list of internal and external factors as shown in Figure 2. The internal factors include the costs of producing the housing attributes and the age of the property. The external factors reflected in the market return include the aspects of the demand for housing, the economic sentiment, the choice of product attributes made available by competitors and other market factors. Regarding presale properties, the pricing takes into consideration not only the internal and the external factors, the same as for spot properties, but also the additional expected and unexpected presale risks which are specific to the forward market as shown on the right-hand side of Figure 2.

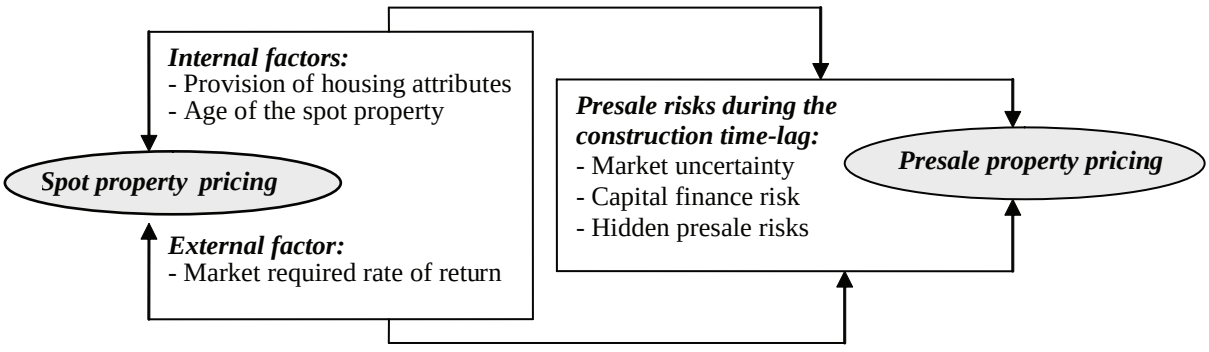

Figure 2. Conceptual framework for pricing spot and presale properties
Source: Leung et al. (2007b)

The additional risks include the expected presale risks arising from market uncertainty during the construction time-lag, the risk from interest rate fluctuations on the additional capital financed for the purchase within the forward contract period, and also the hidden presale risks arising from asymmetric information inherent in the market which include, for example, the risks of development default, high building defect risk, housing features mismatch, exaggeration of floor areas and the use of unethical presale tactics (Leung et al., 2007a and 2009).

3.2. The Repeat Sales Method and the improved FSIT

Based on the framework outlined in Figure 2, the Repeat Sales Method (RSM) developed by Shiller (1993) was employed by Leung et al. (2007b) for building the FSIT. According to the RSM, the quality of a property possesses a package of attributes, x, which remain unchanged between times. Under this assumption, all properties have the same price path through time and a change in the price level of a property occurs only in response to the change in price of the same property sold to indicate the market return, m, required between the two sales period. As such, this method has the advantage of avoiding the functional form required for measuring the unique housing attributes of the properties $p(x)$ as they have been cancelled out in the repeat sales. It should be noted that the assumption of no quality change of the property between sales holds only if the aging effect, a, has been considered. As such, the price change between the two sales of the same property under the RSM can be written as,

$$P_{t_2} - P_{t_1} = P(m, a,) \tag{1}$$

where: P_{t_1} = price of the first sale of the property sold at t_1; P_{t_2} = price of the subsequent sale of the same property sold at t_2; m = market return of the property during the holding period from t_1 to t_2; a = aging effect incurred on the property during the holding period from t_1 to t_2.

Applying the repeat sales equation (1) into presale properties, if the same properties have their first sales taken place in the forward market in form of presales with the assumption of the presale risks, P_F; whereas the subsequent sales are transacted in the spot market after their completion, P_S; then equation (1) could be revised as,

$$P_S - P_F = P(m, r\tau, a, h) \tag{2}$$

where: P_F = price of the first (pre)sale of the uncompleted property; P_S = price of the subsequent (spot)sale of the same property after completion; m = market return generated during the holding period between time F and S; a = aging effect from completion of the property to its subsequent (spot)sale; r = net compounded discount rate required in the market; τ = construction time-lag between the presale and the completion of the property; $r\tau$ = total discount to compensate the additional cost of capital in form of payment discount during τ; h = hidden presale risks borne by buyers during the construction time-lag.

