International Journal of Economic Research

ISSN : 0972-9380

available at http: www.serialsjournals.com

Volume 14 • Number 16 • 2017

Do Different Proxies for Target Capital Structure Generate Different Speeds of Target Adjustment?

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ABSTRACT

The current study is conducted to investigate whether the different proxies for target capital structure provide different speed rates of target adjustment. For this purpose, three target proxies are used; the estimated fitted values from the conventional leverage equation, the industry average and firm's mean leverage over the study sample period. A sample of 64 industrial and services companies over the period of (2005-2016) are selected and tested using panel data analysis, which can be estimated by either Random or Fixed Effects regressors. The results show that the different proxies for target capital structure provide different speed rates of target adjustment, implying that these proxies are heterogeneous not homogeneous. This finding is also confirmed by the results of ANOVA analysis of the mean differences among the three proxies. The reason is mainly attributed to the fact that some target proxies did not take in considerations the time and individuals variation when target adjustment rate is estimated.

Keywords: Fitted values; Partial adjustment; Industry average; Leverage; ASE.

1. INTRODUCTION

It is well-known noting that Modigliani and Miller (1958) conclude that, in the perfect capital market, the firm's observed debt ratio will always beat its optimal ratio. They argue that the perfection of capital market makes the market mechanism capable to correct any expected deviations from the target debt ratio. In 1963, Modigliani and Miller have incorporated the tax benefits of debt due to the tax deductibility of interest payments. Hence, firms can maximize value when excessive debt. Kraus and Litzenberger (1973) contradict Modigliani and Miller(1963)in that, debt is risk free and insert the bankruptcy costs of debt to

the tax model which suggest that the firms must consider the net saving of debt when the decision of raising debt for tax consideration is taken. Hence, firm's should identify the level of debt that maximizes the net saving of debt and change debt accordingly. This Violates perfection assumption of capital market, making actual debt ratios deviate from those targeted ones and consequently, forcing firms to adjust their actual debt ratios toward the one that maximizes the firm's value. Moreover, it suggests that the observed debt ratio not necessary be the optimal one (Mukherjee and Mahakud, 2010). According to Fischer et. al., (1989), the presence of adjustment costs force the firm's actual leverage ratio to deviate from its target level. This support the view of Myers (1977) who argued that the existence of adjustment costs makes actual debt costly to adjust.

It is worth to say now that the existence of capital market frictions make movements toward the target or to stay far away from the target are somehow expensive which in turn influence the speed of making target adjustment. The traditional trade-off theory suggests that the target capital structure is determined by trading-off the bankruptcy cost and tax benefit of debt. However, Morellec et. al., (2012) argue that the different agency conflicts a cross firms is the reason for having cross-sectional differences in debt ratios, suggesting that the traditional trade of theory will not be capable to explain the variation of debt ratios a cross firms. Therefore, the modern Trade-off theory suggests that the firm identifies its target capital structure by trading-off the bankruptcy costs and agency of debt with its benefits of gaining tax saving and reducing the agency costs of free cash flows when the agency conflict of interest between shareholders and mangers exist (Tong and Green, 2005). Byoun, (2008) argue that the probability of retiring debt will increase when the firms has a financial surpluses with low agency costs of free cash flows and high agency costs of debt, suggesting that agency costs have a substantial effect on target leverage ratio and thereby the speed of target adjustment.

Based on the above analysis, we can conclude that the speed of making target reversion is mainly affected by the costs and benefits of moving towards. On other words, the impetus of adjusting actual leverage ratio increases when the benefit of moving toward the target is higher than the cost of moving towards the target and vice versa. However, numerous factors, rather than the cost and benefit of debt, may influence the speed rate of target adjustment, for example; Ashton (1989) declare that the nature of the country tax system may reduce the impetus of raising debt for tax considerations which slow down the speed of movement towards the target. Using asymmetric partial adjustment model, Byoun (2008) found that the speed of making downward target reversion is higher than that of upward target reversion. Mukherjee and Wang (2013) support the finding of Byoun (2008). They found that, at above-target leverage, the bankruptcy risks increases at increasing rates while the tax benefit will increase at decreasing rates, making the costs of deviations higher than its benefits, consequently increasing the speed of target adjustment. The opposite will take place when a firm has below target-leverage ratio. In Jordan as one of developing markets, Zurigat and Mwalla, (2011) provide evidence supporting the findings of Byoun (2008). Moreover, they found that the speed of target reversion is largely affected by the size of target deviations; firms with larger deviations from their target level make target reversion faster than those with smaller deviations. This is because the size of target deviations implicitly influence the impetus of correcting the target deviation. It influences the cost and benefits of moving toward the target leverage ratio and then the adjustment rate (Lev and Pekelman, 1975).

