ADJUSTMENT TO TARGET DEBT MATURITY AND EQUITY MISPRICING: EVIDENCE FROM ASIA PACIFIC

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Abstract: This paper examines firms' target adjustment behavior for debt maturity structure for selected countries from the Asia Pacific region. The literature documents that managers' structure debt issues in line with a target maturity structure which is limited by transactions costs, information asymmetry, agency problems, liquidity needs as well as institutional factors. Our paper contends that firms adjust to target levels at differing rates based on whether the current maturity structure is above or below target levels as well as equity mispricing. We estimate the target debt maturity based on the lead level and measure speed of adjustment to target levels by regressing the difference between the simulated and actual values. Our findings indicate that firms which are below target debt maturity tend to adjust at more rapid rates during periods of overvaluation. Firms which are above target debt maturity tend to adjust at more rapid rates during periods of undervaluation. Our findings indicate asymmetric adjustment rates indicating that debt maturity structure serves as an important tool for signaling. The implications provide a better understanding on the impact of debt maturity on information asymmetry leading to differences in adjustment to target debt maturity structures.

Key words: debt maturity, target adjustment behavior, speed of adjustment, capital structure, Asia Pacific region

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Introduction

Earlier studies and models of capital structure show that debt maturity structures, similar to capital structure, are irrelevant in perfect capital markets (Modigliani and Miller, 1958). Morris (1976) proposes a contrasting model based on perfect capital market assumptions where firms choice of debt maturity influences shareholders' risk exposure given the potential fluctuations in interest rates. Among the plausible explanations for choice of debt maturity proposed in the literature ranges from the

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argument for tax planning (Lewis, 1990), a tool to manage the moral hazard problem (Myers, 1977; Alias et al., 2017), a signaling tool to reduce information asymmetry (Diamond and He, 2014) as well as managing liquidity risks (Iqbal-Hussain et al., 2015; Kamarudin et al., 2018). Empirical studies as well as surveys in developed and emerging markets find that a large majority of firms have a target in mind for maturity structure of debt (Nor et al., 2011; Zainudin et al., 2017a). Firms which place higher levels of reliance on short-term debt would be forced to renegotiate more frequently and thus are more likely to suffer during periods of shocks in the economy (Custódio et al, 2013; Malissa and Kusuma, 2017). Thus, the main aim of this article is to analyze the speed of adjustment towards target debt maturity structure of companies based on the extent of equity mispricing (Guney and Iqbal-Hussain, 2009; Hussain et al., 2016a; Orman and Koksal 2017; Hussain et al., 2017). Our notion is derived from the literature where equity mispricing acts as an impediment or catalyst for firms to adjust to target levels (Warr et al., 2012, Khalaf, 2017).

In line with our expectations based on our empirical priors, the results indicate that firms do indeed adjust towards a target debt maturity level which is determined by firm specific characteristics (Deesomsak et al., 2009). Furthermore, our specific tests show that equity mispricing has a significant impact on firms' adjustment to target debt maturity (Iqbal-Hussain, 2013). Contrary to findings for adjustment to target leverage, firms which are below target levels tend to adjust at more rapid rates during periods of overvaluation (Warr et al., 2012; Hussain et al., 2016b). Our results suggests that during periods of undervaluation, these firms would choose to rely on short-term debt instead which sends a credible signal to the market. In addition, managers with superior levels of information would tend to avoid long-term debt in order to increase firms' value at a later stage by negotiating more favourable terms. Looking at firms above target levels, we document that firms are able to adjust at faster rates during periods of undervaluation which indicates the signalling power of debt given the increased reliance on short-term debt. For instance, managers are more willing to be closely monitored and assessed at more frequent rates during periods of undervaluation.

This study is organised as follows: The introduction is followed by the literature review to motivate the study. Following on, we discuss the empirical model to test the speed of adjustment to target debt maturity. Next we define the variables, describes the data and provide the results for our main empirical model. This is followed a discussion on the empirical results and finally we conclude the study.

Literature Review and Motivation of the Study

This section reviews the relevant literature on the speed of adjustment to target debt maturity as well as the market timing theory to explain capital structure decisions. The trade-off theory predicts that firms have target debt maturities. However, empirical studies document that firms often deviate from target levels given market imperfections as well as adjustment costs.

