The Role of Institutional Investors in Thai REITs

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ABSTRACT

Institutional investors play an important role in capital markets, for example, capital intermediation, governance monitoring, and identifying investment opportunities. In this article, we document the different roles that public and private institutional investors play in the development of the Thai REIT market. We find that they aid in the price discovery process of REIT IPOs and are rewarded for their participation, although through different means. Public institutional investors play a greater role during the early years when the market was less liquid, while private institutional investors are more active in latter years after a regulatory change in the legal structure of REITs. Our findings shed light on the complementary role that public and private institutional investors play in financial market development.

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บทบาทของนักลงทุนสถาบันในทรัสต์เพื่อการลงทุนใน
อสังหาริมทรัพย์ไทย

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บทคัดย่อ

นักลงทุนสถาบันมีบทบาทที่สำคัญในตลาดทุน เช่น เป็นตัวกลางในตลาดทุน สอดส่องดูแลเรื่องธรรมาภิบาล และชี้โอกาสในการลงทุน ในบทความนี้ผู้วิจัยแสดงให้เห็นถึงบทบาทที่แตกต่างกันระหว่างนักลงทุนสถาบันภาครัฐและนักลงทุนสถาบันภาคเอกชนที่มีต่อการพัฒนาของตลาดทรัสต์เพื่อการลงทุนในอสังหาริมทรัพย์ไทย (Thai REITs) เราพบว่านักลงทุนสถาบันช่วยในกระบวนการค้นพบราคาของ REITs ที่ออกเสนอขายให้ประชาชนทั่วไปเป็นครั้งแรก และนักลงทุนสถาบันเหล่านี้ก็ได้รับการตอบแทนจากการมีส่วนร่วมดังกล่าวถึงแม้ว่าจะในรูปแบบที่แตกต่างกันออกไป นักลงทุนสถาบันภาครัฐมีบทบาทที่สูงกว่าในช่วงแรกที่ตลาดยังมีสภาพคล่องต่ำ ในขณะที่นักลงทุนสถาบันภาคเอกชนมีบทบาทมากขึ้นหลังจากที่มีการเปลี่ยนแปลงโครงสร้างทางกฎหมายของ REITs ผลจากการวิจัยนี้แสดงให้เห็นถึงบทบาทที่เสริมกันระหว่างนักลงทุนสถาบันภาครัฐและนักลงทุนสถาบันภาคเอกชนที่มีต่อการพัฒนาของตลาดการเงิน

คำสำคัญ: นักลงทุนสถาบัน ทรัสต์เพื่อการลงทุนในอสังหาริมทรัพย์ การออกเสนอขายหลักทรัพย์ให้ประชาชนทั่วไปเป็นครั้งแรก สภาพคล่อง

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Introduction

Institutional investors play an important role in capital markets. According to an OECD study by De La Cruz et al. (2019), as of December 2017, institutional investors holdings account for 41% of global market capitalization, dominated by the U.S. (72%) which represents over 36% of global market capitalization. In addition to capital intermediation, institutional investors also monitor and influence how firms are governed (see, for example, Admati et al., 1994; Huddart, 1993; Shleifer & Visny, 1986), their corporate financial policies (Brown et al., 2019), identify value-increasing opportunities for their investors (Anderson & Huang, 2017) and aid in the initial public offering (IPO) price discovery process (Chemmanur et al., 2010).

Compared to the rest of the world, the involvement of institutional investors in Thailand is still limited. While the direct statistic for the whole market and all types of institutional investors is not readily available, the study by De La Cruz et al. (2019) reports that institutional investors in emerging Asia excluding China account for 16% of market capitalization. The closest proxy available is trading volume, and a report by The Stock Exchange of Thailand (2020) indicates that local institutions account for 11.35% of total trading value in 2019. For mutual funds, the aggregate ownership is less than 5%, as documented by Ratanabanchuen and Saengchote (2020). However, for real estate investment trusts (REITs), institutional investors have played a very important part. For the 66 REITs that IPO between 2005 and 2019, institutional investor ownership accounts for 23.8% of their market capitalization.

REITs and their predecessors, property funds (PFs), were first introduced in Thailand in 2003 as an alternative financing structure that allows public participation in real estate assets that previously were restricted to those with large amount of capital. In the early days, they were used as special purpose vehicle to restructure distressed assets from the fallout of the 1997 Asian Financial Crisis. However, it was not until 2005 that they became a regular part of the Thai capital market with continued issuance. While PFs and REITs are slightly differently in legal forms and management structure, their primary objective of broadening participation in real estate assets is the same, so we refer to them collectively as REITs in this article.[1] Our objective is to investigate the role of institutional investors in Thai REITs on REIT IPO underpricing, post-IPO performance, price stability and liquidity, and how their participation relates to development of the REIT market.

Our novel contribution is to distinguish between public (government-sponsored pension funds, specialized financial institutions) and private (banks, mutual funds, insurance companies) institutional investors, which is not widely studied in the literature. We motivate our study with Figure 1, which shows a scatter plot of initial returns (calculated as the percentage change from offer price to the end-of-day price and is interpreted as IPO "underpricing" in the literature) and proportion of issues held by institutional investors. If the distinction between public and private institutional investors is not made, there appears to

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[1] Past studies of Thai REITs (for example, Chan et al., 2013) also do not make a distinction between PFs and REITs.