Zurigat, (2016) who tested the impact of financial flexibility on the speed of target adjustment by using asymmetric partial adjustment model, find that financial flexible firms adjust their actual leverage

ratio faster than do inflexible one. He attributed the reason to the fact that financial flexible firms have excess borrowing capacity of debt at more attractive rate whenever needed for target adjustment. Mahakud and Mukherjee (2011) attribute the reason of having different speeds of target adjustment to the different ownership structure and economic conditions in countries where firms operate. Chen (2010) argue that systematic risks resulting from macroeconomic conditions have a considerable impact on the discounted value of net benefits of moving toward target. Faulkender et. al., (2012) support the argument of Chen (2010) in that, the variations in costs and benefits of making target adjustment create different target adjustment rates. This is because systematic risks may change a firm's priorities, for example, priority may be given to have financial flexibility instead of making target reversion. According to Bhamra et. al., (2010), during bad economic conditions, firms become more cautious in creating debt for the purpose of correcting target deviations. In Jordan, one could expect that Jordanian listed firms experience high systemic risks, where political and economic conditions in the Middle East are not stable. Hence, we expect that these firms may have different individual specific effects on target level and on the speed of target adjustment. Zurigat and Mwalla (2011), provide evidence suggesting that Jordanian firms are financially constrained and adjust their target deviation much slowly. They attributed the reason to the absent of developed bond market as well as stock market is suffering from the lack of controls and supervisions with low competition and hence, low liquidity. Oztekin and Flannery, (2012) claim that the costs and benefit of making target adjustment is mainly influenced by institutional difference, legal and financial system. Berens and Cuny (1995) argue that the different type of assets and tax shields will significantly influence the costs and benefits of debt, which in turn results in different target level of capital structure and thereby different rates of target adjustment.

Regardless of factors influence the speed of target adjustment, less attention is given to the target capital structure itself. It is unobservable; hence, different proxies are used as measurement for target capital structure. It is worth to note that determinants of optimal capital structure are affected by the research methodology applied to accomplish the study objectives (Bevan and Danbolt, 2002). Bevan and Danbolt (2002) reported different results depending on whether the methodology used control for heterogeneity, which cannot be incarcerate by observed factors. Therefore, they conclude that when firm and time factors exists, panel data analysis techniques will create results more efficient than do pooled or cross-sectional data analysis techniques. However, this is not the only case, in 2002, Bevan and Danbolt (2002) reached to the fact says that the obtained results are largely depending on the definition of gearing or financial leverage used, where determinants of capital structure were changed with the definition of gearing used. This suggests that if the conventional leverage equation is considered to estimate the target capital structure, we expect that the target level will differ with the definition gearing or financial leverage used and thereby, the speed rate of target adjustment. This might be the reason why studies in the same countries reported different results. Moreover, in addition to the conventional leverage equation for estimating the target capital structure, industry average and the mean of a firm's leverage ratio during the study period may be used as another alternatives proxy for the target leverage ratio. This also may provide different speeds of target adjustment for the same sample data. Therefore, the current study tries to fill the gap in literatures by estimating the target adjustment rates in Jordanian capital market using different proxies for target capital structure. Further, it aims at testing the study models using pooled and panel data analysis techniques for each proxy used in the regressions. Finally, it aims at finding the best proxy for target capital structure using the composition techniques.