Instead of using the FSIT developed by Leung et al. (2007b) which adopted a log-linear structure, an improved testable format was built in this research using a semi-log structure for investigating the impacts of the presale risks contained in equation (2), shown as,

$$\ln P_{St_1} - \ln P_{Ft_{-1}} = \beta_1 + \beta_{2(F,S)} \ln m_{t_{-1} \to t_1} + \beta_3 r\tau_{t_{-1} \to t_0} + \beta_4 a_{t_0 \to t_1} + \beta_5 h_{t_{-1} \to t_0} + \varepsilon \tag{3}$$

$$\ln(P_{St_1} / P_{Ft_{-1}}) = \beta_1 + \beta_{2(F,S)} \ln m_{t_{-1} \to t_1} + \beta_3 r\tau_{t_{-1} \to t_0} + \beta_4 a_{t_0 \to t_1} + \beta_5 h_{t_{-1} \to t_0} + \varepsilon \tag{4}$$

where: $\ln(P_{St_1} / P_{Ft_{-1}})$ = logarithm of the relative price changes of the forward-spot pair sales;

β_1 = intercept coefficient (constant); $\ln m_{t_{-1} \to t_1}$ = logarithm of the market returns generated from the spot property index prevailed in the property market during the holding periods from t_{-1} to t_1; $\beta_{2(F,S)}$ = coefficient measuring the relationship between the rates of returns generated from the presales and those generated from the spot properties; $r\tau_{t_{-1} \to t_0}$ = discounts required to compensate the additional cost of capital during the construction time-lag from t_{-1} to t_0; β_3 = coefficient attached to the discount factor; $a_{t_0 \to t_1}$ = aging effect from completion of the property, t_0, to its subsequent sale in the spot market, t_1; β_4 = coefficient attached to aging effect; $h_{t_{-1} \to t_0}$ = hidden presale risks borne by buyers during construction time-lag, t_{-1} to t_0; β_5 = coefficient attached to the hidden presale risks; ε = error term.

Equation (4) can capture both the expected and the hidden presale risks contained in Figure 2, namely the return generated to cover the market risk during the construction time-lag, m; the discount to compensate for the additional cost of capital incurred to presale property buyers within the forward contract period, $r\tau$; and the possible wealth transfer imposed by developers on the presales taking the advantage of the bundle of hidden presale risks arising from asymmetric information inherent in the forward property market.

Index tracking of the price changes of presale properties – if the presale properties during the forward contract period possess the same level of market risk borne by spot properties, the returns required from the repeat sales of the presale properties and that of spot properties should then be similar and, as such, their price indices should track along closely with each other. Therefore, the correlation coefficient, β_2, measuring the elasticity of the two streams of return rates was expected to be close to 1. Any deviation between the two price indices, forward and spot, would suggest otherwise.

It should be noted that in the original FSIT Model developed by Leung et al. (2007b), a log-linear format was used to compare the pricing behaviors between presales and spot-sales of the same set of properties during the study period. However, if a log-linear structure was used to define the relationship between the price difference of the presales and spot-sales, the continuous compounding returns of the price difference of the presales presented in logarithm would be smaller than the discrete returns of the price difference of the spot-sales presented in linear structure. As such, the coefficient measuring the relationship between the two, β_2, could hardly be close to 1 as expected.

To improve the performance of the FSIT model, logarithm on both the price difference of the presales and the price difference of the spot-sales should be taken. By doing so, the coefficient measuring the relationship between the price difference of the presales and that of spot-sales, β_2, would then be close to 1 since logarithm has been taken on both the dependent and independent variables. To verify this, an improved FSIT Model was built as shown in equation (4).

Discounts required to compensate the additional cost of capital – the discount required by the buyer was regarded as the compensation for the additional cost of capital for holding the uncompleted property during the construction time-lag in which no rental income can be generated. The coefficient β_3 was expected to be positive, i.e. the higher the interest rate and the longer the construction time-lag, the more was the discount required in the presales and thus the larger the relative price changes between the pair-sales (Chau et al., 2003).

Depreciation due to aging of the properties – if subsequent sales of the properties are transacted some time after the completion at t_1, then adjustment had to be made to control the aging impact of the spot properties

transacted in the subsequent sales in order to keep the price level free from the change in quality over time. A negative sign on β_4 was expected to show the depreciation taken place on the properties.