be no relationship between institutional investors and initial returns. However, when separated, initial returns are positively related to public institutional investors' holding, and negatively related to private institutional investors' holding. Because public and private institutional investors often have different priorities and are subject to different levels of scrutiny, the role they can play in the development of capital market can be different.
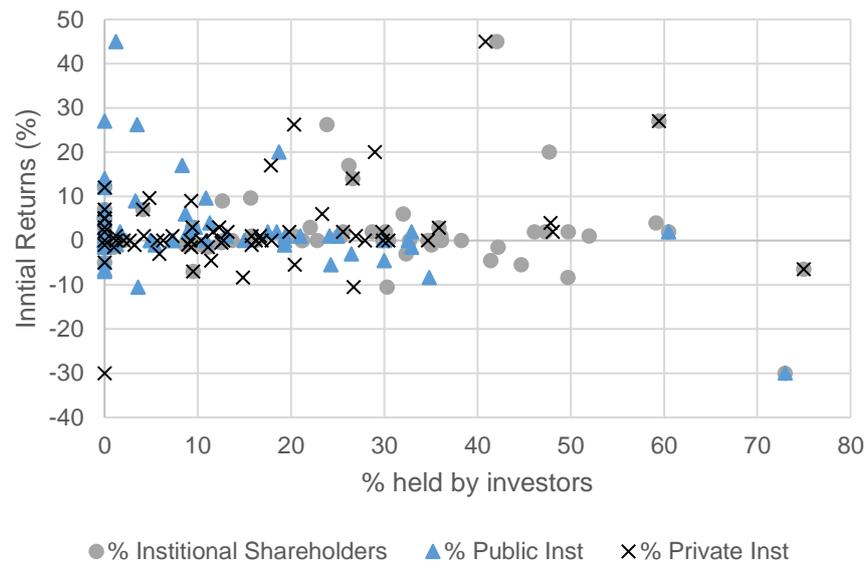

Figure 1: Institutional Investors and Initial Returns

Note: This scatterplot shows the relationship between initial returns (calculated as the percentage change from offer price to the end-of-day price) and proportion of issues held by institutional investors. One point represents one REIT IPO. Banks, mutual funds, government-sponsored pension funds, specialized financial institutions (SFIs), and insurance companies are defined as institutional shareholders. Public institutional shareholders are government-sponsored entities and SFIs.

We find that institutional investors matter for REIT IPOs and liquidity, but not for price stability and long-term returns. In addition, it is important to distinguish between public and private institutional investors. For example, public institutional investors are rewarded in IPOs via lower offer price relative to appraised net asset value, while private institutional investors are rewarded via initial returns; private institutional investors' participation is positively related to liquidity, while public institutional investors' participation is not. We relate our findings to the different concerns regarding price and liquidity risks. Our findings have practical insights for the development of new financial innovations in the capital market.

The rest of this article is organized as follows. In the next section, we review research related to institutional investors and REITs that lead to our research questions. In Section 3, we describe our data sources and empirical methodology. Section 4 reports the result of the analyses and Section 5 concludes our article.

Literature Review

Information asymmetry is one of the most influential frictions in economy and is the fundamental reason for the existence of the financial system. The two major issues that arise from information asymmetry are adverse selection – the difficulty in distinguishing between good and bad investment opportunities, as documented in the seminal paper by Akerlof (1970), and moral hazard – the difficulty in enforcing contracts and lack of incentives to act, traditionally discussed in the context of insurance (Pauly, 1968) and more generally formalized in the context of a firm by Holmström and Tirole (1989).

In terms of navigating adverse selection, institutional investors can be viewed as informed investors (e.g. in the spirit of Glosten & Milgrom, 1985 or Easley et al., 1996), and their informational advantage is argued to help with price discovery in the financial market and identifying value-enhancing investment opportunities. Their role in information production and price discovery, as theoretically motivated by Benveniste and Spindt (1989), is one of the leading explanations behind IPO discount (issuing stocks at a price below fundamental value, empirically identified by the difference between the offer price and closing price on the first trading day), supported by empirical evidence of, for example, Hanley and Wilhelm Jr (1995) and Aggarwal et al. (2002). Chemmanur et al. (2010) find that institutional investors sell 70.2% of their IPO allocations in the first year and capture the profits of the "money left on the table". They conclude that institutional investors play an important supportive role in the IPO aftermarket, which is also documented for Thai mutual funds by Saengchote and Sthienchoak (2020).

In the context of REITs, REIT IPOs in the U.S. in the 1970s and 1980s tended to be overpriced, but by the 1990s they became underpriced (IPO discount). At the same time, institutional investors did not play a major role in REIT until the 1990s. Ciochetti et al. (2002) find that institutional investors began to invest in REITs rather than private real estate equity due to liquidity concerns and they prefer larger, more liquid REITs. Ling and Ryngaert (1997) argue that underpricing is due to greater valuation uncertainty and greater involvement of institutional investors, so underpricing was necessary to compensate them to reveal private information. Their participation can lead to improved performance, as documented by Han et al. (1998).

With respect to identification of investment opportunities, Field and Lowry (2009) find that firms that have high levels of institutional investment tend to outperform firms with low institutional investment, which Anderson and Huang (2017) further attribute this superior performance to post-IPO involvement in well-performing merger and acquisition activities, pointing to the role of institutional investors beyond monitoring the governance of their portfolio companies. For REITs, Ling et al. (2021) show that institutional investors are able to use their geography-based information advantage to earn superior returns.

For moral hazard, the argument in support of institutional investors centers around their role in monitoring the actions and governance of their portfolio companies. The literature has long recognized the influence of large shareholders and the influence they wield over the firms (see, for example, Admati et

al., 1994; Huddart, 1993; Shleifer & Vishny, 1986). In the context of REITs, Chung et al. (2012) find that institutional ownership can improve a REIT operational efficiency (defined by difference between a REIT's actual Tobin's q and hypothetical, value-maximizing q) via improved corporate governance. This is consistent with Hartzell et al. (2006), who find that the investment choices of REITs are more related to Tobin's q if they have greater institutional ownership. Feng et al. (2010) find that institutional investors can increase corporate governance by influencing executive compensation of REIT managers.

