



How do financial constraints affect the relationship between corporate tax avoidance and firm investment? Evidence from Thai listed firms

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Abstract

This study examined the relationship between corporate tax avoidance and firm investment by using 2,555 firm-year observations of listed firms during 2008–2017. The empirical results revealed that firms with increasing investment levels are less likely to engage in tax avoidance activity. This study further performed an analysis of the differences between financially constrained firms and non-financially constrained firms, which affect the relationship between corporate tax avoidance and firm investment. The results found that both firms with high and low financial constraints have negative relationship between tax avoidance and investment levels. The conclusion is that both firms with high and low financial constraints will not find additional internal resources for investment through tax avoidance.

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Introduction

In 2015, the Association of Southeast Asia Nations (ASEAN) economic systems led to increase investment opportunities in ASEAN countries, including Thailand. Cross-border investment permits offshore investments to reduce tax burden, which leads to tax avoidance issues from tax loopholes in the tax system. In this regard, it may signal the relationship between tax avoidance behavior and firm investment, which remains an important area of study, especially in the field of finance, accounting and management. Previous studies focused on the effect of

corporate tax avoidance on capital rationing (Mayberry, 2012) and investment efficiency (Asiri, Al-Hadi, Taylor, & Duong, 2020; Khurana, Moser, & Raman, 2018; Mayberry, 2012), but these studies generally ignored financial constraint considerations. There is already some evidence on how financial constraints relate to corporate investment (Fazzari, Hubbard, Petersen, Blinder, & Poterba, 1988; Almeida & Campello, 2007), cash tax savings (Edwards, Schwab, & Shevlin, 2016) and firm tax evasion (Alm, Liu, & Zhang, 2019). However, those studies lack the examination of how financial constraints affect the relationship between corporate tax avoidance and firm investment, especially in emerging markets. Thailand is a case study due to the rapid expansion of economic activities, but the protection of investor's interests is weak and tax avoidance is a serious problem. This study contributes to the literature in two issues. First, this study

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provides additional information to investors, tax authorities, policy makers, creditors and other users on factors affecting firm investment such as tax avoidance and financial constraints. Second, this study fills a gap in literature by studying the effect of tax avoidance and financial constraints on firm investment in emerging markets.

Literature Review

Investment and Tax Avoidance

In a perfect capital market, neoclassical theory describes the maximum investment that firms will invest until marginal benefits equal marginal costs (Abel, 1983; Hayashi, 1982). The imperfections that exist in the capital market, such as agency problems and information asymmetry, hinder investment efficiency and, hence, result in either overinvestment or underinvestment (Jensen & Meckling, 1976; Myers, 1977; Myers & Mailuf, 1984; Jensen, 1986, as cited in Asiri, Al-Hadi, Taylor, & Duong, 2020), which cause moral hazard and adverse selection. Base managers' motivation leads to concealing the real financial situation and distorts firms' accounting information, resulting in firms' investment deviating from the optimal investment levels. In this regard, moral hazard occurring from managers who perform an increase in investment for personal benefits, may be inappropriate (Jensen & Mackling, 1976) and not provide the highest benefits to shareholders (Hope & Thomas, 2008), using tax avoidance to increase after-tax cash flow and cover up their self-benefits behavior from shareholders (Mayberry, 2012). Adverse selection arises from managers hiding the advantage of information to shareholders in order to obtain external funds or increase in information asymmetry which relates to tax avoidance for fund investment (Mayberry, 2012).

Many researchers have found that the firm's investment depends on its internal resources (Almeida & Campello, 2007; Fazzari, Hubbard, Petersen, Blinder, & Poterba, 1988; Hadlock, 1998; Lamont, 1997) and corporate income tax (Hanlon & Heitzman, 2010). The managers are concerned about tax amount, time, uncertainty of tax payment and tax-deductible items in the calculation of the net present value (NPV) project (Hanlon & Heitzman, 2010). When firms have insufficient internal resources and financial difficulties, managers may forgo investment or find the way to increase fund investment for making firm

value, productive and operational activities. Therefore, tax avoidance may be an alternative for internal funds instead of external funds. Baumann and Friehe (2010) confirmed that tax evasion could increase future expected profits and investment, when firms could invest in long-term competition, so avoiding taxes affected its activities. Mayberry (2012) found that firms could provide additional cash flow from tax avoidance activity to alleviate the influence of capital ratio and increase investment levels. Under tax avoidance increases, firms with low (high) managerial ability present in declined (increased) investment efficiency (Khurana, Moser, & Raman, 2018). Asiri, Al-Hadi, Taylor, and Duong (2020) showed that corporate tax avoidance was positively associated with investment inefficiency.

