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INSTITUTIONAL INVESTOR RECOGNITION ON FINANCIAL ASSET TRANCHES: A STUDY OF THE THAI PROPERTY SECTOR

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Abstract. This study explores the investment behavior of Thailand's institutional investors. A comparison is made between property development shares and property funds. An experiment was conducted on the Stock Exchange of Thailand (SET) from June 2008 to June 2012. However, the findings of this study are expected to be generalized across other emerging markets that are mostly dominated by retail investors. The Generalized Least Squares regression method is applied to limit the threat from small market capitalization characteristics of the sample. The study finds that: (1) trading volume of property funds leads to the market price premium of their net asset values (NAVs); (2) institutional investors' holding of property development shares encourages the market price of these stocks to be higher; (3) institutional investors prefer to make their investment decisions based on the discounted market price of property funds rather than the net asset value of the property funds. The results imply that higher liquidity yields a higher premium price on book value or net asset value. Another implication is that projected cash flows of financial assets that represent their current price are more important than their present net asset value. Finally, free float and the existence of institutional investors positively affect financial asset prices.

1. INTRODUCTION

Since the 1980s, the proportion of institutional investor trading on NYSE has been greater than 70% (NYSE, 2013). The increasingly important role of institutional investors on capital markets is due to a significant expansion of institutional investors worldwide, including endowment funds, hedge funds, insurance companies, investment banking institutions, investment trusts, mutual funds, pension funds, sovereign wealth funds, unit trusts, unit investment trusts, and so on.

In the past decade, a number of emerging capital markets have grown quickly in terms of market capitalization and security types. The growing number of middle-class in developing countries has induced more fund flows to these nations. Several governments in South East Asia have established a variety of instruments to encourage investment in securities. These incentive instruments are particularly tax privilege schemes, such as Long Term Equity Funds (LTFs) or Retirement Mutual Funds (RMFs).

The establishment of these incentive schemes has strengthened the role of institutional investors. To date however, there have only been a few studies on the behavior of institutional investors in emerging markets. There are also many issues pertaining to the corporate governance of institutional investors' investment decisions. This study aims to explore the behavior of Thailand's institutional investors via the investment of two asset classes, namely property development shares and property funds. The study confirms whether or not institutional investors are rational passive investors who invest in underpriced assets.

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This paper is in final form and no version of it will be submitted for publication elsewhere.

1.1. **Overview of the Stock Exchange of Thailand.** Thailand is recognized as one of the leading emerging markets by the International Monetary Fund (IMF). An emerging market is classified by its economic growth rate, i.e. GDP growth rate and fundamental macro economic factors that are rapidly improving (IMF, 2012). Since the 1990s, the Stock Exchange of Thailand (SET) has also allowed the international diversification of financial instruments e.g. American Depositor Receipts (ADRs) or the stocks of SET companies that are traded on US stock exchanges. In 2012, the market return from the Stock Exchange of Thailand (SET) was 35.76% p.a. compared with the Dow Jones Index's rate of return and the FTSE index's rate of return of 5.90% and 6.34% respectively.

The listed securities of the SET are divided into 9 sectors. The property sector consists of construction materials, property development and property funds. Their market capitalization is shown in Figure 1.

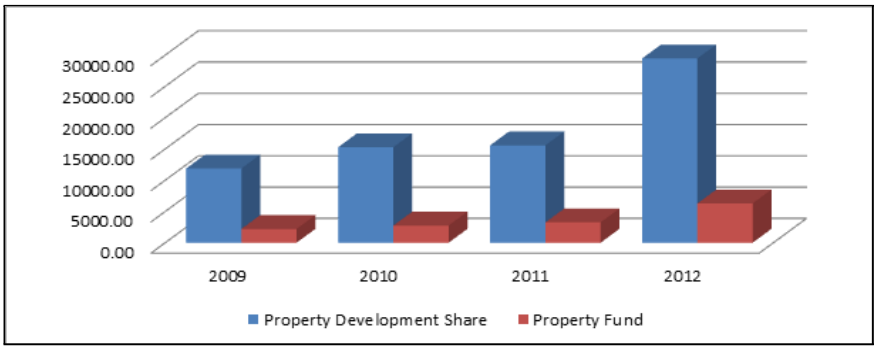

Figure 1: Market capitalization of SET property development shares and property funds.

One of the specific characteristics of the Stock Exchange of Thailand is that retail investors exhibit high proportional trading volumes. This characteristic is the same as in other Asian emerging markets (Wei, Rhee and Wang, 2011). The role of institutional investors is expected to increase while retail investors are believed to gain more experience. From 2009 to 2012, retail investors played the opposite role in trading from institutional investors that comprise foreign investors, proprietary trading and local institutional investors. This observation can be clearly seen in Figure 2, which shows the net trading (buy or sell) value of each investor group on the SET.

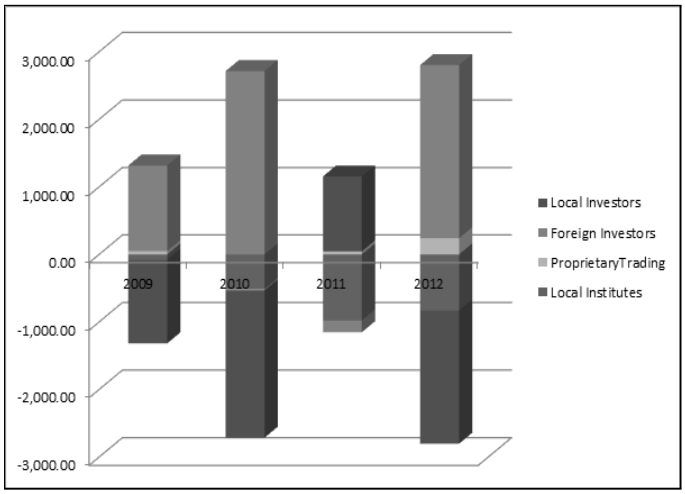

Figure 2: Trading volumes by different types of investors.