Target Debt Maturity

The literature streamlines four main explanation of debt maturity structures which are agency problem view, tax purposes, as a tool to mitigate liquidity concerns as well as a signalling tool. A detailed survey on all four views are provided in Ravid (1996). The agency problem view is based on the moral hazard problem where increased reliance on short-term debt provides a tool to control managerial actions which reduces the underinvestment problem (Myers, 1977; Iqbal-Hussain et al., 2015). Views arising from tax purposes is based on the tax deductibility of interest where an increased reliance on long-term debt is expected if the value capture from tax savings outweighs the flotation costs associated with frequent renewal of debt contracts over the long-run (Lewis, 1990). Looking at the liquidity explanation of debt maturity is derived from the view that firms are constantly trading of the potential benefits of relying on short term debt which leads to increased credit ratings versus the need to maintain sufficient liquidity (Brick and Liao, 2017; Kamarudin et al., 2018). Finally, the signalling view of debt maturity is a reflection of the equilibrium of transaction or flotation costs (Khaw and Lee, 2016, Pontoh, 2017). Firms' ability to adjust to target debt maturity follows the trade-off theory capital structure and is influenced by firm specific as well as institutional factors (Shawtari et al., 2016; Gonzalez, 2017). Our study thus controls for these factors whilst evaluating the impact of equity mispricing on rate of adjustment.

Equity Mispricing

The impact of equity mispricing on capital structure decisions is based on the equity market timing theory which argues that the current debt ratio of a particular firm is the cumulative outcome of previous timing attempts by managers which can influence shareholders' wealth (Guney and Iqbal-Hussain, 2010; Warusawitahrana and Whited, 2015). Several other international studies also document similar results where managers time equity issues to coincide with equity mispricing where firms prefer to issue debt during periods of undervaluation whilst opting for equities during periods of overvaluation (Vallandro et al., 2014). The empirical literature does however provide contention on the ability of the market timing theory to explain security issues (Hussain 2014; Allini et al., 2017). Thus, it is clear that significant contention exists in the literature on the market timing theory as a valid explanation for capital structure decisions. Therefore our paper aims to contribute to the literature by evaluating the impact of equity mispricing on the structure of debt maturity given that it has a direct impact on cost of capital and thus rate of adjustment to target debt maturity.

Methodology

The analysis utilizes unbalanced panel data approach for the empirical model in order for the model to better capture inferences of parameters for speed of adjustment to target debt maturity. In addition, unbalanced panel data analysis allows the mitigation of bias due to missing or unobservable variables. Variable definitions are guided by the literature and are presented in table 1 (Deesomsak et al., 2009). We further eliminate the impact of outliers via winsorising where observations from the 1st and 99th percentile are dropped from the sample (Zainudin et al., 2017b). Observations with missing data are also eliminated from the analysis. Given our notion of measuring speed of adjustment, we require a minimum of three-year continuous observations in order to utilize the dynamic two-step system GMM method.

Table 1. Definition of Variables (*Deesomsak et al., 2009)*

Variable	Definition
Leverage (LEV)	Total debt scaled by total debt plus MV of equity and BV of preference shares
Firms Size (SIZE)	Natural logarithm of assets
Growth Opportunity (Growth)	Total assets minus book value of equity plus MV of equity scaled by total assets
Earnings Volatility (VOL)	Absolute value of $\{[EBIT_t - EBIT_{t-1}]/EBIT_{t-1}\}$ minus average of $\{[EBIT_t - EBIT_{t-1}]/EBIT_{t-1}\}$
Liquidity (LIQ)	Current assets scaled by current liabilities
Profitability (PROF)	EBIT scaled by total assets
Share price performance (SPP)	Changes in share price
Asset Maturity (AMAT)	Total fixed assets scaled by total assets
Firm Quality (QUA)	Altman's Z-score

Modelling Adjustment to Target Debt Maturity

Our model of target debt maturity is measured at the lead level (*t+1*). We further utilise two different approaches to allow robustness of results. In the first instance, we model target levels based on the approach utilised in Fama and French (2002); based on the known firms specific and country specific measures which include 12 industry dummies which take the value of [1, 0] which are documented in Appendix A, can be expressed as (Deesomsak et al., 2009):

$$DEBT\ MATURITY_{it+1} = \beta_1 CONST_{it} + \gamma[FIRM\ SPECIFIC\ DETERMINANTS\ AND\ COUNTRY\ SPECIFIC\ DETERMINANTS]_{it} + \varepsilon_{it} \quad (1)$$