2. THEORETICAL AND EMPIRICAL LITERATURE REVIEW

As previously mentioned, the target capital structure is unobservable, therefore, empirical studies have applied different proxies for the target capital structure and reported different results when target adjustment models are tested. There were different arguments behind each proxy used for the target leverage ratio. Lev(1969), who was the first estimating the capital structure adjustment rate, uses previous industry mean capital structure as proxy for a firm's target capital structure. He finds that firms are a target industry-mean reversion. Bowen et. al., (1982) supports the use of past industry mean for the purpose of investigating whether or not target adjustment exists. They argue that inter-industry similarities in leverage are constant which excludes the differential estimation effect of having different target levels. This is consistent with Loo and Hui (2009) who argue that the use of historical mean of firm's debt ratio, as well as the industry's debt ratio, reduces the sound effects of temporary variations in time caused by flotation costs and business cycle. However, DeAngelo and Roll (2015) claim that a time series variant in financial leverage is significantly large to be considered when the optimal capital structure is estimated, suggesting that the capital structure is not stable and changed over time. This makes an industry median leverage as proxy for target leverage ratio will change accordingly. Therefore, Myers (1984) who introduces the pecking order theory of capital structure, argue that the target off theory of capital structure will not be capable to predict the individual and time variations of a firm's observed leverage ratio. Zhou et. al., (2016) declare that previous studies did not take in consideration the responsibility of the target capital structure itself in creating a significant heterogeneity. Therefore, they argue that target reversion is not equally important to all firms, depending to what extent target reversion influence the firm's value. The finding of Zhou et. al., (2016) supports Elsas and Florysiak (2011) regarding the heterogeneity of the speed of target adjustment.

However, this is not be the case when the fitted values are estimated using conventional leverage equation. The temporary effect strongly exists, hence, the target value is changed over time which may affect the estimated value of the adjustment rate. This is because determinants of optimal capital structure are not stable; they changed over time. Therefore, Memon et. al., (2015) argue that the target capital structure itself is varying over time, suggesting that, in reality, firms are "targeting a moving target" of capital structure when the adjustment rate is estimated. This is the reason as to why Konings and Vandenbussche (2004) conclude that the industry mean cannot be considered the superlative measure of the target to be adjusted for when target deviation exists. Therefore, the majority of empirical studies prefer the proxy determined by a firm-specific factors. This proxy is estimated using the conventional leverage equation that tested the expected impact of a set of firm's characteristics against the leverage ratio. However, there is no common agreement regarding the factors influence the capital structure decisions (Frank and Goyal,2009), hence, they will not be the same across the empirical studies that have been conducted to investigate the target adjustment process (Mukherjee and Wang, 2013). Some studies extracted these factors from the firm specific factors (firms characteristics) such as profitability, size, economic growth, tangibility, earning volatility, liquidity, and non-debt tax shield (Delcoure, 2007; Huang and Song, 2005; Banerjee et. al., 2000; Bevan and Danbolt, 2002; Rajan and Zingles, 1995; Titman and Wessels, 1988) amongst others. The other use some market specific factors with the firm's specific factors such as economic growth, interest rates and inflations (Memon et. al., (2015), Bhamra et. al., (2010) and Cook and Tang (2010).

Empirical studies in both developing and developed countries provide evidences supporting the dynamic target capital structure theory. However, different explanation and justifications are given as to why

firms correct their target deviations quickly or slowly. As above mentioned, explanation to their findings of these studies suggest the speed of movement toward the target differ from one market to another, from study time period to another, from sample to another, and from econometrics technique to another. With respect to the target proxy used for estimating the target deviations and then target adjustment rates of target revision, no studies investigate the impact of the selected proxy of target capital structure on the speed of target adjustment. Byoun (2008); Flannery, Rangan (2006); Ozkan (2001); DeAngelo and Roll, (2015) Mukherjee and Wang (2013) use the estimated fitted values from the conventional leverage equations as a proxy for the target capital structure. Lev (1969), Kraus and Litzenberger (1973) Jalilvand and Harris (1984) ; Howakimian, et. al., (2001); Tongkong (2012), and Mukherjee and Mahakud (2010) use the industry average of leverage as a proxy for the target capital structure. Fama and French (2002), Shyam-Sunder and Myers (1999) and Marsh, (1982)use the mean of a firm's leverage ratio over the study period as a proxy for the target capital structure.