However, not all large investors share the same objectives and strategies. Bushee (2004) defines three categories of institutional investors: "transient" investors which trade frequently and hold small stakes in portfolio companies; "dedicated" investors that have stable ownership and take large position; and "quasi-indexers" who also have stable ownership but small position. These different types of investors are found to have different effects on the firms, particularly with respect to returns volatility. In an investigation of U.S. stocks, An et al. (2016) find that ownership by pension funds is negatively related to stock price crash risk, while ownership by transient institutional investors who trade more frequently can exacerbate the risk. Ben-David et al. (forthcoming) find evidence that ownership by large institutions predicts higher volatility and greater noise in stock prices, as well as greater fragility at times of crisis. For REITs, Davos et al. (2013) document a reduction in ownership by institutional investors during the financial crisis, displaying a "flight to quality". However, this pattern is more pronounced for transient investors such as mutual funds, but less so in dedicated investors such as pension funds. Studies in Thailand have not specifically distinguished between types of institutional investors, but a recent study of Thai stock IPOs by Dumrongwong (2020) finds that institutional holding is negatively related to the stocks' post-IPO volatility.

In this study, we investigate the effect of institutional investors' participation in three aspects: on IPO underpricing, post-IPO returns and post-IPO price stability and liquidity. Specifically, we hypothesize that institutional investors' participation should: (1) be positively related to IPO underpricing, (2) be positively related to long-term returns, and (3) be related to price stability and liquidity, but the direction of the relationship depends on the type of investors. Because public institutional investors (government-sponsored pension funds, SFIs) play an important role in Thai REIT market, we further distinguish between private and public institutional investors in our study, which is our main contribution.

Research Methodology

Data and Sample

The main information used in this article is REIT characteristics, which are obtained from the Stock Exchange of Thailand (SET), IPO prospectuses and annual reports. Stock returns data, which are used to analyze IPO underpricing, post-IPO returns, and price stability and liquidity are obtained from Refinitiv Datastream. We focus on REITs that listed between January 2005 and December 2019. While ownership

information is not available at the time of IPO, public listing requires REITs to disclose their major holders periodically. We obtain the information from the SETSMART database which is maintained by SET and manually classify investors by group. REIT sponsors are typically firms that previously owned the real estate asset purchased by the REITs, and sponsor retention can be interpreted as signal of quality in the spirit of Leland and Pyle (1977). Banks, mutual funds, government-sponsored pension funds, specialized financial institutions (SFIs), and insurance companies are defined collectively as institutional investors. The classification is further subdivided into public (government-sponsored entities and SFIs) and private institutional investors.

Methodology

For the first analysis, we use the regression equation as specified in Equation 1. The main variable of interest is underpricing, which is measured as initial returns (IR) from the offer price to the closing price on the first trading day, and the main independent variable is institutional ownership (IO), measured in natural log. Following the finding of Ooi et al. (2019) that IPO participants can be rewarded by subscribing at prices below the net asset value (NAV) of the REIT appraised by valuers, we also consider premium of offer price to NAV as another dependent variable using the same regression equation.

$$\text{IR} = \alpha + \beta_1\text{IO} + \beta_2\text{SO} + \beta_3\text{S\_REP} + \beta_4\text{IPO\_SIZE} + \beta_5\text{U\_REP} + \beta_6\text{STOCK\_VOL}$$
$$+\beta_7\text{FIRST} + \beta_8\text{NUM\_IPO} + \beta_9\text{LAG\_MKT\_RET} + \varepsilon \tag{1}$$

Motivated by the findings of Ooi et al. (2019) and Wong et al. (2013), we include the following control variables: sponsor ownership, measured in natural log (SO); sponsor reputation, proxied by whether sponsor is listed (S_REP); issue size, measured in natural log (IPO_SIZE); underwriter reputation, defined by the share of total IPO proceeds for a given underwriter (U_REP); stock market volatility from day 2 to day 60 after IPO (STOCK_VOL); first IPO of a given property type in the market (FIRST); cumulative IPOs done by the same sponsor (NUM_IPO); and 15-day lag market returns prior to IPO (LAG_MKT_RET).

$$Y = \alpha + \beta_1\text{IO} + \beta_2\text{SO} + \beta_3\text{S\_REP} + \beta_4\text{IPO\_SIZE} + \beta_5\text{U\_REP} + \varepsilon \tag{2}$$

For the post-IPO returns analysis, we compute the market-adjusted buy-and-hold abnormal return (BHAR) over the three horizons.[2] For price stability and liquidity analysis, we compute volatility using daily returns over three horizons: 100 days, 1 year and 3 years. Empirically, stable prices can result from active trading at the same price or zero trade (therefore stale price), we also analyze liquidity in conjunction with volatility. Motivated by Amihud (2002), we use proportions of days with no trade as proxy for illiquidity, and the variable is also computed over the three horizons. In both analyses, we use the regression specified by Equation 2, where Y represents the measure of price stability, liquidity and post-IPO returns as appropriate.

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[2] Rather than using the unadjusted cumulative buy-and-hold return, we adjust the returns by deducting market return to remove the influence of market conditions on the variables since our IPO sample is from 2005 to 2019.

We drop STOCK_VOL, FIRST and NUM_IPO and LAG_MKT_RET because STOCK_VOL is mechanically correlated with the price stability measure, while the other variables are proxies for information that should be relevant to the investor's decisions only on the first day. In all specifications (both Equations 1 and 2), we use White robust standard errors to account for heteroskedasticity. The summary statistics of the variables used are reported in Table 1.