In addition to the static approach of modelling target debt maturity levels, we further estimate target levles based on the 2-step system GMM esimator (Blundell and Bond, 1998). The autoregressive model is thus expressed as:

$$Debt\ Maturity_{it+1} = \beta_1 CONST_{it} + \beta_2 Debt\ Maturity_{it} + \gamma[EXPLANATORY\ VARIABLES]_{it} + \pi_{it} + \tau_{it} + \varepsilon_{t+1} \quad (2)$$

where $\text{Target Debt Maturity}_{it+1}$ is the lead variable which is to be estimated in at (*t+1*). $\text{Debt Maturity}_{it}$ is the lag variable which represents the actual level for debt maturity at (*t*), $\gamma[\text{EXPLANATORY VARIABLES}]_{it}$ are a vector of explanatory variables that include both firm specific as well as country specific determinants. In addition to the dynamic estimator, we further utilise robust standard errors (White, 1980) whilst correcting for finite sample errors (Windmeijer, 2005). Our approach of utilising both the static and dynamic approach is to overcome the inherent bias in the nature of panel data. We model the rate of adjustment to target debt maturity as follows (Warr et al., 2012):

$$DM_{it+1} - DM_{it} = \beta_1 CONST_{it} + \beta_2 DISTANCE_{it} + \gamma[EXPLANATORY\ VARIABLES]_{it} + \varepsilon_{it} \quad (3)$$

Equity Mispricing

We utilise the residual income model in order to estimate the intrinsic value of equity given its various advantages (Elliott et al., 2007). The intrinsic value of equity can be defined as follows (Elliott et al., 2007):

$$IV_0 = BE_0 + \sum_{t=1}^{T}(1+k)^{-1} EE_0[I_t - K] \times BE_{t-1} + \frac{(1+k)^{-T}}{k} TV \quad (4)$$

The terminal value (TV) is estimated as follows:

$$TV = \frac{EE_0[(I_T - k \times BE_{t-1}) + (I_{t+1} - k \times BE_T)]}{2} \quad (5)$$

where IV_0 is the intrinsic value of equity which is of interest to our estimation. BE_0 accounts for book value of equity, *k* captures the cost of equity capital whilst EE_0 is expected earnings at the financial year-end. Time 0 is defined as the previous fiscal year and *T* is set to be the end of two years.

Data

Our sample is selected from a panel set for all firms available in Thomson Reuters Datastream for Malaysia, Thailand, Singapore and Australia for the period of 1993 – 2016. Representation of developed and developing countries allows our analysis to control for developments in market and institutional factors when employing our empirical tests. Similar to our empirical priors, we exclude financial firms whilst missing observations are dropped from the sample (Thabet et al., 2017). In addition, the dynamic nature of our empirical model requires a minimum of three years of continuous observations. Our final sample consists of 14, 864 firm-year observations. Breakdown of the sample by country are provided in Appendix B.

Table 2. Mean differences of variables between Developed Countries and Developing Countries

Variables	Developed Countries	Developing Countries
MAT	0.5388	0.2896
(t-stat)	(3.1822)***	
LEV	0.2369	0.2962
(t-stat)	(8.2919)***	
SIZE	16.2492	18.6803
(t-stat)	(2.9152)***	
GROW	2.6428	1.9025
(t-stat)	(2.6391)***	
VOL	3.8244	2.9056
(t-stat)	(1.2036)	
LIQ	2.5830	1.6495
(t-stat)	(5.9910)***	
PROF	0.0625	0.8622
(t-stat)	(0.9291)	
SPP	0.0979	0.1421
(t-stat)	(4.2445)***	
AMAT	0.3629	0.3988
(t-stat)	(2.9344)***	
QUA	0.3821	1.9205
(t-stat)	(3.6344)***	
BKDEV	8.2931	7.8364
(t-stat)	(0.8903)	
MKDEV	4.3692	3.9022
(t-stat)	(1.2410)	
TERM	-5.4202	-1.5206
(t-stat)	(5.3108)***	
INF	3.8641	2.9108
(t-stat)	(3.0189)***	

We define MAT as the ratio of long-term debt to total debt. LEV is defined as the debt to total assets. SIZE is natural lograithm of total assets. GROW is defined as book value of total assets less book value of equity plus market value of equity divided by total assets. VOL is absolute difference between annual percentage change in EBITand the average fo this change. LIQ is defined as the ratio of current assets to current liabilities. PROF is EBITD divided by total assets. SPP is dfined as the first difference between logs of annual share price. AMAT is the ratio of total fixed assets to total assets. QUA is the Altman's Z-score. BKDEV is defined as the total bank assets divided by GDP. MKDEV is market capitalisation divided by GDP. TERM is defined as the differences between government bond yield and lending rates. INF is based on the changes in the CPI. Significance levels of difference are denoted as *,** and *** for 10%, 5% and 1% level, respectively.

The average value of the variables for firm specific and market-wide determinants are reported in table 2 above. The comparison between the two groups show that firms in developed economies tend to rely more heavily on long-term debts relative to firms in developing countries. In addition, other average values are as expected and in line with our empirical priors for both categories i.e. in developed versus developing markets.