Memon et. al., (2015) found that Pakistan firms close 28% of their target deviation per year. However, using data from the same market, Tongkong (2012) provide evidence suggesting that Pakistani firms adjust their leverage at speed rate of 0.40. This is similar to what has been reported by Mukherjee and Mahakud (2010) in Indian market. They who found that Indian industrial firms correct their target deviation at rate of 0.41. Jalilvand and Harris (1984) found that USA's firms adjust their leverage at a rate of 55.7% per year. Using different time sample data from the same market, Fama and French (2002), Flannery and Rangan (2006) and Kayhan and Titman (2007) estimate adjustment speed rate of 0.175, 0.342 and 0.18 respectively. Furthermore, Leary and Roberts (2005) and Huang and Ritter (2009) reported a speed rates of adjustment of 0.250 and 0.173 per year respectively. Antoniou *et. al.,* (2008) found that the speeds of target adjustment in a bank-based financial system such as Germany France, and Japan are not homogeneous. They reported speeds rate of adjustment of 0. 24, 0.59 and 0.11 per year respectively, while in market based system such as United State and United Kingdom, they reported a speed rate of 0.32 and 0.33 respectively. Ozkan (2001) found that UK firms adjust their target deviations at a rate of 44.3% per year. In another bank-based financial system, Miguel and Pindado (2001) found that Spanish firms adjust their leverage rate at a rate of 0.79.

3. RESEARCH METHODOLOGY

Sample and Data Collection

The sample of the current study includes all industrial and services firms listed in Amman Stock Exchange (ASE) over the period of 2005-2016. For the purpose of having a balanced panel data, the current study excludes all the company that have a missed data, liquidated and established after 2005. Therefore, it restricted the study period to 2005-2016 to reduce missing data. The data employed to test the study empirical models is collected using a published firms' annual financial reports. Moreover, data is available in the website of the ASE.

Empirical Models: The current study aims at investigating the heterogeneity of the proxies for the target capital structure. For this purpose, it uses three proxies; the estimated fitted values from conventional leverage equation (the static model of capital structure), a firm's average leverage ratio and industry average. Unlike the later two proxies for the target capital structure, the former one is estimated using a set of firm's characteristics that have documented influence the target capital structure. The current study

uses profitability, growth opportunity, the firm's size, non-debt tax shield and tangibility as independent variables in the static model of capital structure. The following section will introduce the theoretical and empirical framework of each hypothesis to each independent variable. It is worth to note here that the capital structure theories provide different explanations and justifications as to why these firm's characteristics affect its capital structure. For the purpose of estimating the speed rates of target adjustment for each proxy of target capital structure, the study uses the partial adjustment model developed by Shyam-Sunder and Myers, (1999).

Static Model of Capital Structure

The static model of capital structure can be represented by the following conventional leverage equation:

$$L_{it} = \eta_0 + \eta_1 P_{it-1} + \eta_2 T_{it-1} + \eta_3 S_{it-1} + \eta_4 ND_{it-1} + \eta_5 GR_{it-1} + \varepsilon_{it} \quad (1)$$

where,

L_{it} is the actual leverage ratio of firm i at time t, and P_{it-1} is the profitability of firm i at time $t-1$, T_{it-1} is the tangibility for firm i at time $t-1$, S_{it-1} is the size of i at time $t-1$, ND_{it-1} is the non-debt tax shield of firm i at time $t-1$, GR_{it-1} is the growth opportunities of firm i at time $t-1$. The following are the firm's characteristics used as determinants of optimal capital structure.

Profitability: The tax model of Modigliani and Miller (1963) predict a positive relationship between profitability and leverage where interest payments are tax deductible from taxable income. Although the trade-off theory of capital structure expects a positive impact of profitability on leverage, it provide different explanation to the nature of this relationship. It states that profitable firms will have a sufficient cash to pay their financial obligations, which reduces the expected default risk and thereby the bankruptcy costs. Hence, firms can generate debt at more attractive rates, creating a positive relationship between debt and profitability. Agency theory of free cash flow provide another explanation as to why profitability affect leverage positively. It predicts that profitable firms with stable dividend policy and low growth opportunities will have more funds under management control who may use it in the way that harms the firms value (Jensen and Meckling,1976). Jensen (1986) suggests the use of debt to restrict the firm's ability from using any excess funds for their own purposes. Hence, the agency theory of capital structure expect a positive relationship between profitability and leverage. With respect to the asymmetric information hypothesis of Myers and Majluf (1984) and the pecking order theory of Myers (1984), profitability affect leverage negatively, in the since that profitable firms will be able to retain more funds for financings, which reduce the need for creating debt externally.