2. Institutional investors and property development

Institutional investors generally have to deal with asset allocation, given that their managed funds are large and have long maturity. Because of these restrictions, property assets normally become part of institutional investors' basic investment. Since property assets are generally expensive, they are illiquid. To attract investors, property assets must have high risk-adjusted returns than basic financial securities, such as common stocks. The return gap between property assets and basic financial securities is called "liquidity premium". The predictability of income streams from property assets also offers attractive opportunities for investors to accept gearing. In the past few years, the money supply easing by major developed countries (also known as quantitative easing or QE) has resulted in a low interest rate environment. Nevertheless, investors can still protect their investment value through property investments since the value of property assets will be higher from lower discount rate (gearing ratio). There are also drawbacks to investing in property assets, such as the lumpiness of assets, information asymmetries, and barriers to entry. Possible reasons are as follows: (1) building values tend to be large; (2) properties are basically indivisible; (3) sellers of an asset generally have an informational advantage over buyers and; (4) substantial capital is needed to invest in properties. Moreover, managing these assets requires professional managerial knowledge, especially with regard to technical management of the assets, leasing activities, refurbishments, transactions, and strategic dimensions of the assets. In the final case, investors will act like the manager of an operating property.

Since the 1970s, property investments have shifted dimensionally from direct investments or investments in real assets to indirect investments or investments in financial assets. The traditional method of real estate investments has benefits of full control management and more tax transparency. However, from the financial point of view, a large lot size and the heterogeneity of real estate can result in a high degree of unsystematic risk (Miller and Geltner, 2005). The development of financial assets such as property funds and Real Estate Investment Trusts (REITs) are aimed at dealing with liquidity constraints. Property funds increase the liquidity of property assets through valuation and separation in fund units. Fund investment also lessens the total risk by reducing its unsystematic risk portion. Unit holders can benefit from a small lot size, low transaction costs, and regular report of the unit's NAV (Net Asset Value). For all these apparent benefits of investing in property funds, it can be said that investors have the ability to switch between property funds and other asset classes. Figure 3 shows the classification of financial asset classes from low to high risk.

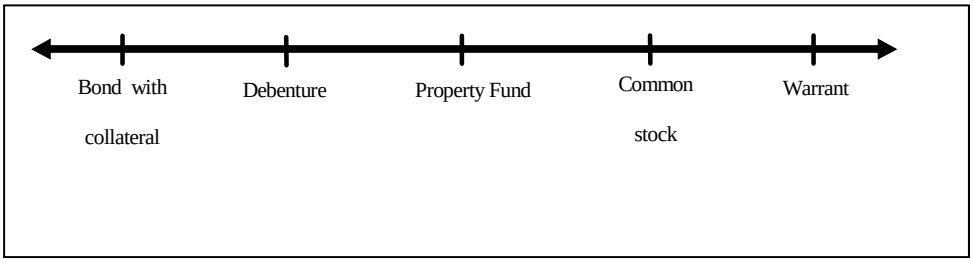

Figure 3: Financial asset risk classification.

In Thai capital markets, major financial assets relating to properties can be categorized by their degree of risk, from bonds to warrants. The transition of asset types, from real assets to financial assets, is associated with liquidity constraints. The property business has a long cash conversion cycle because the average inventory period is long. The mortgage process also results in properties being sensitive to interest rate changes. Properties may behave the same

way as bonds when interest rates increase, i.e. the property price tends to decrease when the interest rate rises, holding other factors constant. In real life, however, when other factors are not held constant, this phenomenon might not always be the case. Hoesli et al. (2004) find that property returns are weakly correlated with stock returns. The diversification benefits of property investment largely stems from properties' low (often negative) correlation with bonds.

Table 1: Differences between property asset types

Investor preferences	Property development shares	Property fund	
		Lease hold	Free hold
Investment period	Could be short term investment to long term period	Medium to long term	
Availability of capital employed	Market daily	Reference to the price on secondary market	
Minimum lot size	100 shares each	100 units each	
Foreign limitation	Normally the direct holding does not exceed 49% according to National Commercial Act	No limitation	
Risk preference	High	Less than freehold	More than leasehold
Tax consideration	No capital gain taxes if sold on SET		
	Withholding tax of 10% for dividends if listed on SET but the holding period before and after dividend paid must be longer than 3 months		
Valuation	Very complicated depending on company capital and business structure	Cash flows expected from the asset or cash flows expected from a closely-related asset	
Control	By board of directors through the annual shareholder meeting	By appointment of the mutual fund company; usually there are no annual unit holder meetings except for non-ordinary transaction, e.g. asset sale, contract changes	
Pre emptive right	YES	NO	
Leverage Ability	YES without legal limit	Normally not allowed or very limited (presently the Commercial Laws allow no more than 10%)	

The risk of common stocks comes from business risk and financial risk. Property funds in Thailand need to have a specific purpose of asset allocation, normally closed-end funds with an option to be listed on the SET. The risk of property fund investments stems from the risk of investing in real estate. Generally, major concerns in real estate investments are: (1) adverse changes in political or economic conditions; (2) adverse local market conditions; (3) financial conditions of property buyers and sellers; (4) changes in availability of debt or equity financing; (5) changes in interest rates and other operating expenses; and (6) changes in environmental laws and regulations, zoning laws and other governmental rules, and fiscal policies. Property

fund investments thus are exposed to the same group of risk factors, and as a result their value is volatile. The capital value of the assets in property funds may significantly diminish in the event of a sudden downturn in real estate market prices or an instant decline in the economies in Bangkok and other provinces in Thailand where such a portfolio of properties in the fund are located. Property funds may also be adversely affected by the illiquidity of real estate investments and the lack of alternative uses for properties. Moreover, concentration of investments in retail properties exposes property funds to the risk of downturns in the retail market of Thailand. Such downturns may lead to a decline in the occupancy of the properties or real estate-related assets in the portfolio of property funds. This decline will negatively affect the income of the property fund from the premises, and/or result in a decline of the NAV, which will have an adverse impact on dividends paid to unit holders and/or on operations and financial conditions of the property fund. Table 1 summarizes the differences between property shares and property funds in some important respects.