Table 1: Descriptive Statistics

	Mean	SD	Min	Median	Max
Initial returns (%)	2.45	9.45	-30.00	0.50	45.00
Premium of offer price to NAV	1.22	8.46	-14.57	-0.18	28.47
Proportion retained by sponsors (%)	21.39	13.89	0.00	20.00	65.08
Proportion held by institutional investors (%)	25.96	19.06	0.00	25.47	75.00
Proportion held by public inst. investors (%)	10.63	14.75	0.00	4.26	73.00
Proportion held by private inst. investors (%)	15.32	15.40	0.00	11.54	75.00
Issue size (THB million)	3,695	4,315	505	2,273	26,200
Sponsor is a listed company (0, 1)	0.62	0.49	0.00	1.00	1.00
Underwriter market share (%)	14.70	12.58	0.87	9.41	38.37
Stock market volatility (%)	1.06	0.52	0.30	1.01	2.98
First property type in market (0, 1)	0.12	0.33	0	0	1
Sponsor market learning	1.70	1.19	1	1	6
Cumulative market returns (15 days) (%)	1.52	5.24	-25.78	2.07	12.39

Note: This table reports the descriptive statistics for the 66 Thai REIT IPOs between January 2005 and December 2019. Information on shares ownership is obtained from the SETSMART database which is maintained by SET. Sponsors are identified from IPO prospectuses and are generally previous owners of the assets purchased by REITs. Banks, mutual funds, government-sponsored pension funds, specialized financial institutions (SFIs), and insurance companies are defined as institutional shareholders. Public institutional shareholders are government-sponsored entities and SFIs. Stock market returns and volatility are calculated based on daily, value-weighted average total returns of all stocks listed in the Stock Exchange of Thailand (SET) and the Market for Alternative Investment (mai). Returns data are obtained from Refinitiv Datastream.

Research Finding

Underpricing

First, we begin with the correlation analysis, reported in Table 2. Initial returns are weakly negatively correlated with proportion held by institutional investors as predicted by theory (but statistically insignificant), but when further classified into public and private investors, there are strong and opposite correlations for the two investor groups, consistent with the pattern in Figure 1. This univariate result suggests that the distinction between public and private institutions is materially important: IPOs with greater public institutional investors appear to be less underpriced, while those with greater private institutional investors more underpriced.

Table 2: Correlation

	IR	Premium	% Sponsor	% Inst	% Public
Initial returns (IR)	0.164				
Premium of offer price to NAV	0.141	-0.072			
% held by institutional investors	-0.066	0.096	-0.481***		
% held by public inst. investors	-0.370***	-0.298**	-0.314**	0.611***	
% held by private inst. investors	0.273**	0.404***	-0.295**	0.652***	-0.201

Note: This table reports the pairwise correlation coefficient between the variables. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Next, we investigate this relationship in a multivariate setting that incorporates other determinants of REIT underpricing. The regression outputs are reported in Table 3. In the baseline analysis (column 1), the only variable that is statistically significant is U_REP, which is positive, contrary to finding of Wong et al. (2013).[3] A one standard deviation increase in U_REP is associated with an underpricing of 2.26%, which is economically large compared to the sample average of 2.45%. The theoretical argument behind underwriter reputation is that prestigious underwriters have lower risk offerings and hence require lower underpricing, but in the context of Thailand, this could represent the bargaining power that underwriters have over issuers, as there are only 15 unique underwriters during the sample period, compared to 43 for stock IPOs documented by Saengchote and Sthienchoak (2020). The coefficient on IO is negative but statistically insignificant, consistent with the univariate analysis in Table 2. Other determinants of underpricing (e.g. STOCK_VOL, FIRST and LAG_MKT_RET) have signs that are inconsistent with previous studies of Asian REITs (e.g. Ooi et al., 2019; Wong et al., 2013) but are not statistically significant. When we further distinguish between public and private institutional investors (column 2), only ownership by public institutional investors is statistically significant at 10% level, but the direction of the relationship remains.

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[3] For stock IPOs, Boonchuaymetta and Chuanrommanee (2013) find that underwriter reputation is not related to underpricing in Thailand, citing regulatory restriction on the choice of underwriters as a reason.

Table 3: Underpricing Analysis

Dependent Variable	(1) IR	(2) IR	(3) Premium	(4) Premium
IO	-4.1775		1.2536	
	(12.878)		(8.512)	
IO_PUBLIC		-21.4130*		-17.0336*
		(12.481)		(9.882)
IO_PRIVATE		13.8108		17.3344*
		(15.136)		(10.101)
SO	8.6568	7.4445	4.8521	2.5803
	(13.126)	(11.943)	(14.816)	(12.642)
S_REP	1.5519	1.3674	3.5531	3.4504
	(2.668)	(2.345)	(2.170)	(2.063)
IPO_SIZE	0.3750	-0.6607	1.2052	0.2432
	(1.238)	(1.308)	(1.483)	(1.463)
U_REP	0.1808**	0.1928**	-0.0209	-0.0061
	(0.079)	(0.078)	(0.092)	(0.085)
STOCK_VOL	-3.9418	-2.0948	-6.3016***	-4.4984**
	(2.539)	(1.898)	(2.118)	(1.935)
FIRST	0.8901	1.2604	-2.0171	-1.6648
	(4.684)	(4.431)	(3.217)	(3.479)
NUM_IPO	0.9013	0.7508	0.1499	-0.0361
	(1.579)	(1.441)	(0.824)	(0.860)
LAG_MKT_RET	0.1765	0.3182*	-0.2941	-0.1507
	(0.225)	(0.187)	(0.259)	(0.229)
INTERCEPT	-2.5272	2.9798	-4.1401	1.3143
	(8.321)	(8.583)	(10.556)	(10.410)
Observations	66	66	66	66
Adjusted R-squared	0.0671	0.171	0.0702	0.196