Results

The results for the empirical models are reported in this section. The results for regressing equation (1) are reported in table 3 below. Column 1 – 4 report results by country whilst the last two columns reports the pooled data. Coefficients are reported based on the mean values of results from regressions on an annual basis for the sample period. Significant levels are determined based on the time series approach utilised in Fama and French (2002).

Table 3. Estimating Target Debt Maturity$_{(t+1)}$

Variables	Thailand	Malaysia	Singapore	Australia	Static	Dynamic
Constant	-0.4241***	-0.6422***	-0.2899***	-0.1452	0.2653***	-
(t-stat)	(3.2808)	(8.9901)	(2.9012)	(0.8926)	(3.5582)	-
Lagged DM	-	-	-	-	-	0.3825***
(t-stat)	-	-	-	-	-	(16.4328)
LEV	0.2088***	0.1455***	0.1199***	0.4292***	0.2742***	0.1405**
(t-stat)	(5.2598)	(3.0248)	(2.4420)	(5.2344)	(3.8241)	(2.0129)
SIZE	0.0508***	0.0928***	0.0929***	0.0623***	0.0735***	0.0283**
(t-stat)	(4.2899)	(9.6301)	(10.2839)	(3.1891)	(8.3921)	(1.9848)
GROW	0.0629***	0.0025	0.0058	0.0003	0.0241	0.0010
(t-stat)	(4.2451)	(0.9108)	(0.0903)	(0.0092)	(1.3422)	(0.3481)
VOL	-0.0018***	-0.0082	-0.0038***	0.0011	0.0019	0.0003
(t-stat)	(2.9081)	(0.1099)	(3.8246)	(1.2432)	(1.5826)	(0.6329)
LIQ	0.0729***	0.0628***	0.00629**	0.0088	0.0428***	0.08372***
(t-stat)	(6.9822)	(4.2399)	(2.0815)	(1.4320)	(3.9825)	(2.8329)
PROF	0.4281***	0.1599**	0.0936	-0.2462***	0.2683***	0.1206
(t-stat)	(4.4322)	(5.3138)	(0.6932)	(3.9205)	(3.5847)	(1.4892)
SPP	0.0092	-0.0008	0.0382**	0.0562**	0.0192	0.0029
(t-stat)	(0.8192)	(1.0288)	(1.9982)	(2.0015)	(1.3692)	(1.2988)
AMAT	0.3163***	0.2936***	0.3464**	0.1452	0.2593**	0.0912
(t-stat)	(6.0288)	(6.2408)	(2.0922)	(1.4680)	(1.9809)	(1.2474)
QUA	-0.0462***	0.0001	0.0010	0.0012	0.0028	0.0015
(t-stat)	(6.2399)	(0.0024)	(0.8233)	(0.5729)	(0.1092)	(0.0980)
Average R^2	0.2210	0.1528	0.2136	0.2452	0.2891	-
F-Test (p-values)	0.00	0.00	0.00	0.00	0.00	-

Adjusted R^2	-	-	-	-	-	0.4826
AR (1)	-	-	-	-	-	-4.2388***
AR (2)	-	-	-	-	-	0.7360
Wald Test (p-values)	-	-	-	-	-	0.00
Sargan Test (p-values)	-	-	-	-	-	0.36
Period			1993 – 2016			
Observations	3,284	6,682	2,826	2,072	14,864	14,864

For columns 1 to 5, the mean slope coefficient is the average of the slopes for annual regressions. Time-series standard error is the time-series standard deviation of the regression coefficient as in Fama and French (2002). For results in column 6, standard errors robust to heteroscedasticity and based on Windmeijer (2005) finite sample correction. Industry and time dummies were included in the model in order to control for industry and time effects but no statistically significant effect was found. In columns 5 and 6, country dummies were additionally included.

All regressions include time and industry dummies which are mostly insignificant. Furthermore regression in column 5 include additional country dummies which are significant suggesting country specific factors influence target debt maturity levels. In the column 6 the country dummies are replaced with the country-specific determinants. Our initial results confirm to findings documented in the literature. (Deesomsak et al., 2009; Hussain et al., 2018a). Results for regressing equation (2) are reported in the last column of table 3 above based on the dynamic estimation. Our results are qualitatively similar to that observed in the static framework. Diagnostics in table show that the first-order serial correlation (AR 1) is negative whilst indicating an absence of the second-order serial correlation (AR 2). This satisfies the assumption of absence of higher-order serial correlation. In addition, the Wald statistics is also significant for the model. The Sargan test further validates the instruments used which indicates absence of correlation with the error term. In addition, the lagged dependent variable has a positive and significant coefficient which confirms firms' do indeed adjust to target debt maturity structures (Hussain et al., 2018b). Given that the lagged dependent is significant as reported in table 3, we are able to conclude that firms do indeed adjust to target debt maturity levels. In order to estimate the rate of adjustment to target levels, we simulate estimated values from the results in column 5 and 7 of table 3 which is then used as the input for values in equation (3) (Warr et al., 2012). The distance measures in equation (3) would be negative for firms which are above target levels and positive for firms below target levels. In order to examine the main notion of the study, we split our sample into two groups based on the positive and negative distance measures. We then estimate the following model for both groups:

$$DM_{it+1} - DM_{it} = \beta_1 CONST_{it} + \beta_2 (DISTANCE) \times UNDER\ or\ OVER_{it} + \gamma[Explanatory\ Variables]_{it} + \varepsilon_{it+1} \quad (6)$$

The results for estimating the model in equation (6) are reported in Table 4.

Table 4. Estimating Speed of Adjustment to Target Debt Maturity

	1	2	3	4	5	6
			Firms above target debt maturity(t+1)		Firms below target debt maturity(t+1)	
Panel A: Results based on Residual Income Model						
DIST	0.4823***	0.6029***	-	-	-	-
	(6.8922)	(8.9238)	-	-	-	-
DIST x UNDER	-	-	0.5238***	0.6493***	-	-
	-	-	(7.2453)	(9.0256)	-	-
DIST x OVER	-	-	-	-	0.3864***	0.4026***
	-	-	-	-	(4.9890)	(5.2081)
Adjusted R^2	0.4299	0.4862	0.5109	0.5324	0.3491	0.3832
Wald (p-values)	0.00	0.00	0.00	0.00	0.00	0.00
Observations	14,864	14,864	6,842	6,842	7,109	7,109
Period	1993 – 2016					
Panel B: Robustness of results based on Analyst Forecasted Earnings						
DIST	0.3629***	0.4126***	-	-	-	-
	(3.6890)	(4.2877)	-	-	-	-
DIST x UNDER	-	-	0.4235***	0.4732***	-	-
	-	-	(5.3294)	(4.8933)	-	-
DIST x OVER	-	-	-	-	0.2905***	0.3108***
	-	-	-	-	(2.9088)	(3.0024)
Adjusted R^2	0.3204	0.3672	0.3592	0.3801	0.3723	0.3622
Wald (p-values)	0.00	0.00	0.00	0.00	0.00	0.00
Observations	7,382	7,382	4,082	4,082	3,836	3,836
Period	1993 – 2016					

This table provides the results for analysis for adjustment to target debt maturity. ***, ** and * indicates significance at 1%, 5% and 10% respectively. The dependent variable is the difference of lead debt maturity and lag debt maturity. Column 1, 3 and 5 reports results for estimation on a static framework while column 2, 4 and 6 reports results for estimations based on a dynamic framework. The coefficients are reported based on estimation for the difference between the lead and lag variable as the dependent variable. 2 – dimension clustered standard errors are reported in parentheses which are clustered at unit (firm) and time (year) level. All regressions include industry dummies [0, 1], time (year) dummies as well as country dummies and other known determinants of debt maturity as discussed in the text above which serve as control variables.

We report the results based on the pooled data for our sample. Columns 1, 3 and 5 are based on the estimated of target debt maturity based on the static framework i.e. target levels simulated from equation (1). Columns 2, 4 and 6 are based on the target levels obtained from the dynamic framework approach i.e. values obtained from simulating results of equation (2). Regressions include year, industry as well as country dummies. The share price performance variable (*SPP*) is excluded from the regressions in order to avoid multicollinearity issues with the mispricing measure. The regressions reported are coefficients which are based on standard errors clustered both on the time and firm dimension (Petersen, 2009). This provides additional gains over the Rogers (1993) or the White (1980) approach. However, our results do not differ qualitatively in the event that Rogers or White standard errors are used to measure significance given that Petersen standard errors are generally larger.
Results in column 1 and 2 further confirms that firms adjust to target debt maturity as the DIST variable is significant. The coefficient captures that rate of adjustment to range from 48% - 60%. Results reported in columns 3 and 4 capture the effect equity undervaluation for firms which are above target levels. We find that the interaction terms is significant. Thus, firms are inclined to increase reliance on short-term debt during periods of undervaluation as a signal on the true price as well as the quality of the firm. This suggests that managers are willing to undergo frequent monitoring and scrutiny given the constant need to renew borrowings. Contrastingly, for firms which are below target levels, the interaction is based on equity overvaluation. The interaction term is significant indicating that firms are willing to increase debt maturity structures to take advantage of share overvaluation as managers have greater access to information regarding the ‘true’ value of firms’ equity. In order to provide robustness to our results, we also gather data from the Bloomberg database which is matched to our sample dataset for analyst forecasted earnings (Bonaime et al., 2014). This however significantly reduces our sample size given that only a limited number of firms are covered by analysts. The results are reported in panel B of table 4 above. The results indicate a similar conclusion where the interaction terms are significant for columns 3 to 6. Thus, it is clear that equity mispricing has a significant impact on firms’ rate of adjustment to target debt maturity levels.