Wealth transfer arising from asymmetric information and the three repeat sales method – since there was hardly any proxy available in the market for identifying the group of hidden presale risks arising from asymmetric information in one measure, a dummy variable, h, was built into the model to investigate whether there was any impact from the hidden risks imposed on the pricing of the presale properties. The dummy variable, h, was used to classify the category of the forward-spot pair-sales from the spot-spot pair sales of the same set of properties contained in the sample set for comparison. However, only forward-spot pair-sales were contained in Equation 2 without the inclusion of spot-spot pair-sales. To tackle this problem, spot-spot pair-sales of the properties had to be included in the model for the analysis. As such, three repeat sales of the same property with the first sale ($P_{Ft_{-1}}$) transacted in the forward market and the subsequent two sales (P_{St_1} for the second sale and P_{St_2} for the third sale) transacted in the spot market were required in order to make two-pairs-sales for the same property, i.e. a forward-spot pair, $\ln(P_{St_1} / P_{Ft_{-1}})$, and a spot-spot pair, $\ln(P_{St_2} / P_{St_1})$, for the same property. Equation 4 was then revised as,

$$\ln(P_2 / P_1) = \beta_1 + \beta_2 \ln m + \beta_3 r\tau + \beta_4 a + \beta_5 h + \varepsilon \quad (5)$$

where: $\ln(P_2 / P_1)$ = logarithm of the relative price changes of the two sets of repeat sales data from the same properties. $\ln(P_{St_1} / P_{Ft_{-1}})$ if they were forward-spot pairs, and $\ln(P_{St_2} / P_{St_1})$ if they were spot-spot pairs; $\ln m$ = logarithm of the market returns generated from the spot index, the period is from t_{-1} to t_1 if the dependant variable was a forward-spot pair, and from t_1 to t_2 if the dependant variable was a spot-spot pair; $r\tau$ = payment discounts to compensate the additional cost of capital from t_{-1} to t_0 for forward-spot pairs and zero otherwise; a = aging effect on forward-spot pairs from t_0 to t_1, and spot-spot pairs from t_1 to t_2; h = unity was assigned if they were forward-spot pairs and zero otherwise.

If the coefficient β_5 attached to the dummy variable had significantly lowered the intercept (in negative sign), the differential intercept suggested that a wealth transfer relative to the price changes had been embedded in pricing the presale properties. The larger the negative differential intercept, the higher the presale properties were priced at t_{-1} compared to their equilibrium spot prices.

3.3. Data source

The study period covered the years from 1993 to 2006 and the data were extracted from various sources for the validation.

Properties chosen – properties contained in the sample set were selected from twelve randomly selected housing estates. They were all high-rise buildings in the form of self-contained housing estates in which their structural characteristics, neighborhoods and amenities were very similar (Tse, 1997). As required by the FSIT, only properties with three repeat sales were selected so that a forward-spot pair and a spot-spot pair could be formed for the same individual property. There were a total of 2136 pair-sales, including both the forward-spot pairs and spot-spot pairs, extracted from the years 1993 to 2006 from the Economic and Property Research Centre (EPRC). The transactions spread evenly over the study period so that both boom and bust periods were covered in the tests. To further control the quality of the sample set, the ages of the properties selected for the study were no more than ten years old when the spot sales were transacted.

Spot property price index – the Selected Popular Residential Developments (SPRD) published by the Rating and Valuation Department of the Hong Kong Government was considered the most appropriate benchmark proxy in this study for measuring the returns generated in the spot property market. It is because the SPRD covers properties from large self-contained estates which share similar characteristics with the twelve housing estates chosen for the study in terms of period of construction, building style, facilities and properties attributes. Also, the data are available on quarterly basis which provides more up-to-date information in reflecting the recent market sentiment and has been the primary source that practitioners make reference to. The SPRD price index was, therefore, used as the benchmark proxy for measuring returns generated from the spot property market.

Discounts to compensate for the additional cost of capital – most property developments are financed through borrowing and the borrowing rates charged by banks in Hong Kong generally fluctuate with the best lending rates. Developers would take reference of the best lending rates for setting the discounts offered. The best lending rates, extracted from the database of the Hong Kong Monetary Authority, therefore, was used in this study as proxy for measuring the cost of capital.

A summary statistics of the sample set is contained in Table 1.

4. RESEARCH FINDINGS

Ordinary Least Square (OLS) method was used for the validation of the models built in the study.