Note: This table reports ordinary least square regressions of IPO initial returns (IR) and premium of offer price to NAV (Premium) on institutional ownership (IO), which is calculated as the natural log of (1 + proportion held by institutional investors), and other determinants of underpricing. The variables used are based on those described in Table 1, where SO is the natural log of (1 + proportion retained by sponsors), S_REP is a dummy variable for listed sponsor company, IPO_SIZE is the natural log of issue size, U_REP is share of total IPO proceeds for a given underwriter, STOCK_VOL is stock market volatility from day 2 to day 60 after IPO computed from daily value-weighted market returns, FIRST is a dummy variable for first IPO of property type in the market, NUM_IPO is cumulative count of REIT IPOs by the same sponsor, and LAG_MKT_RET is cumulative value-weighted market returns 15 days prior to IPO. Column 2 and 4 further subdivides institution ownership into public and private institutions. White robust standard errors are shown in parentheses, and *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

The role of institutional investors in IPO underpricing is typically attributed to the reward for informed investors to produce and reveal their information. Afterall, being able to subscribe at a price lower to market price means the investors will receive immediate profit on the first trading day. Given their lower underpricing, the natural question that arises is whether public institutional investors are compensated at all for their involvement. One unique feature of REIT IPOs is that the value of the real estate assets to be acquired must be appraised by independent valuers, so we can also look at the offer price of the REITs relative to the net asset value (NAV) implied by the appraisals. It is important to note that real estate valuation is typically conducted from the perspective of investors who directly invest and thus face illiquidity. Because REITs have greater liquidity than direct real estate investment, Cherkes et al. (2008) argue that the valuation of REIT can be greater than the underlying NAV. Nevertheless, an issue with lower premium of offer price to NAV (or even discount) can also be viewed as a way for issuers to reward their subscribers. In their study of underpricing in Asian REIT IPOs, Ooi et al. (2019) argue that issuers compensate their underpriced IPOs by listing at premium to their fundamental values by market timing.
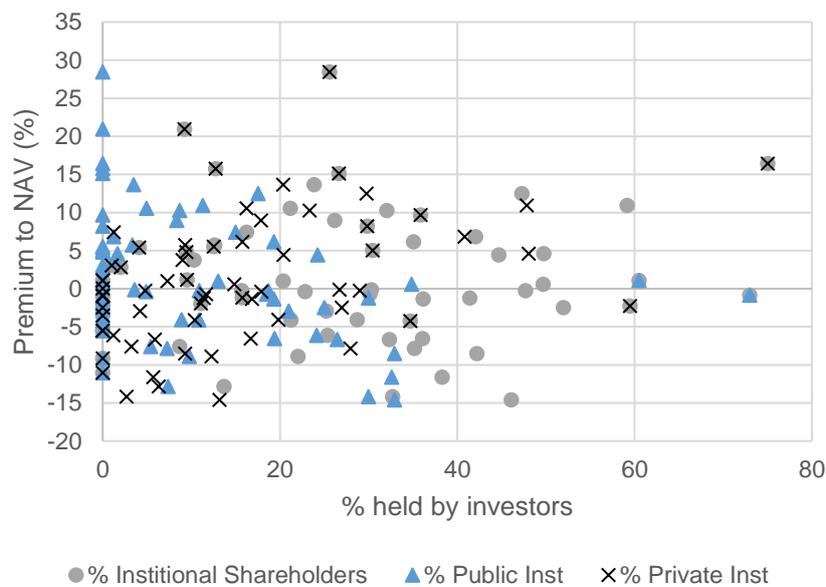

Figure 2: Institutional Investors and Premium to NAV

Note: This scatterplot shows the relationship between premium of offer price to NAV (calculated as the percentage difference between offer price and the net asset value of the REIT appraised by valuers) and proportion of issues held by institutional investors. One point represents one REIT IPO. Banks, mutual funds, government-sponsored pension funds, specialized financial institutions (SFIs), and insurance companies are defined as institutional shareholders. Public institutional shareholders are government-sponsored entities and SFIs.

Similar to Figure 1 which graphically shows the relationship between initial returns and institutional investors' participation, Figure 2 shows a similar pattern for offer price to NAV. In column 3 and 4 of Table 3, we modify Equation 1 by replacing the dependent variable (initial returns) with premium of offer price to NAV. Issues more widely held by public institutional investors are more likely to be offered at lower premium to NAV, while issues held by private institutional investors are more likely to be offered at a premium. This finding is consistent with Ooi et al. (2019) and suggests that public institutional investors, too, are rewarded for their role in REIT IPOs, but they receive their compensation pre-listing (via lower premium or even discount), while private institutional investors receive theirs when REITs finally trade on the market.[4] There is a view that those working in the public sector are more risk-averse than private sector (see, for example, Chen & Bozeman, 2012). To the extent that pre-listing compensation is less risky than relying on initial returns, our finding is consistent with greater risk aversion among public asset managers. The difference in how they are compensated can be taken as evidence of how risk aversion that arises from institutional differences can influence mechanism design in financial market.

Returns

Academic research suggests that institutional investors involvement is associated with superior long-term performance (e.g. Anderson & Huang, 2017; Field & Lowry, 2009; Ling et al., 2021). We explore the relationship between institutional holdings and BHAR over three holding periods. The result is reported in Table 4.

Contrary to theoretical prediction, REIT returns are largely unrelated to institutional ownership. In fact, the explanatory power of the regression model is very low with negative adjusted R-squared for 100 days and 1 year horizons. For 3 years horizon, the model performs slightly better, with adjusted R-squared of 30%, but this is largely driven by the negative intercept of -55.3% (common component) and the positive relationship with U_REP. A one standard deviation increase in U_REP is associated with a 10.5% increase in BR, so while reputable underwriters are associated with greater underpricing for issuers, it can be compensated for by better long-term performance. It is worth nothing that on average, REIT BHAR is negative. This is because REITs as an asset class behave more like fixed income rather than equity investment. REIT income mainly derives from rent, and if they do not acquire new properties, their income growth potential is more limited than traditional companies.