Summary

Our study estimates the rate at which firms adjust to target debt maturity for a sample of firms from Asia Pacific. We utilize the unbalanced panel data approach. The main objective of this study is to evaluate the impact of equity mispricing on the adjustment to target debt maturity. Guided by the approach in the literature, our model is based on a two-stage approach which captures firms target adjustment behavior in a more efficient manner whilst accounting for equity mispricing. The model estimates the distance measure in order to evaluate the amount debt maturity structures must change in order for firms to reach optimal levels. Our empirical results show that firms which are above target levels tend to adjust at more rapid rates in the presence of equity undervaluation. The finding implies that managers are motivated to send signals to the market via opting for a greater proportion of short-term borrowings. In addition, firms with favorable information would also avoid short-term debt in the hope of obtaining more favorable terms at a later date once a correction in equity prices materialize. Looking at firms below target levels we find that managers opt for longer term borrowing in the event of equity overvaluation. This suggests that managers are taking advantage of windows of opportunity given their information advantage over the market by shifting towards longer maturity structures. The implications capture an interesting avenue of the interaction between debt maturity structures and equity prices implying the importance of debt maturity as a signaling tool. In addition, changes in debt maturity are also motivated by managers locking in 'value' to existing shareholders. Hence our study provides an interesting contribution to the literature and motivates further the agenda for research in evaluating the dynamics of adjustment to debt maturity based on the capital structure of firms.

References

Alias N., Yaacob M.H., Jaffar N., 2017, *Governance structure, corporate restructuring and performance*, "Polish Journal of Management Studies", 15(1).

Allini A., Rakha S., McMillan D.G., Caldarelli A., 2017, *Pecking order and market timing theory in emerging markets: The case of Egyptian firms*, "Research in International Business and Finance", 44.

Blundell R., Bond S., 1998, *Initial conditions and moment restrictions in dynamic panel data models*, "Journal of Econometrics", 87(1).

Bonaimé A.A., Öztekin Ö., Warr R.S., 2014, *Capital structure, equity mispricing, and stock repurchases*, "Journal of Corporate Finance", 26.

Brick I.E., Liao R.C., 2017, *The joint determinants of cash holdings and debt maturity: the case for financial constraints*, "Review of Quantitative Finance and Accounting", 48(3).

Custódio C., Ferreira M.A., Laureano L., 2013, *Why are US firms using more short-term debt?* "Journal of Financial Economics", 108(1).

Deesomsak R., Paudyal K., Pescetto G., 2009, *Debt maturity structure and the 1997 Asian financial crisis,* "Journal of Multinational Financial Management", 19(1)..

Diamond D.W., He Z., 2014, *A theory of debt maturity: the long and short of debt overhang*, "Journal of Finance", 69(2).

Elliott W.B., Koëter-Kant J., Warr R.S., 2007, *A valuation-based test of market timing, "*Journal of Corporate Finance", 13(1).

Fama E.F., French K.R., 2002, *Testing trade-off and pecking order predictions about dividends and debt*, "Review of financial studies", 15(1).

González V.M., 2017, *Firm and country determinants of debt maturity: New international evidence, "*International Finance", 20(3).

Guney Y., Iqbal-Hussain H., 2009, *Capital structure and market timing in the UK: Deviation from target leverage and security issue choice,* "Multinational Finance Journal", 13.

Guney Y., Iqbal-Hussain H., 2010, *Capital structure and IPO market timing in the UK*, In Behavioural finance working group conference: Fairness, Trust and Emotions in Finance.

Hussain H. I., 2014, *Do Firms Time the Equity Market in a Non-Linear Manner? Evidence from the UK,"* The International Journal of Business and Finance Research", 8(4).

Hussain H. I., Shamsudin M.F., Salehuddin S., Jabarullah N. H., 2018a, *Debt Maturity and Shari'ah Compliance: Evidence from Malaysian Panel Data*, "European Research Studies Journal", 21(1).

Hussain H.I., Shamsudin M.F., Anwar N.A.M., Salem M.A., Jabarullah N.H., 2018b, *The Impact of Shari'ah Compliance on the Adjustment to Target Debt Maturity of Malaysian Firms*, "European Research Studies Journal".