The rest of this paper is separated into 4 sections. The second section discusses other related previous studies. The third part concentrates on data, the definition of variables, and the research methodology. The fourth section shows results and discussions. The last section summarizes the research outcomes and the limitations

3. LITERATURE REVIEW

This section consists of three parts. The first part reviews the literature on investment in property. The second part explores institutional investors' behaviors. The third part summarizes previous studies pertaining to variable development.

Property investment decisions depend on many factors. Some of the important ones are the period of investment; cash inflow stability and the potential to increase revenue; appreciation potential; nature of contracts; location; and utilization. The return on property investment comes from income received (current yield) and asset price appreciation (capital gains yield), while sources of risk are the security of the investment and liquidity (Berry et al., 1999). Property development usually requires significant investment. Thus, property development companies usually have a high debt ratio. The study of Thao, Joseph and Ooi (2012) confirms that the maturity of the debt capital market has a significant and positive influence on firms' capital structure while developments in the equity capital market have an inverse impact on the debt ratio of property companies.

Institutional investors are major players not only in developed markets but their role is also rapidly growing in emerging market countries (Khorana et al., 2005). Institutional investors can encourage short-term managerial behaviors (Bhide, 1993). Chen et al. (2007) divide institutions into two groups; these are independent institutions (e.g. mutual fund managers and investment advisers) and grey institutions (e.g. bank trusts, insurance companies, and other institutions). Independent institutions tend to be a pressure-resistant investor while grey institutions tend to be a pressure-sensitive type that is loyal to corporate management. Brickley et al. (1988) argue that banks and insurance companies are more supportive of management actions than other types of institutional investors in anti-takeover amendment proposals. Their investigation of investment preferences has results consistent with what usually happens in the U.S. market, in that institutional investors generally prefer large, widely held, and visible stocks. In contrast, Bennett et al. (2003) observe that independent managers invest more in firms with liquid stocks and firms in countries with strong legal environments, in comparison to grey managers (especially the bank-controlled ones). In the study of Bushee (2001), transient institutional investors are found to be concentrating on near-term earnings, but passive on long-run value. This behavior consequently induces myopic stock mispricing. Nagel (2005) provides evidence that mispricing is at the greatest degree for stocks with the lowest degree of institutional ownership. Here, institutional ownership is a proxy for the extent to which short-selling constraints bind (the assumption is that short-selling is cheaper for institutions).

Recent institutional investor involvement in corporate governance has been seen as a natural response to the decline in the takeover market and the rise of informed institutional investors (Pound, 1987). Gompers and Metrick (2001) indicate that institutional ownership (the fraction of a firm's shares held by all institutions) can predict returns cross-sectionally given that firm characteristics are similar, while Cohen et al. (2002) show that institutions, as a group, exploit price momentum at the expense of individuals. Amir (2007), on the other hand, argues that the liquidity-ownership relationship is mostly driven by institutional ownership rather than insider ownership. In addition, liquidity is positively related to total institutional holdings but negatively related to institutional blockholdings. Most institutional blockholders are permitted to trade on information as they are not classified as insiders even if they hold more than 10% of a stock's outstanding shares. Amir's study also reports that while institutional holdings are positively correlated with liquidity, institutional concentration is observed to be negatively correlated with liquidity. From the perspective of institutional investors, property assets have a long duration with a combined aspect in which contractual rents are tied to the rate of inflation. This feature calls for a mixed investment strategy (Chun et al., 2000; and Craft, 2001).

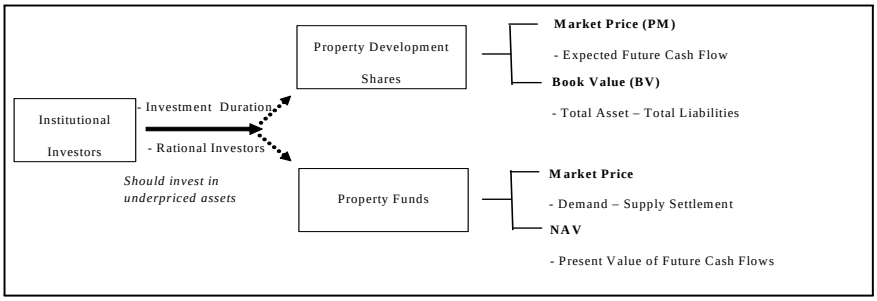

Figure 4: Conceptual framework.