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[4] If REITs with high ownership by public institutional investors are issued at discount to NAV, one may expect such REITs are underpriced and have positive initial returns. However, REITs often trade at discount to NAV (see, for example, Morri & Baccarin, 2016), so it is possible for them to not have high initial returns, as observed in Table 3. The lack of liquidity (measured by days with no trading activity) among REITs with ownership by public institutional investors depicted in Figure 3 suggests that price discovery be limited in early REITs.

Table 4: Returns Analysis

Dependent Variable	(1) BHAR	(2) BHAR	(3) BHAR
Horizon	100 days	1 year	3 years
IO_PUBLIC	-15.0623	6.0829	-48.7345*
	(21.769)	(31.603)	(26.029)
IO_PRIVATE	19.3143	35.8604	18.5194
	(17.796)	(24.865)	(24.778)
SO	-4.5780	0.9383	-40.6109
	(17.198)	(25.501)	(24.906)
S_REP	-4.1174	0.1150	3.8891
	(4.347)	(5.589)	(5.789)
IPO_SIZE	2.0779	-2.9187	2.5832
	(2.105)	(4.086)	(3.143)
U_REP	-0.0557	0.2964	0.8319***
	(0.166)	(0.272)	(0.241)
INTERCEPT	-17.2472	3.3852	-55.3150**
	(16.280)	(29.050)	(23.816)
Unconditional mean	-4.0670	-9.4082	-31.1103
Standard deviation	12.585	20.255	22.101
Observations	66	65	58
Adjusted R-squared	-0.0105	-0.0281	0.307

Note: This table reports ordinary least square regressions of market-adjusted buy-and-hold abnormal returns (BHAR) on public and private institutional ownership (IO_PUBLIC/IO_PRIVATE), which is calculated as the natural log of (1 + proportion held by institutional investors) and control variables. The dependent variables are calculated over three horizons: 100 days, 1 year and 3 years. The variables used are based on those described in Table 1, where SO is the natural log of (1 + proportion retained by sponsors), S_REP is a dummy variable for listed sponsor company, IPO_SIZE is the natural log of issue size, and U_REP is share of total IPO proceeds for a given underwriter. White robust standard errors are shown in parentheses, and *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

For 100 days and 1 year horizons, BHAR is statistically unrelated to both types of institutional ownership, but for 3 years horizon, it is negatively related to public institutional ownership at 10% significance level. It appears that institutional ownership has no or even negative influence on REIT returns. Next, we investigate the last relationship: price stability and liquidity.

Table 5: Price Stability and Liquidity Analysis

Dependent Variable	(1) Volatility	(2) Volatility	(3) Volatility	(4) % No Trade	(5) % No Trade	(6) % No Trade
Horizon	100 days	1 year	3 years	100 days	1 year	3 years
IO_PUBLIC	0.7955	1.1160	1.2014	0.0781	0.0868	-0.0332
	(1.069)	(1.160)	(0.788)	(0.196)	(0.211)	(0.145)
IO_PRIVATE	0.2299	0.3516	-0.8890	-0.2520*	-0.3074**	-0.3125*
	(0.561)	(0.597)	(0.698)	(0.141)	(0.145)	(0.160)
SO	0.3233	0.9556	1.4378**	0.0538	0.1824	0.1388
	(0.706)	(1.042)	(0.673)	(0.163)	(0.192)	(0.182)
S_REP	-0.0930	-0.0307	-0.0719	-0.0680*	-0.0899**	-0.1001**
	(0.163)	(0.141)	(0.182)	(0.034)	(0.039)	(0.042)
IPO_SIZE	0.0765	-0.0039	-0.0771	-0.1338***	-0.1283***	-0.1154***
	(0.098)	(0.112)	(0.099)	(0.022)	(0.025)	(0.024)
U_REP	-0.0078	-0.0036	0.0018	-0.0001	0.0002	0.0004
	(0.006)	(0.011)	(0.008)	(0.001)	(0.001)	(0.002)
INTERCEPT	0.2747	0.7592	1.4637*	1.2617***	1.2429***	1.1638***
	(0.669)	(0.927)	(0.768)	(0.161)	(0.185)	(0.182)
Unconditional mean	0.8659	0.9880	1.1458	19.076	23.122	23.857
Standard deviation	0.5540	0.6431	0.6341	23.381	24.671	23.588
Observations	66	65	58	66	65	58
Adjusted R-squared	-0.0526	-0.0578	0.0438	0.540	0.498	0.472

Note: This table reports ordinary least square regressions of REIT volatility (computed using daily returns) and share of days with no trade (computed relative to number of trading days) on public and private institutional ownership (IO_PUBLIC/IO_PRIVATE), which is calculated as the natural log of (1 + proportion held by institutional investors) and control variables. The dependent variables are calculated over three horizons: 100 days, 1 year and 3 years. The variables used are based on those described in Table 1, where SO is the natural log of (1 + proportion retained by sponsors), S_REP is a dummy variable for listed sponsor company, IPO_SIZE is the natural log of issue size, and U_REP is share of total IPO proceeds for a given underwriter. White robust standard errors are shown in parentheses, and *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Price Stability and Liquidity

Our proxy for price stability is volatility (computed from daily returns). To address the issue where low volatility can result from periods of no trade, we supplement the analysis with the proportion of days with no trade, similar to Amihud (2002). The regression outputs are reported in Table 5. For volatility, reported in columns 1 to 3, the result is similar to BHAR: the model's explanatory power is very low for 100 days and 1 year horizons. For 3 years horizon, the variable that is statistically related (at 5% level) to volatility is sponsor ownership, whose positive relationship may be a consequence of lower free floats on price movements. However, there appears to be no relationship between institutional ownership and volatility, which contrasts with the finding of Dumrongwong (2020) that institutional investors provide a stabilizing presence for stock returns post-IPO.