4.1. OLS estimation of the improved FSIT model

Table 2 contains the results generated from the validation of the improved FSIT. The signs of all the coefficients attached to the explanatory variables were generated as expected. The coefficient, β_2, measuring the elasticity of the percentage change in the price difference of the forward-spot properties for a percentage change of the price difference of the benchmark spot properties, was at 0.9903. It was not only significant with t-stat at 86.05 but also very close to 1.

Table 1. Summary statistics of the twelve housing estates

Variables	Min.	Max.	Mean	Std. deviation
Sales price[1]	0.6	17.5	4.5	2.5
Relative price changes[2]	0.2094	3.4667	1.0119	0.4394
Spot market returns[3]	–122.3	95.9	–8.4	50.1
Age[4]	0	10	3.5	2.8
Annual discount rate[5]	5	11	9	1
Construction time-lag[6]	0	1.9	0.4	0.4
Total compounded discounts required[7]	0	17.2	2.8	3.6
No. of pair sales (N)	2136			

[1] All sales prices, including both presales and spot-sales, under the dependant variable (in million HK dollars); [2] Relative price changes of the pair-sales under the dependant variable (P_2/P_1); [3] Returns generated from the property market measured by the SPRD (spot property) Index during the holding periods (in %); [4] Ages of the properties when the spot sales were conducted (in years); [5] Annual discount rates required in the market (in %); [6] Construction time-lags during the forward contract period (in years); [7] Total payment discounts required to compensate the additional cost of capital during the construction time-lag (in %).

Table 2. OLS estimates of the improved FSIT on the housing estates

Explanatory variables	Coefficient	Std. Error	t-Stat	Prob.
Constant β_1	0.0162	0.0103	1.59	0.1146
Spot market returns β_2	0.9903	0.0115	86.05	0.0000
Discount factor β_3	0.9625	0.1888	5.10	0.0000
Aging β_4	–0.0158	0.0018	–3.20	0.0014
Hidden presale risk β_5	–0.0405	0.0146	–2.79	0.0054
Adjusted R-squared		0.84		
F-stat		2866		
No. of pair sales (*N*)		2136		

It indicated that the relative price changes of both the forward property market and the spot market during the study period were not only in the same direction but also with a high degree of synchronization which was close to 1.

The discount factor showed a positive coefficient of 0.9625 which indicated that a discount very close to the estimated compensation was embedded in the presale prices as payment discount for covering the additional cost of capital incurred to the buyers during the construction time-lag. The aging factor showed a negative coefficient of –0.0158 which was approximated at a depreciation rate of 1.6% per annum in depreciation of property values. The negative coefficient of –0.04 attached to the hidden presale risks suggested that a wealth transfer was found only in the price changes of forward-spot pair-sales, but not in the spot-spot pair-sales of the same properties. It was also statistically significant at t-stat of –2.79. The finding supports the proposition that developers were able to charge an extra profit of approximately 4% on the presale property prices higher than the expected prices of the same set of properties sold in the spot market in which no hidden presale risks were present.

4.2. OLS estimation on presale properties only

The improved FSIT Model was used to compare the pricing behaviors between presales (forward-spot pair-sales) and spot-sales (spot-spot pair-sales) of the same set of properties and the results showed that a wealth transfer was embedded in the presales but not in the spot sales. Then, one might ask how presale properties would perform on their own in the forward property market without inclusion of the spot properties. To do this, a separate test was needed which contained only forward-spot pair sales without the spot-spot pair sales. Based on the improved FSIT, the dummy variable representing the hidden presale risks was excluded from the test so that the spot-spot pair sales were taken out from the dependant variable set, equation (5) was revised as,

$$\ln(P_{St_1} / P_{Ft_{-1}}) = \gamma_1 + \gamma_2 \ln m + \gamma_3 r\tau + \gamma_4 a + \varepsilon \quad (6)$$

Since the dummy variable was taken out, the effect of the hidden risks which were specific to the forward market would, therefore,

be absorbed in the intercept, γ_1, through the regressing process. As such, a lower value should be obtained from the intercept generated from equation (6), γ_1, compared to that of the improved FSIT Model, β_1, outlined in equation (5), indicating the amount of wealth transferred from the presale property buyers to the developers. The test was carried out and the results are contained in Table 3.