Gillan and Starks (2003) speculate that the rise of professional money managers as a large shareholder group in corporations worldwide offers the potential for increased monitoring of firm management. Institutions' involvement can range from threatening a stock sale to actively using corporate voting rights or meetings with management. Furthermore, several empirical studies suggest that independent investment advisers and mutual funds are active monitors. Daniel et al. (1997) show that stocks held by mutual funds outperform a variety of benchmarks. Stock-holdings data suggest that institutions in general and mutual funds in particular have stock-picking skills even though their returns after costs and fees seem to be poor. Since investment decisions directly relate to the consideration of expected returns, non-rational behaviors among investors need explanation. The theoretical framework underpinning these phenomena is behavioral finance. Zhang (2006) finds that stocks with greater informational uncertainty (e.g., small business entities that have very few analysts following) exhibit stronger statistical evidence of mispricing in terms of return predictability from book/market and momentum within cross-sectional regressions.

Under the regime of capitalism, land rights, especially freehold[1], encourages property investment to be an interesting alternative choice for institutional investors. Their investment decisions are much related to the balance of risk and return. While financial assets increase the liquidity of properties, investors lose some control. Thus, rational institutional investors often seek to invest in asset types that generate strong and regular cash inflows. As the book value of property development shares comes from the balance sheet, while the NAV comes from the forecast of the net present value of cash flows throughout the asset life, institutional investors tend to invest in assets with lower unit market price to NAV. In contrast, institutional investors prefer a higher market price to book value of property development shares since normally there

[1]Freehold refers to ownership of land and the buildings on such land. The opposite is leasehold estate where property reverts to the owner when the lease expires.

is a strong positive correlation between market price and P/E ratio (Ramcharran, 2002). Figure 4 summarizes the theoretical development of the study.

4. DATA AND METHODOLOGY

4.1. **Data and variables definition.** The property sector in the Stock Exchange of Thailand (SET) consists of three groups: (1) construction materials, e.g. cement, steel and decoration materials; (2) property development and construction companies; and (3) property funds. Sample data in this paper includes only property development companies and the property fund sector. There are, in total, 43 listed property development companies and 17 property funds in the sample. The daily observation period lasts from June 1, 2008 to June 30, 2012 or four consecutive years. The small market capitalization leads to no trading volume for some observed days. These observations are deleted from the final list in order to limit the autocorrelation and heteroscedasticity that may arise later on. The descriptive statistics of each sample group are shown in Appendices 1 and 2. Although some control variables are not reported daily, i.e. Book Value (BV) is reported quarterly, and Net Asset Value (NAV) and Coincident Economic Index (CEI) are reported monthly, the standard deviation of these variables is very small (less than 1 for BV and NAV and less than 4 for CEI). When small standard deviation of economic variables exists through the study period, the threat from misinterpretation is limited (Prayaratch, 2010).

The model specification has two variable groups i.e. control variables and observed variables. The variables' symbols, definitions and expectation signs are explained in the following table (see Table 2).

Table 2: Variable development summary

Variable	Definition	Expected Sign
	Control variable	
I	• The inter-bank overnight rate, which directly reflects the yield to maturity (YTM). The data come from the Bank of Thailand through its website: www.bot.or.th.	"+" / Chiou and Su, (2007)
	• For the property development sector, a higher interest rate will push down the equity as the net tangible asset does not change. In other words, a higher interest rate would lower the book value of the stock.	
	• For property funds, their illiquidity characteristic in the SET results in no correlation between their market price and short-term interest rate. The flat yield curve during the study period implies that the NAV is unchanged.	
CEI	• Coincident Economic Index (CEI) is the indicator of business cycles, intended as a complementary tool in the assessment of economic trends and short-term economic forecasting. The CEI is useful in the determination of the turning points or the peaks and troughs of business cycles as well as a short term (3-4 months) forecast of the economy. The data come from the Bank of Thailand through its website: www.bot.or.th.	"+" / Ibrahim and Said, (2012)
	• The CEI is constructed from 5 components, including real imports, manufacturing production index, real gross value added tax, volume sales of automobiles, and real debit to demand deposit (withdrawals of demand deposit account). During the study period, the interest is capped at a low point in Thailand so that the discounted rate does not significantly change.	

Variable	Definition	Expected Sign
	• As CEI represents the economic conditions, an increase of CEI would lead to the expectation of good economic conditions which determines higher prices of financial asset. Thus, Pm/BV or Pm/NAV ratios would increase.	
Oil	• The diesel premium grade is announced daily by Petroleum Thai Plc. (PTT), which has more than 90% of the oil supply in Thailand. The data come from Petroleum Authority of Thailand through its website: www.pttplc.com/th/getoilprice.aspx.	"-" / Miles (1996)
	• Property development companies and property funds require revaluation of their NAV regularly. Diesel price movements significantly affect construction costs. A lower price of oil would decrease the replacement cost of property assets. Thus, the NAV or BV should be lower. The lower values of the denominators would increase the market price to BV or the market price to NAV ratios.	
lnSET	• The SET Index is a composite economic indicator which is calculated from the prices of all common stocks (including unit trusts of property funds) on the main board of the Stock Exchange of Thailand (SET), except for stocks that have been suspended for more than one year. It is a market capitalization-weighted price index which compares the current market value of all listed common shares, with its value on the base date of April 30, 1975, which was when the Index was established and set at 100 points. The index is calculated as follows:	"+"
	Set Index $=\frac{\text{Current\_Market\_Value}\ 100}{\text{Base\_Market\_Value}}$	
	• The data come from the Stock Exchange of Thailand through its website: www.setsmart.com.	
	• Since the SET index is positively correlated with the market price of securities, a higher index should lead to higher Pm/BV or Pm/NAV ratios.	
Observed variables		
lnVol	• For property shares, the daily trading volume is directly related to their free float. Liquidity has a positive effect on the market price. Thus an increase of trading volume should also increase market price and accordingly Pm/BV ratio.	"+"
	• The data come from the Stock Exchange of Thailand through its website: www.setsmart.com.	
lnAvgVol	• The trading volume on property funds is slim, thus the average of monthly trading volume is used as a proxy for the whole month's observation. Since liquidity positively affects the market price, an increase in the average daily trading volume should increase market price and accordingly the Pm/NAV ratio.	"+"
	• The data come from the Stock Exchange of Thailand through its website: www.setsmart.com.	
Iinv	• Iinv is a dummy variable. Iinv is defined to be 1 if institutional investor holding in property assets is greater than a specified percentage point, or 0 otherwise.	"+" for property shares
	• The holding of institutional investors is assumed to be significant if institutional investors own more than 5% of property shares and 30% of property funds.	