Next, we look at proportion of days with no trade (measured as % of trading days during the holding period) and the result reveals several interesting insights. REITs that are larger with sponsors listed in the stock market (S_REP) are less likely to have days with no trade. This is consistent with evidence from international REITs that institutional investors prefer REITs that are larger, as documented by Ciochetti et al. (2002). For REITs whose sponsors are listed in the stock market, greater information availability (compared to unlisted sponsors) could explain greater market activity. In this investigation, our main finding is that REITs with greater private institutional investors' participation have fewer days with no trade. A 1% increase in private institutional investors' participation is associated with a 0.25-0.31% reduction in proportion of days with no trade. A similar relationship for public investors' participation is not observed, however. While we make no claim of causality, it appears that REITs with more private institutional investors are more actively traded (and thus liquid).[5] Is opposing result related to the differences in the characteristics of the REITs invested by the two groups of investors? We investigate one final aspect before drawing a conclusion.

Property Funds Versus REITs

If one were to look institutional investors' participation over time, an interesting pattern emerges. Figure 3 plots the average participation for public and private institutional investors, and it shows that private institutional investors' participation increases sharply after 2014, while public investors' share declines. This uplift coincides with the regime change from property funds (PFs) to REITs.

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[5] There are numerous possibilities; for example, private institutional investors may trade actively, so stocks become more liquid; private institutional investors prefer to invest in more liquid REITs; there are periods where REIT market as a whole is illiquid, so only public institutional investors participate. The circumstances surrounding our research setting do not allow for the different channels to be explicitly tested, but we make our best attempt to investigate the possibilities.
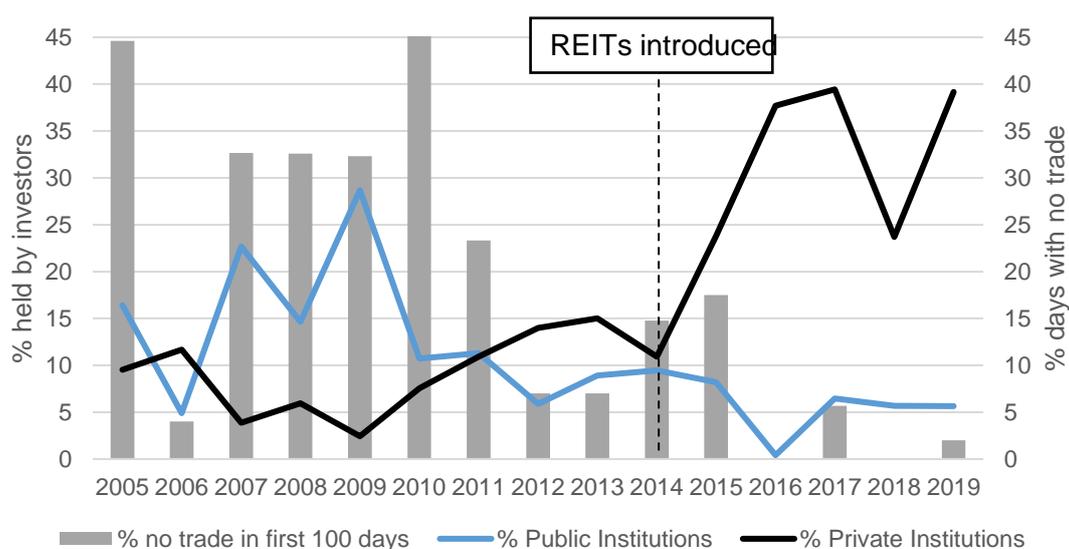
Figure 3: Institutional Investors' Participation Over Time

Note: This figure shows the average proportion of issues held by institutional investors and average share of days with no trade (in the first 100 days) over time. Public institutional shareholders are government-sponsored entities and SFIs, and private institutional investors are banks, mutual funds and insurance companies. In Thailand, fund-based investment in real estate assets originally took the form of Property Fund for Public Offering Type I (PFPO), also referred to as property funds in 2003. In late 2000s, the Securities and Exchange Commission modernized the format to conform with international standards. Beginning 2014, property funds were no longer allowed and existing funds must be converted to REITs. The first REIT in Thailand began trading in October 2014.

Up until this point, we do not explicitly distinguish between PFs and REITs because of their similarity in intended outcomes. By shifting to REITs which are more consistent with international markets, the range of investment opportunities is broadened as well as flexibility to use more leverage, but it does not change the nature as a vehicle for capital intermediation. However, while PFs were more similar to mutual funds – created and managed by asset management companies – REITs are more similar to companies in a sense that their IPOs involve underwriters whose task is to make sure the IPO is fully subscribed. Compared to asset management companies, underwriters may have access to a wider range of private institutional investors, which could result in greater participation as observed in the data.