Hussain H.I., Shamsudin M.F., Hasim M.A., Salem M.A., Gadar K., Ali A., Abdullah A.M., 2017, *Speed of Adjustment and Macro Economic Growth*, "Advanced Science Letters", 23(4).

Hussain H.I., Shamsudin M.F., Jabarullah N.H., 2016b, *Dynamic capital structure and factors influencing the speed of adjustment of UK firms*, "Indian Journal of Science and Technology", 9(42).

Hussain H.I., Shamsudin M.F., Jabarullah N.H., lnabi Salem M.A., Shawtari F.A., 2016a, *Speed of Adjustment and Financial Constraints: Evidence from the UK*, "Indian Journal of Science and Technology", 9(38).

Iqbal-Hussain H., 2013, *Non-linearity in timing the equity market and debt-equity choice of UK firms, "*Journal of Business Management", 13(4).

Iqbal-Hussain H., Shamsudin M., Ali A., Salem M., Sajilan S., Rahman N., Ani N., 2015, *Agency Problems and Its Impact and Relevance on Firms Borrowings*, "Review of Integrative Business and Economics Research", 4(3).

Kamarudin F., Sufian F., Nassir A.M., Anwar N.A.M., Ramli N.A., Tan K.M., Hussain H.I., 2018, *Price efficiency on Islamic banks vs. conventional banks in Bahrain, UAE, Kuwait, Oman, Qatar and Saudi Arabia: impact of country governance*, "International Journal of Monetary Economics and Finance".

Khalaf B.K.A., 2017, *Empirical Investigation of Symmetric and Asymmetric Target Adjustment Models: Capital Structure of Non-Financial Firms in Jordan*, "International Journal of Economics and Finance", 9(3).

Khaw K.L.H., Lee B.C.J., 2016, *Debt Maturity, Underinvestment Problem and Corporate Value, "*Asian Academy of Management Journal of Accounting and Finance", 12(1).

Lewis C.M., 1990, *A multi-period theory of corporate financial policy under taxation*, "Journal of Financial and Quantitative Analysis", 25(1).

Mallisa M., Kusuma H., 2017, *Capital structure determinants and firms' performance: empirical evidence from Thailand, Indonesia and Malaysia*, "Polish Journal of Management Studies", 16(1).

Modigliani F., Miller M., 1958, *The Cost of Capital, Corporation Finance and the Theory of Investment*, "American Economic Review", 48.

Morris J.R., 1976, *On corporate debt maturity strategies*, "Journal of Finance", 31(1).

Myers S.C., 1977, *Determinants of corporate borrowing, "*Journal of Financial Economics", 5(2).

Nor F.M., Haron R., Ibrahim K., Ibrahim I., Alias N., 2011, *Determinants of target capital structure: Evidence on South East Asia countries, "*Journal of Business and Policy Research", 6(3).

Orman C., Köksal B., 2017, *Debt maturity across firm types: Evidence from a major developing economy*, "Emerging Markets Review", 30.

Petersen M. A., 2009, *Estimating standard errors in finance panel data sets: Comparing approaches*, "Review of Financial Studies", 22(1).

Pontoh W., 2017, *The Capital Structure: Is Debt just a Policy or Requerement?* "European Research Studies Journal", 20(2).

Ravid S., 1996, *Debt Maturity:A Survey,* "Financial Markets, Institutions and Instruments",5.

Rogers W., 1993, *Regression Standard Errors in Clustered Samples*, "Stata Technical Bulletin", 13.

Shawtari F.A., Salem M.A., Hussain H.I., Alaeddin O., Thabit O.B., 2016, *Corporate governance characteristics and valuation: Inferences from quantile regression,* "Journal of Economics, Finance and Administrative Science", 21(41).

Thabet O.B., Shawtari F.A., Ayedh A.M., Ali F., 2017, *Capital Structure of Malaysian Sharīʿah-Compliant Firms*, "Journal of King-Abdul Aziz University-Islamic Economics", 30(1).

Vallandro L.F.J., Zani J., da Silva C.E.S., 2014, *IPO Market Timing and Capital Structure: Evidences from Brazil,* "International Business Research", 8(1).

Warr R.S., Elliott W.B., Koëter-Kant J., Özteki, Ö., 2012, *Equity mispricing and leverage adjustment costs,* "Journal of Financial and Quantitative Analysis", 47(3).

Warusawitharana M., Whited T.M., 2015, *Equity market misvaluation, financing, and investment,* "Review of Financial Studies", 29(3).

White H., 1980, *A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity*, "Econometrica", 48(4).

Windmeijer F., 2005, *A finite sample correction for the variance of linear efficient two-step GMM estimators,* "Journal of Econometrics", 126(1).