Variable	Definition	Expected Sign
	• The reason why different criteria is used to define Iinv is that more than 95% of listed property development companies have less than 30% institutional holders.	"-" for property funds
	• Institutional investors in this study are classified into the following groups: (1) commercial banks; (2) security companies investing in own assets; (3) insurance companies; (4) government units and state enterprises under the law on budgetary procedures, or other legal entities established under a specific law; (5) the Government Pension Fund; (6) Provident Funds; (7) Social Security Funds; (8) mutual funds under the Security Law; (9) the Thai Red Cross Society; (10) public benefit foundations; (11) savings and credit; (12) international financial institutions in which Thailand is a member; (13) mutual funds under foreign laws which publicly offer investment units for sale to investors; (14) foreign investors that can be classified under categories (1) to (7) above; and (15) other investors approved by the SEC.	
	• The data come from the Stock Exchange of Thailand through its website: www.setsmart.com.	
	• Since rational institutional investors tend to behave like value investors (VI), who evaluate their investment from cash flow expectation (market price) rather than the book value, the expectation of Iinv coefficient for property shares sector is positive or the investors prefer growth stocks to low PE stocks. The NAV is the present value of future cash flows for property funds. As a consequence, the Iinv coefficient for property funds should have a negative sign; that is, institutional investors would prefer underpriced assets.	

4.2. **Methodology.** General Least Square (GLS) regression is applied in this study to limit the problems of heteroscedasticity and autocorrelation from the sample characteristics, i.e. small market capitalization and government policy control affecting economic variables (e.g. oil price movement is substantially intervened in by the government). After re-estimating the model with weighted least squares techniques (WLS), the p-value of F-statistic is less than 0.05. The Breusch Godfrey (BG) autocorrelation test is significant at the 5% level. The Augmented Dickey Fuller test (ADF) on each variable is shown in Tables 3 and 4. Thus, the analysis complies with basic assumptions of econometrics.

Table 3: Unit root test at level of property shares sample

	ADF Test at Level (Test of I(0))				
Variable	Lag	ADF Test Statistic	Critical Value (5%)	Prob.	Remark
Pm/BV	0	-8.717336	-3.40991	0.0000	Stationary
OIL	0	-15.33775	-3.40991	0.0000	Stationary
I	0	-7.217130	-3.40991	0.0000	Stationary
CEI	0	-18.03311	-3.40991	0.0000	Stationary
lnVol	0	-50.78728	-3.40991	0.0000	Stationary
lnSET	0	-11.94179	-3.40991	0.0000	Stationary

Pm/BV is the ratio of market price and Book Value (BV) of property development shares. Oil is the daily price of premium grade diesel, announced by Petroleum Thai Plc. I refers to the inter-bank overnight rate, announced by Bank of Thailand (BOT). CEI is the Coincident Economic Index, which is the indicator for assessing Thailand economic trend. lnVol is the

natural logarithm of the daily trading volume. lnSET is the natural logarithm of composite prices of all listed companies on the Stock Exchange of Thailand (SET). All ADF test statistics are significant at 5%, indicating that all variables are stationary.

Table 4: Unit root test at level of property fund sample

	ADF Test at Level (Test of I(0))				
Variable	Lag	ADF Test Statistic	Critical Value (5%)	Prob.	Remark
Pm/NAV	0	-4.370776	-3.40991	0.0000	Stationary
OIL	0	-7.318802	-3.40991	0.0000	Stationary
I	0	-3.376668	-3.40991	0.0000	Stationary
CEI	0	-9.268673	-3.40991	0.0000	Stationary
lnAvgVol	0	-19.13372	-3.40991	0.0000	Stationary
lnSET	0	-4.324496	-3.40991	0.0000	Stationary

Pm/NAV refers to the ratio of market price and Net Asset Value (NAV) of property funds. . Oil is the daily price of premium grade diesel, announced by Petroleum Thai Plc. I refers to the inter-bank overnight rate, announced by Bank of Thailand (BOT). CEI is the Coincident Economic Index, which is the indicator for assessing Thailand economic trend. lnAvgVol is the natural logarithm of the average monthly trading volume. lnSET is the natural logarithm of composite prices of all listed companies on the Stock Exchange of Thailand (SET). All ADF test statistics are significant at 5%, indicating that all variables are stationary.

The results shown in Tables 3 and 4 imply that all variables of both sectors are stationary at level since the absolute value of ADF statistics is higher than the absolute value of the MacKinnon Critical Value at 10% significance level.

The multicollinearity test of each variable is performed by calculating the Variance Inflation Factors (VIF) and the results are shown in Tables 5 and 6. Three variables have their VIF ratio greater than 5 but still less than 10, while the correlation (shown in Appendix 2) between (1) I and lnSET is 0.60, and (2) Oil and lnSET is 0.5. Referring to the study of Gordon (1968), economic variables having a VIF ratio of less than 10 are acceptable for multiple regression analysis.