As mentioned above, this study expected that the relationship between corporate tax avoidance and firm investment would be positive when firms with high investment levels are lower in all three measures of tax avoidance (i.e. ETR, CETR and CETR5). This implies that managers consider a firm's investment policy through tax planning and tend to take advantage of asymmetric information related to avoiding tax payments. Cash tax savings can be used to reduce capital ratios and provide additional cash flow to continue on NPV project. Therefore, the alternative hypothesis is as follows:

H1: Firms with increasing (reducing) investment levels are likely to engage in tax avoidance at high (low) levels.

Financial Constraints

External funds are costly but internal funds are inexpensive (Hadlock, 1998), therefore, firms often use internally generated funds before the pursuit of external funds (Asiri, Al-Hadi, Taylor, & Duong, 2020). For example, Fazzari, Hubbard, Petersen, Blinder, and Poterba (1988) explained that capital expenditures of firms with financial constraints could be funded from internally generated funds for investment. Mayberry (2012) confirmed that tax avoidance could increase cash flows and generate additional internal cash funds through tax planning. Among firms with low cash reserves, financial constraints have influence on tax planning (Edwards, Schwab, & Shevlin, 2016). Strategic tax planning is designed to save tax payments or avoid taxes and bring money to investment (known as adverse selection), by investing in projects that provide the highest returns at the

level of availability of internal resources (Billett, Garfinkel, & Jiang, 2011). Managers can take advantage of tax planning or diminish the impact of financial constraints on financial statements by using the legal practice of accounting. Edwards, Schwab, and Shevlin (2016) found that firms with financial constraints were associated with increasing cash tax planning and decreasing cash ETR. Their results suggested that financial constraints had a significant influence on tax avoidance. Therefore, it can be confirmed that firms with high financial constraints tend to involve tax avoidance activity (Alm, Liu, & Zhang, 2019; Mayberry, 2012). However, some scholars have suggested that corporate tax avoidance not only brings risk to managers but also increases the uncertainty of excessive investment. Tax avoidance also leads to an increase in direct costs (i.e. tax planning costs, lawsuit and penalty costs) and indirect costs (i.e. agency costs, corporate reputation costs, and capital costs) (Desai & Dharmapala, 2009). For those reasons, this study argues that both firms with high and low financial constraints will not rely on tax avoidance for supporting their investment. The second hypothesis is as follows:

H2: Tax avoidance is negatively associated with the level of investment, both financially constrained firms and non-financially constrained firms.

Methodology

Data Collection

This study examined 2,555 firm-year observations of listed firms on Security Exchange of Thailand (SET) in 2008–2017, including seven industries: agriculture and food industry, consumer products, industrial, property and construction, resources, services and technology. This study excluded firms with missing data, firms under the rehabilitation program, firms whose financial year does not end on December 31, and firms having a negative pre-tax income. All variables were collected from SET market analysis and reporting databases, annual registration statement, annual reports, company and world bank websites.

Data Analysis

This study used a random effects model for the analysis of panel data. To eliminate the extreme values of

observations (Connelly, 2016), all variables were winsorized at 0 and 1. For testing the hypothesis H1 and H2, the model is shown in Equation (1).

$$INVRA_{i,t} = \beta_0 + \beta_1 TAXAV_{i,t} + \sum_j Control_{j,i,t} + \varepsilon_{i,t} \quad (1)$$