Zainudin Z., Ibrahim I., Hussain H.I., Hadi A.R.A., 2017a, *Debt and Financial Performance of REITs in Malaysia: An Optimal Debt Threshold Analysis,* "Journal Ekonomi Malaysia", 51(2).

Zainudin Z., Ibrahim I., Said R.M., Hussain H. I., 2017b, *Debt and Financial Performance of Reits In Malaysia: A Moderating Effect of Financial Flexibility,* "Journal Pengurusan (UKM Journal of Management), 50.

DOSTOSOWANIE DO DOCELOWEJ WYMAGALNOŚCI ZADŁUŻENIA ORAZ NIEPRAWIDŁOWEJ WYCENY WARTOŚCI: DOWODY Z AZJI I PACYFIKU

Streszczenie: W niniejszym artykule przeanalizowano zachowanie firm w zakresie dostosowań docelowych dla struktury zapadalności długu dla wybranych krajów z regionu Azji i Pacyfiku. W literaturze udokumentowano, że struktura zarządzania zadłużeniem jest zgodna z docelową strukturą zapadalności, która jest ograniczona przez koszty transakcji, asymetrię informacji, problemy agencji, potrzeby płynności oraz czynniki instytucjonalne. Stwierdzono, że firmy dostosowują się do poziomów docelowych przy różnych stawkach w zależności od tego, czy obecna struktura zapadalności jest powyżej lub poniżej poziomu docelowego, jak również z powodu niewłaściwej wyceny kapitału własnego. Oszacowano docelowy termin zapadalności długu na podstawie poziomu wiodącego oraz zmierzono szybkość dostosowania do poziomów docelowych poprzez regresję różnicy między symulowanymi a rzeczywistymi wartościami. Wyniki wskazują, że firmy, które nie osiągają docelowego poziomu zadłużenia, mają tendencję do szybszego dostosowywania

stawek w okresach przewartościowania. Firmy, które przekraczają docelowy poziom zadłużenia, mają tendencję do szybszego dostosowywania stawek w okresach niedowartościowania. Wyniki wskazują na asymetryczne wskaźniki korygowania, które wskazują, że struktura terminów zapadalności służy jako ważne narzędzie sygnalizacji. Implikacje te zapewniają lepsze zrozumienie wpływu dojrzałości długu na asymetrię informacyjną prowadzącą do różnic w dostosowaniu do docelowych struktur zapadalności długu.
Słowa kluczowe: dojrzałość długu, zachowanie dostosowania celu, szybkość dostosowań, struktura kapitałowa, region Azji i Pacyfiku

调整目标债务期限和股权公示：亚太地区的证据

摘要：本文考察了亚太地区选定国家企业的债务期限结构目标调整行为。文献记载了管理者的债务结构与目标成熟度结构相一致，这种结构受交易成本，信息不对称，代理问题，流动性需求以及制度因素的限制。我们的论文认为，企业根据目前的期限结构是高于还是低于目标水平以及股票定价错误，以不同的汇率调整目标水平。我们根据铅水平估算目标债务到期率，并通过回归模拟值和实际值之间的差异来测量调整到目标水平的速度。我们的研究结果表明，低于目标债务期限的公司往往会在高估期间以更快的速度进行调整。高于目标债务到期率的公司往往会在低估期间以更快的速度进行调整。我们的调查结果表明，调整率不对称表明债务期限结构是信号传递的重要工具。这些含义可以更好地理解债务到期对信息不对称的影响，从而导致对目标债务期限结构的调整差异。
关键词：债务成熟度，目标调整行为，调整速度，资本结构，亚太地区。

Appendix A: Industry Classifications

No	Industry Name
1	Automotive, Aviation and transportation Manufacturing
2	Beverages, Tobacco Manufacturing
3	Building and construction Manufacturing
4	Chemicals, Healthcare, Pharmaceuticals Manufacturing
5	Computer, Electrical and electronic equipment Manufacturing
6	Diversified industry Manufacturing
7	Engineering, Mining, Metallurgy, Oil and gas exploration
8	Food producer and processors, Farming and fishing manufacturing
9	Leisure, Hotels, restaurants and pubs Services
10	Other business Services
11	Paper, Forestry, Packaging, Printing and Publishing, Photography Services
12	Retailers, Wholesalers and distributors Services
13	Services
14	Textile, Leather, Clothing, Footwear and furniture Manufacturing
15	Utilities Services

Appendix B: Breakdown of Sample by Country

Country	Firms	Number of Observations
Thailand	692	3,284
Malaysia	1,415	6,682
Singapore	598	2,826
Australia	440	2,072
Overall	3,145	14, 864