Table 5: Multicollinearity test of property development shares sample

Variable	R-square	VIF
OIL	0.6049	2.5309
Iinv	0.0087	1.0087
I	0.8669	6.5111
CEI	0.5583	2.2639
lnVol	0.0486	1.0511
lnSET	0.8245	5.6988

Oil is the daily price of premium grade diesel, announced by Petroleum Thai Plc. Iinv is a dummy variable, representing the existence of institutional investors for property development shares, institutional investors exist if the proportions of any institutional investors are at least 5%. I refers to the inter-bank overnight rate, announced by Bank of Thailand (BOT). CEI is the Coincident Economic Index, which is the indicator for assessing Thailand economic trend. lnVol is the natural logarithm of the daily trading volume. lnSET is the natural logarithm of composite prices of all listed companies on the Stock Exchange of Thailand (SET). All VIFs are less than 10, implying that there is no significant multicollinearity problem.

Table 6: Multicollinearity test of property fund sample

Variable	R-square	VIF
OIL	0.8652	6.4192
Iinv	0.0000	1.0000
I	0.7509	4.0146
CEI	0.6452	2.8186
lnAvgVol	0.0539	1.0570
lnSET	0.6376	2.7597

Oil is the daily price of premium grade diesel, announced by Petroleum Thai Plc. Iinv is a dummy variable, representing the existence of institutional investors, for property funds institutional investors exist if the proportions of any institutional investors are at least 30%. I refers to the inter-bank overnight rate, announced by Bank of Thailand (BOT). CEI is the

Coincident Economic Index, which is the indicator for assessing Thailand economic trend. lnAvgVol is the natural logarithm of the average monthly trading volume. lnSET is the natural logarithm of composite prices of all listed companies on the Stock Exchange of Thailand (SET). All VIFs are less than 10, implying that there is no significant multicollinearity problem.

Since all variables have a VIF ratio of less than 10, and the theoretical definition of the dependent variable (Market Price to Book Value or NAV) is not similar to all the independent variables, therefore, the model specification can be written as follows:

$$P_m/BV = b_0 + b_1\,(Oil) + b_2\,(I) + b_3\,(CEI) + b_4\,(lnSET) + b_5\,(lnVol) + b_6\,(Iinv) \tag{4.1}$$

$$P_m/NAV = b_0 + b_1\,(Oil) + b_2\,(I) + b_3\,(CEI) + b_4\,(\ln SET) + b_5\,(lnAVG.Vol) + b_6\,(Iinv) \tag{4.2}$$

Equation (4.1) is applied to the property development shares sample while Equation (4.2) is applied to the property fund sample.

5. EMPIRICAL ANALYSIS

5.1. **Empirical Results.** Empirical results of Equations (4.1) and (4.2) are shown in Tables 7 and 8. At the 95% confidence level, variables I and OIL are significant and are consistent with their expected sign. The variable CEI is significant with a positive sign at the confidence level of 95% only for the property fund group. In contrast, variable lnSET is significant with a positive sign at the confidence level of 95% for property development shares, but at the confidence level of 90% for property funds.

Results regarding the trading volume variables (lnVol and AvgVol) are different between the property development shares and property fund group. This observed variable turns out to be significant only for the property fund case, but not for the other one. The slim trading volume of property funds leads to the premium of its liquidity. The second observed variable for property development shares, Iinv, shows that the presence of institutional investors can lead to an increase in the market price of property development shares. In the property fund sector, institutional investors prefer to invest when they see that the market price of the funds is too cheap rather than when they consider the net asset value of the funds is too low.

Table 7: General least squares of property development shares group

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.163459	3.443004	-2.080584	0.0375
I	0.419382	0.096402	4.350332	0.0000*
CEI	0.037640	0.034764	1.082732	0.2789
OIL	-0.259779	0.057400	-4.525764	0.0000*
lnSET	1.305022	0.471293	2.769027	0.0056*
lnVol	0.036328	0.039069	0.929843	0.3525
Iinv	2.298496	0.102935	22.32952	0.0000*
Weighted Statistics				
R-squared	0.663599	Mean dependent var		1.281232
Adjusted R-squared	0.663554	S.D. dependent var		6.874649
S.E. of regression	3.295814	Akaike info criterion		5.223340
Sum squared resid	483952.0	Schwarz criterion		5.224708
Log likelihood	163693.0	F-statistic		14647.87
Durbin-Watson stat	2.087662	Prob(F-statistic)		0.000000

I refers to the inter-bank overnight rate, announced by Bank of Thailand (BOT). CEI is the Coincident Economic Index, which is the indicator for assessing Thailand economic trend. Oil is the daily price of premium grade diesel, announced by Petroleum Thai Plc. lnSET is the natural logarithm of composite prices of all listed companies on the Stock Exchange of Thailand (SET). lnVol is the natural logarithm of the daily trading volume. Iinv is a dummy variable, representing the existence of institutional investors for property development shares, institutional investors exist if the proportions of any institutional investors are at

least 5%. At 99% confidence level, significant variables are I, OIL, lnSET and Iinv. For each of these variables, the actual sign of the coefficient is also consistent with the expected sign (see Table 2).

Oil is the daily price of diesel premium grade announced by Petroleum Thai Plc. Iinv represents to the existence of institutional investors the cutoff point for property development share is 5%. I is the inter-bank overnight rate referring to database of Bank of Thailand (BOT). CEI is abbreviated from Coincident Economic Index and it is the indicator assessment for Thailand economic trend. lnVol is the natural logarithm of daily trading volume. lnSET is the natural logarithm of composite prices of all listed companies on the Stock Exchange of Thailand (SET).