Following Biddle, Hilary, and Verdi (2009) and Connelly (2016), *INVRA* is firm investment, including the ratio of capital expenditures to non-current assets at the beginning of year *t* (*Capex_ppe*) and the ratio of capital expenditures to cash flow (*Capex_cf*). The higher first ratio reflects that firms have a higher asset depreciation and if their tax avoidance measures are low, it is possible that these firms may have tax avoidance behaviors. For the second ratio, when the ratio is higher than one, it shows that firms' operations can generate cash required for purchasing of non-current assets. The lower ratio means that firms are facing cash flow issues and an acquisition of non-current assets. *TAXAV* is corporate tax avoidance, including the effective tax rate (ETR) as total tax expenses divided by pre-tax income; cash effective tax rate (CETR) equals cash tax paid divided by pre-tax income; and the accumulation of five-year cash effective tax rate (CETR5) is calculated by the sum of cash tax paid over the previous five years divided by the sum of pre-tax income minus special items over the same period. ETR is a sign of advantage of strategic tax planning where tax savings are included in accounting earnings (Hanlon & Heitzman, 2010). In addition, firm's fund investment is relationship with cash but not earnings (Mayberry, 2012), and long-periods of CETR can capture the reversals of the accruals (Dyreg, Hanlon, & Maydew, 2008) and mitigate influence on earnings management (Hanlon & Heitzman, 2010), so CETR and CETR5 variables are included. This study suggested that firms with a lower ETR, CETR and CETR5 were engaged in tax avoidance activities. In addition, this study included control variables consisting of accrual-based earnings management measured by the absolute discretionary accruals (DIAC) (see Braam, Nandy, Weitzel, & Lodh, 2015) to detect firm's earnings management and capture financial reporting quality; ZSCORE calculated using Altman (1968)'s model for capturing firm-specific changes in financial constraints (Edwards, Schwab, & Shevlin, 2016); free cash flow (FCF) (see Connelly, 2016) for capturing the finance available to investment; return on assets as pretax income to total assets (ROA), a positive relationship indicates that firms have higher profitable and greater cash available for investment (Connelly, 2016); long-term debt to total assets (LEV) for controlling

a situation of firm’s capital structure; net property, plant and equipment to total assets (PPE) for capturing capital-intensive firms; intangible assets to total assets (INA) for controlling the differences between book and tax planning; the natural log of total assets (SIZE) to reflect that large firms have fewer capital constraints (Mayberry, 2012); tax loss carryforward (TLC) is one if a firm has net operating loss carryforward and 0 otherwise, for controlling firms utilizing the loss carryforward to reduce taxable income (Edwards, Schwab, & Shevlin, 2016). Lastly, gross domestic product (GDP) equals negative one multiplied by annual percentage change in inflation-adjusted GDP (Edwards, Schwab, & Shevlin, 2016) for controlling the effect of macro-economic consequences.

Testing hypothesis H2 was based on the prediction of bankruptcy from the Altman Z–score, which was used in prior research for capturing financial constraints (Edwards, Schwab, & Shevlin, 2016). The higher Z–score (2.99) represents that firms are in good financial health. The Z–score below 1.81 is widely used for financial distress evaluation of developed countries, however, it may not be appropriate to assess Thai financially constrained firms, which are considered to be at low financial development. Therefore, this study used Z–score as Rankz’s dummy variable for distinguishing between firms with high financial constraints having a Z–score below and equal to the percentile 25 (0.51), whereby Rankz takes value 1, and firms with low financial constraints having a Z–score

above this percentile, whereby Rankz takes value 0. This study expected that the coefficient of the relationship between tax avoidance and investment levels for financially constrained firms would be less than non-constrained firms.

Results and Discussions

Descriptive Statistics

Table 1 presents descriptive statistics for all the variables used in the regression models after winsorizing at the 1st and 99th percentiles. For investment variables, Capex_ppe has a mean (median) value of 0.301 (0.270) and a standard deviation of 0.157. Capex_cf has a mean (median) value of 0.538 (0.540) and a standard deviation of 0.259. For corporate tax avoidance, the mean values of ETR, CETR and CETR5 are 0.168, 0.171 and 0.187, respectively, suggesting that, on average, most firms have lower tax rates relative to the statutory tax rates (that were 30% in 2008–2011, 23% in 2012, and 20% in 2013–2017).

Correlation Analysis

Table 2 presents the Pearson and Spearman correlation. The coefficients of ETR, CETR and CETR5 show significant positive correlation with Capex_ppe and

Table 1 Descriptive statistics

N = 2555					
Variable	Mean	Median	SD	p25	p75
capex ppe	0.301	0.270	0.157	0.200	0.350
capex cf	0.538	0.540	0.259	0.330	0.760
etr	0.168	0.180	0.095	0.100	0.230
cetr	0.171	0.180	0.099	0.090	0.250
cetr5	0.187	0.200	0.114	0.090	0.260
diac	0.506	0.410	0.446	0.210	0.680
zscore	0.998	0.890	0.676	0.510	1.290
fcf	0.428	0.350	0.267	0.240	0.550
roa	0.094	0.080	0.072	0.040	0.130
lev	0.444	0.460	0.195	0.300	0.600
ppe	0.324	0.300	0.225	0.130	0.500
ina	0.040	0.010	0.090	0.000	0.030
size	22.63	22.38	1.478	21.54	23.57
tlc	0.152	0.000	0.359	0.000	0.000
gdp	-0.001	0.010	0.047	-0.040	0.040