The results of the OLS estimates on the forward-spot pair sales only equation (6) compared to that of the improved FSIT Model equation (5) on the same set of properties are contained in Table 3. The comparison showed that the coefficients attached to the explanatory variables of the spot market return (1.0018 in (6) vs 0.9903 in (5)), aging impact (–0.0195 in (6) vs –0.0158 in (5)) and discount required between the two tests during the study period (1.0136 in (6) vs 0.9625 in (5)) were very similar. However, the intercept generated from the forward-spot pair-sales only at –0.0208 in (6) was very much lower than that of the FSIT model at 0.0162 in (5), of which the impact of the hidden presale risks had been considered under a separate dummy variable. The range of the differences is –0.037 [from –0.0208 (γ_1 in (6)) to 0.0162 (β_1 in (5))] which was approaching to β_5 of –0.04 in (5). The result once again confirmed the suggestion proposed by the improved FSIT model that presale property buyers had paid an extra amount of about 4% on the presale prices in the forward property market, higher than the expected prices required in the spot property market in which the group of hidden presale risks was not present.

5. CONCLUSIONS

The research was conducted to investigate whether a wealth transfer from presale property buyers to developers had been imposed in the pricing of presale properties due to the hidden presale risks arising from asymmetric information in forward property markets. According to the economic theory of transfer of consumer surplus with asymmetric information, developers are able to hide information about the negative aspects of the properties in the presales in order to generate an extra profit since buyers are not able to inspect the uncompleted properties when they make the purchases. By adapting the forward-spot index tracking (FSIT) model using a log-linear structure built by Leung et al. (2007b) for studying the impact of the hidden presale risks on the pricing of presale properties, an improved FSIT model using a semi-log structure was built. The improved model can reflect more accurately the relationship between the price movement of presale properties and that of spot properties since logarithm had been taken on both variables for the measurement.

Table 3. Comparison between forward-spot pair sales and improved FSIT model

Explanatory Variables	Forward-spot pair sales only (6)		The FSIT Model (5)	
	Coefficient γ	t-Stat	Coefficient β	t-Stat
Constant	–0.0208	–1.37	0.0162	0.12
Spot market returns	1.0018	61.72	0.9903	0.00
Discount factor	1.0136	5.18	0.9625	0.00
Aging	–0.0195	–3.36	–0.0158	0.00
Hidden forward risks	N/A	N/A	–0.0405	0.01

The results showed that, first, the market returns generated from presale properties in Hong Kong during the study period tracked along very closely to those of spot properties. Second, a payment discount correlated to the interest rate at the time when the presale was transacted and the length of the construction time-lag was demanded on the presale price to compensate the additional cost of capital incurred to the buyer within the forward contract period. On the other hand, a wealth transfer averaging at about 4% of the presale prices was found in the pricing of the presale properties, which supports the proposition that developers could have charged prices in the presales higher than the prices of these properties sold in the spot market in which no hidden presale risks were present. On the other side, buyers might have to accept the higher price imposed on presales by developers in order to get the developments with the housing attributes that they desired, which resulted in a wealth transfer. Yet, whether this was a premium that buyers were willing to pay for and, if so, how much the amount should be warrants further investigation.

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SANTRAUKA

TURTO PERSKIRSTYMAS IŠANKSTINIŲ NEKILNOJAMOJO TURTO SANDORIŲ RINKOSE

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Nekilnojamojo turto (NT) agento problema, kurią sukelia neproporcinga informacija iš anksto parduodant nebaigtą statyti nekilnojamąjį turtą išankstinių NT sandorių rinkose (angl. *forward property markets*), yra gerai žinoma. Kadangi pirkėjai negali apžiūrėti nebaigto statyti nekilnojamojo turto, vystytojai gali nuslėpti informaciją apie neigiamus nekilnojamojo turto dalykus arba perdėti kokybę, tuo siekdami pasipelnyti iš išankstinio pardavimo papildomai prie likutinės vertės, lyg nekilnojamasis turtas būtų parduodamas neatidėliotinų atsiskaitymų rinkoje (angl. *spot market*). Šiuo atžvilgiu tyrime taikytas išankstiniais sandoriais ir neatidėliotinais atsiskaitymais pagrįsto kartotinio NT pardavimo kainodaros modelis, siekiant iš anksto parduodamo NT kainodarą išnagrinėti lyginant su neatidėliotinų atsiskaitymų rinkoje parduodamu NT, kai agento problemos nėra. Išvados rodo, kad vystytojai turėjo galimybę pirkėjams primesti turto perskirstymą paimdami iš jų daugiau, kai iš anksto parduodamą nekilnojamąjį turtą įkainodavo naudodamiesi neproporcinga informacija, būdinga išankstinių NT sandorių rinkoms.