I refers to the inter-bank overnight rate, announced by Bank of Thailand (BOT). CEI is the Coincident Economic Index, which is the indicator for assessing Thailand economic trend. Oil is the daily price of premium grade diesel, announced by Petroleum Thai Plc. lnSET is the natural logarithm of composite prices of all listed companies on the Stock Exchange of Thailand (SET). lnVol is the natural logarithm of the daily trading volume. Iinv is a dummy variable, representing the existence of institutional investors for property development shares, institutional investors exist if the proportions of any institutional investors are at least 5%. At 99% confidence level, significant variables are I, OIL, lnSET and Iinv. For each of these variables, the actual sign of the coefficient is also consistent with the expected sign (see Table 2).

Table 8: General least squares of property fund group

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-23.04940	1.072928	-21.48271	0.0000
I	0.174379	0.010540	16.54453	0.0000*
CEI	5.378494	0.247949	21.69195	0.0000*
OIL	-0.506528	0.050653	-9.999931	0.0000*
lnSET	-0.054031	0.028823	-1.874617	0.0609**
lnAvgVol	0.022727	0.003367	6.750034	0.0000*
Iinv	-0.233913	0.006118	-38.23192	0.0000*
Weighted Statistics				
R-squared	0.744962	Mean dependent var		0.872014
Adjusted R-squared	0.744895	S.D. dependent var		3.182791
S.E. of regression	0.313005	Akaike info criterion		0.515114
Sum squared resid	2221.910	Schwarz criterion		0.517591
Log likelihood	5835.933	F-statistic		11040.85
Durbin-Watson stat	2.152624	Prob(F-statistic)		0.000000

I refers to the inter-bank overnight rate, announced by Bank of Thailand (BOT). CEI is the Coincident Economic Index, which is the indicator for assessing Thailand economic trend. Oil is the daily price of premium grade diesel, announced by Petroleum Thai Plc. lnAvgVol is the natural logarithm of the average monthly trading volume. lnSET is the natural logarithm of composite prices of all listed companies on the Stock Exchange of Thailand (SET). Iinv is a dummy variable, representing the existence of institutional investors, for property funds institutional investors exist if the proportions of any institutional investors are at least 30%. At 99% confidence level, significant variables are I, CEI, OIL, lnAvgVol and Iinv, whilst lnSET is significant at 95% confidence level. For each of these variables, the actual sign of the coefficient is also consistent with the expected sign (see Table 2).

5.2. **Discussion.** As shown in figure 3, investing in property development shares is riskier than investing in property funds. The reason is that property funds must meet the diversification standard as specified by their investment policies. This study confirms that when financial assets are riskier, there are premiums on their net tangible assets. In other words, the financial transformation process results in the risk of property development shares being higher than that of property funds. As a consequence, rational investors are willing to pay higher premiums for the process. The valuation of property development shares depends on future cash flow expectations because property companies set their investment policy to be consistent with the

economic conditions. Thus, institutional investors will pay a higher price if there are positive net cash flows from future investments. The finding of this study is consistent with that of Ramcharran (2002). In the property fund sector, the existence of institutional investors with a negative coefficient implies that institutional investors prefer the underpriced assets. For example, institutional investors are more likely to invest in property funds if the ratio of Pm to NAV of the fund decreases, i.e. when the market price of the property fund decreases and the NAV of the property fund increases.

The outcome of this study implies: (1) financial process makes a clearer picture of its valuation, i.e. a property fund legally defines its investment so that institutional investors will not be willing to pay premiums, unlike in the case of property shares; and (2) institutional investors prefer liquidity and accept a higher price.

The empirical findings of this paper suggest that institutional investors make their investment decisions based on the future status of financial assets. The current value of net assets is less important than the expectation of future cash flows. Institutional investors may refer to the Thai accounting standard on how much assets are actually worth. The trading volume confirms that investors will demand liquidity premium, thereby, increasing the financial asset price. Thus, the listed SET companies should pay more attention to the free float in order to avoid the underpriced financial assets.

The policy implication of this study is that a higher proportion of institutional investors in the Stock Exchange of Thailand (as shown in Figure 2) could decrease the market volatility, thereby leading to lower periods of underpriced assets. Initial Public Offerings (IPOs) normally transform family-controlled firms into public firms. Thus, if the capital received from the IPO is lower than its intrinsic value, family-controlled companies are discouraged from going public. This is clearly evident from the past five years when Thailand has shown the lowest figure of Initial Public Offerings (IPOs) in South East Asia. The average IPO valuation in Thailand is only US$38 million compared with US$139 million in Malaysia, US$129 million in Singapore, US$97 million in Indonesia and US$112 million in the Philippines (Bloomberg, 2012).

6. CONCLUSION

The study of institutional investor recognition on financial asset tranches: A case study of the Thai property sector aims to explore the behavior of institutional investors on different types of financial assets, i.e. property development shares and the property fund sector. The results of this study show that institutional investors tend to make their investment decisions based on their valuation of financial assets and pay less premium for assets that closely resemble real assets, e.g. property funds. This study also indicates that the free float, which is derived from trading volumes, increases the financial asset price. Thus, the concentration of shareholders may lessen the valuation of the financial assets.

Regulatory bodies can use the results of this study for future issues of information disclosure statement of financial assets. For example, the valuation of the market price on property assets should be made to depend on their replacement cost or their current market price, in addition to their present value of cash flows. In the future, an extended study could be conducted on the gap between finance and accounting valuation practices, i.e. between net asset value of property funds and book value of property development shares.