Table 2 Correlation

Variable	(1)	(2)	(3)	(4)	(5)
	capex_ppe	capex_cf	etr	cetr	cetr5
capex_ppe	1	0.006	0.301***	0.330***	0.276***
capex_cf	-0.032	1	0.032	0.056***	0.012
etr	0.207***	0.033***	1	0.737***	0.547***
cetr	0.230***	0.055***	0.746***	1	0.562***
cetr5	0.181***	0.022	0.525***	0.547***	1

Note: Pearson (Spearman) correlation are presented lower triangle (upper triangle). All variables were winsorized at 0 and 1.

*** $p < .01$.

Capex_cf, indicating that higher level of tax rates is associated with higher level of investment. The correlation results suggest that firms with increasing investment levels are less likely to engage in tax avoidance activity. In addition to partial correlations, this study also uses tolerance (TOL) and variance inflation factor (VIF) as indicators of multicollinearity. The regression results, VIF of all variables in the models do not exceed 3, TOL is not far from one, indicating that it does not cause a serious multicollinearity problem.

Regression Results

The relationship between corporate tax avoidance and firm investment is presented in Table 3. In all six models, the coefficients of ETR, CETR and CETR5 are significant positive correlation with all investment measures. The result suggests that higher level of investment by firms leads to high effective tax rate, high cash effective tax rate and high five-year cash effective tax rate. The conclusion is

that firms with increasing investment levels are less likely to engage in tax avoidance activity, which is not consistent with H1. Because there are more direct and indirect costs, if firms are found to be avoiding taxes their reputation will be affected. Managers will put effort on investment and focus on building confidence in financial statements according to the laws, so they do not consider tax avoidance.

An analysis of the differences between financially constrained firms and non-financially constrained firms affecting the relationship between corporate tax avoidance and firm investment is shown in Table 4. The dependent variable of Panel A (Model 1–6) is capex to non-current assets ratio, while the dependent variable of Panel B (Model 1–6) is capex to cash flow ratio. Three tax avoidance measures reveal significant and positive correlation with investment levels, indicating that firms with high and low financial constraints are not involved in tax avoidance to increase fund investment. Because tax avoidance leads to future costs of tax liabilities, future losses and reputation costs, when firms face financial difficulties in investing and

Table 3 The relationship between corporate tax avoidance and firm investment

Variable	capex_ppe			capex_cf		
	(1)	(2)	(3)	(4)	(5)	(6)
etr	0.310*** (8.734)			0.229*** (4.245)		
cetr		0.330*** (9.679)			0.190*** (3.648)	
cetr5			0.112*** (3.435)			0.134*** (2.749)
Constant	0.261*** (3.341)	0.254*** (3.282)	0.339*** (4.333)	0.496*** (4.299)	0.511*** (4.433)	0.533*** (4.631)
Control	Yes	Yes	Yes	Yes	Yes	Yes
No. Obs.	2555	2555	2555	2555	2555	2555
Adj. R^2	0.172	0.181	0.151	0.271	0.270	0.269

Note: * $p < .10$. ** $p < .05$. *** $p < .01$.

Table 4 The relationship between corporate tax avoidance and firm investment under financially constrained firms and non-financially constrained firms

Panel A	(1)	(2)	(3)	(4)	(5)	(6)
Variable	capex_ppe					
	rankz=1	rankz=0	rankz=1	rankz=0	rankz=1	rankz=0
etr	0.247*** (3.227)	0.319*** (8.024)				
ctr			0.240*** (3.000)	0.339*** (9.157)		
ctr5					0.161** (2.493)	0.196*** (2.888)
Constant	0.028 (0.166)	0.317*** (3.970)	0.032 (0.189)	0.307*** (3.882)	0.056 (0.331)	0.405*** (4.996)
Adj. R ²	0.162	0.186	0.165	0.196	0.161	0.156
Panel B	(1)	(2)	(3)	(4)	(5)	(6)
Variable	capex_cf					
	rankz=1	rankz=0	rankz=1	rankz=0	rankz=1	rankz=0
etr	0.239** (2.105)	0.288*** (4.772)				
ctr			0.184*** (3.174)	0.375*** (3.245)		
ctr5					0.155*** (1.815)	0.173* (2.781)
Constant	0.441* (1.895)	0.558*** (4.443)	0.400* (1.729)	0.600*** (4.786)	0.455** (1.962)	0.616*** (4.922)
Adj. R ²	0.139	0.313	0.145	0.309	0.140	0.308
Control var.	Yes	Yes	Yes	Yes	Yes	Yes
No. of Obs.	640	1915	640	1915	640	1915