Table 6: Property Funds and REITs

REIT or PF	(1) PF	(2) PF	(3) PF	(4) PF	(5) REIT	(6) REIT	(7) REIT	(8) REIT
Dependent Variable	IR	Premium	% No Trades	BHAR3Y	IR	Premium	% No Trades	BHAR3Y
I_OWNERSHIP_PUBLIC	-26.5488*	-16.9892	-0.0046	-40.2309	-7.8918	-29.5149	-0.3084	-64.7830
	(13.531)	(12.410)	(0.250)	(28.616)	(27.488)	(35.932)	(0.325)	(73.738)
I_OWNERSHIP_PRIVATE	2.3864	13.7560	-0.2065	35.4138	59.6000	15.8379	-0.0313	-64.3023
	(14.294)	(14.058)	(0.252)	(33.918)	(52.461)	(21.197)	(0.202)	(64.342)
S_OWNERSHIP	2.6662	8.1405	-0.2135	-24.5018	113.0913	57.5651*	0.8622	-150.3156
	(11.719)	(16.009)	(0.208)	(28.029)	(64.319)	(28.680)	(0.429)	(78.417)
S_REPUTATION	3.4655	4.1385	-0.0862*	2.3084	-11.3162	-2.3455	-0.1506	1.0377
	(2.262)	(2.457)	(0.045)	(6.808)	(7.583)	(4.721)	(0.093)	(18.477)
IPO_SIZE	-0.7168	0.7562	-0.1277***	-0.4032	-9.1283	-7.0503	-0.1814**	28.2622**
	(1.180)	(1.386)	(0.023)	(2.849)	(11.629)	(5.575)	(0.062)	(8.959)
U_REPUTATION	0.1906**	-0.0109	0.0006	0.8089***	0.2100	0.0307	-0.0014	0.1810
	(0.072)	(0.099)	(0.002)	(0.276)	(0.252)	(0.188)	(0.004)	(0.336)
STOCK_VOL	-2.0100	-4.4696*			-33.9778	-7.9795		
	(2.127)	(2.313)			(19.413)	(12.794)		
FIRST	0.0279	-7.4381			6.5684	-4.4612		
	(4.621)	(6.454)			(12.116)	(7.081)		
MARKET_LEARNING	-0.1231	-2.5772			4.0603	1.9438		
	(1.859)	(1.730)			(2.576)	(1.499)		
LAG_MKT_RETURN	0.2708*	-0.1090			-0.2873	-0.0836		
	(0.159)	(0.219)			(1.149)	(0.608)		
INTERCEPT	6.2679	-0.9243	1.2843***	-37.7409*	69.1381	59.5100	1.6175**	-213.9890**
	(8.325)	(10.284)	(0.171)	(21.581)	(85.598)	(47.103)	(0.485)	(66.595)
Observations	47	47	47	47	19	19	11	11
Adjusted R2	0.152	0.0448	0.499	0.162	-0.124	-0.359	0.675	0.469

Note: This table reports ordinary least square regressions of IPO initial returns (IR), premium of offer price to NAV (Premium), market-adjusted buy-and-hold abnormal returns (BHAR) over 3 years, and share of days with no trade (computed relative to number of trading days) on public and private institutional ownership (IO_PUBLIC/IO_PRIVATE), which is calculated as the natural log of (1 + proportion held by institutional investors) and control variables. A dummy variable, REIT, is added for IPOs that are issued as REITs rather than property funds. There are 19 REITs and 47 property funds in the sample, and the regressions are separated accordingly. The variables used are based on those described in Table 1, where SO is the natural log of (1 + proportion retained by sponsors), S_REP is a dummy variable for listed sponsor company, IPO_SIZE is the natural log of issue size, U_REP is share of total IPO proceeds for a given underwriter, STOCK_VOL is stock market volatility from day 2 to day 60 after IPO computed from daily value-weighted market returns, FIRST is a dummy variable for first IPO of property type in the market, NUM_IPO is cumulative count of REIT IPOs by the same sponsor, and LAG_MKT_RET is cumulative value-weighted market returns 15 days prior to IPO. White robust standard errors are shown in parentheses, and *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively

In our sample, there are 47 PFs and 19 REITs, all of which are issued from 2014 onward. We incorporate this distinction by creating a dummy variable REIT and repeat the regressions of underpricing, premium of offer price to NAV, BHAR over 3 years and share of days with no trades over 3 years. The result is reported in Table 6. Most of the regression outputs are similar, but the relationship between initial returns and IO is only observed in the PF subsample, not REIT. This suggests that much of the relationship documented in our article is related to the shift from PFs to REITs, consistent with the structural shift in participation depicted in Figure 3. For the case of premium of offer price to NAV, the REIT effect is clear: the average premium (INTERCEPT) of PFs is positive, while that of REITs is negative.

While the objective of our investigation is not to causally identify the mechanism through which public institutional investors affect REIT outcomes (here, we return to the earlier nomenclature and use the term REIT to describe both PFs and REITs), it is worth noting that PFs correspond to the early years of the market, which is characterized by low liquidity, as reflected in Figure 3 through share of days with no trade over time. In our research setting, both public and private institutional investors can be considered "dedicated" investors in the spirit of Bushee (2004), who should provide stability and not frequently trade. However, public and private institutional investors are subject to different levels and frequency of scrutiny. In a paper that studies the role of the stock market as a monitor of managerial performance, Holmström and Tirole (1989) argue that market liquidity is related to the information quality of stock price as a signal. If private institutional investors were subject to greater scrutiny, then an illiquid market would be unattractive to them. Viewed in this light, our findings can be interpreted as evidence that public institutional investors play an important role in early development of the Thai REIT market, as their relatively lower exposure to scrutiny increases their ability to participate in illiquid investments. From a chicken-and-egg perspective, their early participation likely was the catalyst before other participants in latter years.

Discussion and Conclusion

In this article, we investigate the role that institutional investors play in the Thai REIT market between 2005 and 2019. By separating them into public (government-sponsored entities and SFIs) and private (banks, mutual funds, insurance companies), we find that public institutional investors play an important role in developing the market in its early years, as reflected in their greater participation during the phase when the market was relatively illiquid, while private institutional investors play a greater role after property funds (PFs) were superseded by REITs in 2014. Consistent with adverse selection model of Benveniste and Spindt (1989), both types of institutional investors play a role in navigating the information asymmetry surrounding IPOs and are rewarded for their participation. However, public institutional investors are compensated via offerings priced below their NAV, while private institutional investors are compensated via initial returns, which is consistent with notion that public institutions are more risk-averse and therefore require pre-listing compensation, which is less risky. In sum, our article highlights the different roles that

public and private institutional investors play: public institutions tend to worry more about price risk, while private institutions worry more about liquidity. The findings provide practical insights into how the market for new financial innovations can be developed.

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