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APPENDIX A

Table A.1: Descriptive statistics of property development shares sample group

	Pm/BV	OIL	I	CEI	SET	Vol	Iinv
Mean	1.143108	29.17355	2.181437	120.1444	937.9150	18435332	0.437886
Median	0.820000	29.39000	2.000000	120.5400	985.9100	1985200	0.000000
Maximum	9.780000	32.33000	3.940000	127.2200	1240.030	3.30E+09	1.000000
Minimum	0.000000	25.79000	1.250000	109.9800	624.0000	0.000000	0.000000
Std. Dev.	0.904813	1.365924	0.868066	3.406564	165.0664	84567390	0.496132
Skewness	2.311609	0.184950	0.154655	-0.597241	-0.254726	19.71706	0.250395
Kurtosis	12.94493	2.931108	1.371091	3.817086	1.759077	574.3803	1.062698
Observations	45795	45795	45795	45795	45795	45795	45795

Pm/BV is the ratio of market price and Book Value (BV) of property development shares. Oil is the daily price of premium grade diesel, announced by Petroleum Thai Plc. I refers to the inter-bank overnight rate, announced by Bank of Thailand (BOT). CEI is the Coincident Economic Index, which is the indicator for assessing Thailand economic trend. lnVol is the natural logarithm of the daily trading volume. SET is the composite prices of all listed companies on the Stock Exchange of Thailand (SET). Vol is the daily trading volume. Iinv is a dummy variable, representing the existence of institutional investors for property development shares, institutional investors exist if the proportions of any institutional investors are at least 5%.

Table A.2: Descriptive statistics of property fund sample group

	Pm/NAV	OIL	I	CEI	SET	AvgVol	Iinv
Mean	0.770998	28.53479	2.339339	118.7242	825.4999	248562.2	0.705613
Median	0.803873	28.79000	2.500000	118.9300	801.3200	23588.04	1.000000
Maximum	1.405118	44.24000	3.940000	127.2200	1240.030	21365220	1.000000
Minimum	0.000000	18.34000	1.250000	109.9800	384.1500	0.000000	0.000000
Std. Dev.	0.258562	4.301172	0.811606	3.864699	234.2661	977636.0	0.455776
Skewness	-1.263223	0.461906	-0.216689	-0.160811	-0.209515	16.22779	-0.902273
Kurtosis	5.483451	5.926210	1.502565	2.457849	1.873491	320.0014	1.814097
Observations	25334	25334	25334	25334	25334	25334	25334

Pm/NAV refers to the ratio of market price and Net Asset Value (NAV) of property funds. . Oil is the daily price of premium grade diesel, announced by Petroleum Thai Plc. I refers to the inter-bank overnight rate, announced by Bank of Thailand (BOT). CEI is the Coincident Economic Index, which is the indicator for assessing Thailand economic trend. SET is the composite prices of all listed companies on the Stock Exchange of Thailand (SET). AvgVol is the average monthly trading volume. Iinv is a dummy variable, representing the existence of institutional investors, for property funds institutional investors exist if the proportions of any institutional investors are at least 30%.

APPENDIX B

Table B.1: Correlation matrix of property development shares sample group

	Pm/BV	I	CEI	OIL	lnSET	lnVol	Iinv
Pm/BV	1.000000	0.132999	0.120189	0.116950	0.180468	0.213990	0.391291
I	0.132999	1.000000	0.282657	0.508935	0.601792	0.043851	-0.069717
CEI	0.120189	0.282657	1.000000	0.616913	0.622742	0.027923	-0.039621
OIL	0.116950	0.508935	0.616913	1.000000	0.635042	-0.005218	-0.055747
lnSET	0.180468	0.601792	0.622742	0.635042	1.000000	0.044052	-0.079222
lnVol	0.213990	0.043851	0.027923	-0.005218	0.044052	1.000000	0.204899
Iinv	0.391291	-0.069717	-0.039621	-0.055747	-0.079222	0.204899	1.000000

Pm/BV is the ratio of market price and Book Value (BV) of property development shares. Oil is the daily price of premium grade diesel, announced by Petroleum Thai Plc. I refers to the inter-bank overnight rate, announced by Bank of Thailand (BOT). CEI is the Coincident Economic Index, which is the indicator for assessing Thailand economic trend. lnVol is the natural logarithm of the daily trading volume. SET is the composite prices of all listed companies on the Stock Exchange of Thailand (SET). Vol is the daily trading volume. Iinv is a dummy variable, representing the existence of institutional investors for property development shares, institutional investors exist if the proportions of any institutional investors are at least 5%.

Table B.2: Correlation matrix of property fund sample group

	Pm/NAV	I	CEI	OIL	lnSET	lnVol	Iinv
Pm/NAV	1.000000	0.008760	0.183801	0.190872	0.185670	0.151875	0.204456
I	0.008760	1.000000	0.062115	0.166318	0.128274	-0.075735	-0.020723
CEI	0.183801	0.062115	1.000000	0.512748	0.643440	0.159715	-0.001329
OIL	0.190872	0.166318	0.512748	1.000000	0.526930	0.120794	0.004506
lnSET	0.185670	0.128274	0.643440	0.526930	1.000000	0.162200	-0.013134
lnVol	0.151875	-0.075735	0.159715	0.120794	0.162200	1.000000	0.103535
Iinv	0.204456	-0.020723	-0.001329	0.004506	-0.013134	0.103535	1.000000

Pm/NAV refers to the ratio of market price and Net Asset Value (NAV) of property funds. . Oil is the daily price of premium grade diesel, announced by Petroleum Thai Plc. I refers to the inter-bank overnight rate, announced by Bank of Thailand (BOT). CEI is the Coincident Economic Index, which is the indicator for assessing Thailand economic trend. SET is the composite prices of all listed companies on the Stock Exchange of Thailand (SET). AvgVol is the average monthly trading volume. Iinv is a dummy variable, representing the existence of institutional investors, for property funds institutional investors exist if the proportions of any institutional investors are at least 30%.