Note: *p < .10. **p < .05. ***p < .01.

external funds are expensive, firms will reduce investment and are not willing to participate in strategic tax planning (Edwards, Schwab, & Shevlin, 2016). The results also show that firms with low levels of financial constraints have greater investment levels than firms with high financial constraints, implying that these firms have sufficient financial resources and high capacity for fund investment from external loans. Consequently, the results support the hypothesis that for both firms with high and low financial constraints, the relationship between tax avoidance and investment levels is negative.

Robustness Test

For empirical test results of hypothesis, the following methods were used to test the robustness of the main

results. First, in 2015, Thai tax law was amended to reduce the firm’s tax avoidance. The period’s dummy variable was constructed for the change in tax law, that is, one in year 2015 and 0 otherwise (period dummy is also defined for the period of before and after the change in tax law), expecting that tax avoidance should be quite noticeable before tax law changing and reduced after year 2015. Second, in order to avoid endogenous problem that results in biased coefficient estimates, this study used Huber-White robust standard errors clustered by firm, which is used to control for heteroscedasticity (Edwards, Schwab, & Shevlin, 2016) and two-stage least squares (2SLS) regression analysis. The potential endogeneity issue between tax avoidance and financial constraints was considered. Edwards Schwab, and Shevlin (2016) suggested that firms with increased financial constraints showed a decrease in

CETR. To address this possible concern of endogeneity between tax avoidance and financial constraints, in the first stage, the general model was adopted to estimate tax avoidance levels by the model as $TAXAV = ZSCORE + \sum Control + \varepsilon$. The results of the first stage confirm that a lower (higher) ZSCORE is associated with a lower (higher) ETR, CETR and CETR5. Third, was using the alternative of tax avoidance measures by following Huseynov and Klamm (2012). The excess of ETR, CETR and CETR5 is the residual values of estimation from Equation (2) and replaces tax avoidance variables of Equation (1) for capturing the proportion of tax rates which are not normally related to firm specific characteristics.

$$TAXAV_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 LEV + \beta_3 Dividend_{it} + \beta_4 MB_{it} + \beta_5 IO_{it} + \beta_6 ROA_{it} + \beta_7 Capex_{it} + \varepsilon_{it} + Year + Industry \quad (2)$$

Fourth, paying dividends ratio (following Fazzari, Hubbard, Petersen, Blinder, & Poterba, 1988) and the KZ index (following Kaplan & Zingales, 1997) were used to assign firms into financially constrained firms and non-constrained firms. After the above adjustments, the results (no table displayed) show that the coefficients of ETR, CETR and CETR5 are significant positive correlations with all investment measures. There is no signal of tax avoidance before and after the change in tax law. They are robust to heteroscedasticity. For the 2SLS test and changing the way of tax avoidance measures, the results show that both firms with high and low financial constraints have negative relationship between tax avoidance and investment levels. Firms with low paying dividend ratio and firms in the top three deciles of the KZ index, which are defined as financially constrained firms, are not involved in tax avoidance and their investment levels are less than non-constrained firms. The overall results are the same as previous studies and remain robust.

Conclusion and Recommendation

This study examined the relationship between corporate tax avoidance and firm investment by using 2,555 firm-year observations of listed firms on the SET in 2008–2017. The results revealed that tax avoidance had significant negative correlation with the level of investment, indicating that firms with increasing investment levels are less likely to engage in tax avoidance activity. When controlling financial constraints, both firms with high and low financial constraints had negative relationship between tax avoidance

and investment levels. The results indicated that firms choose to reduce investment when facing financial difficulties, therefore, tax avoidance activity is not an alternative to increase fund investment. Firms with low levels of financial constraints have greater investment levels, implying that these firms have adequate financial resources available to increase investment. The conclusions of this study expand the understanding of financial constraints and corporate tax avoidance that affects firm investment. Future study can change the way of financial constraints measures by the Whited-Wu, Hadlock-Pierce indices and having a credit rating.

Conflict of Interest

There is no conflict of interest.

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