Tangibility: The impact of Tangibility on a firm's financial leverage comes from the fact that firms with more fixed assets have more collateral to secure debt which reduce the agency costs of debt (Rajan and Zingales, 1995). Moreover, it will maintain value when the firm goes bankrupt (Jensen and Meckling, 1976). Therefore, the agency theory expect a positive relationship between leverage and tangibility. Like agency theory, the Trade off theory has expected a positive relationship between leverage and tangibility. It states that the expected bankruptcy costs for firms with more tangible assets are low which reduce the costs of debt finance and consequently increasing the firm's leverage level (Zurigat and Mwalla, 2011).

Size: As an indicator for the bankruptcy risk, large size firms are expected to generate more debt because of the diversity effect of having different products lines, markets and collateral (Titman and Wessels, 1988).

Hence, unlike small firms, large size firms will be able to create more debt (Bradley et. al., 1984). Moreover, the size is also used as an indicator to the asymmetric information in which they are complicated and difficult to be monitored by shareholders, especially the small ones (Rajan and Zingales, 1995). This may increase the agency costs and increase the firm's reliance on internally generated funds and consequently reducing leverage.

Growth opportunities: Empirical studies used growth opportunities as an indicator of the agency costs of debt. They attributed the reason to the fact that the intangible value of growth opportunities disappears when firms go bankrupt (Titman and Wessels, 1988). Hence, firms with high growth opportunities cannot generate debt at attractive rates because potential investors will demand risk premium. This will reduce the impetus of raising funds through debt. Unlike the agency theory of capital structure, the pecking order suggests that a firm's leverage and growth opportunities are positively related (Barton et. al., 1989). The underlying argument behind its prediction is that firm with more growth opportunities needs to generate funds externally because internal funds will not be sufficient to cover all valuable growth opportunities. However, we must take in consideration the nature of relationship depends on the measurement of growth opportunities. This may be totally different when growth in total assets not the ratio of market value to book value is used to measure the growth opportunities.

The following table provides the descriptive statistic of explanatory variables in model (1) depending on the collected sample pooled data over the study period.

Table 1
Descriptive statistics

Variables	*Mean Value*	*Standard Deviation*	*Minimum value*	*Maximum value*
L_{it}	0.262	0.219	0.004	0.862
P_{it-1}	0.078	0.145	–0.221	0.426
T_{it-1}	0.308	0.276	0.009	0.772
S_{it-1}	18.08	6.284	13.108	19.872
GR_{it-1}	1.342	0.563	0.457	12.792

The descriptive statistics results shows that the sample firms of the current study are less leveraged firms where the mean value of leverage variable is found to be 0.262. Moreover, they are heterogeneous where the standard deviation was 0.219, suggesting that firms have different level of leverage. This might attributed to the absent of developed bond market and banks are more cautious in making loans during the current uncertain political and economic conditions in the region. The same for profitability and growth opportunities which directly affected by the systematic risks resulting from uncertain political and economic conditions.

Estimation Results of Model 1

The diagnostic tests indicate that the Fixed Effects regressor is the most appropriate technique for creating efficient results. This suggests that the heterogeneity effects are relevant. Hence, ignoring this effect when estimating the target adjustment rate may create misleading results. The significant Lagrange Multiplier (LM) test implies that the results obtained by the pooled OLS regressors will not be consistent and efficient. This finding is also confirmed by Hausman test, which is found to be statistically significant. Both tests

indicate that the panel data analysis not the pooled data analysis is the best for testing the study empirical models. Furthermore, the results suggest the fixed effects model will be more appropriate than random effects. It is worth to note that first; the estimation of model (1) was for the purpose of estimating the fitted values as a proxy for the target capital structure. Second; the fixed effects model was found to be the best specification for empirical model as will see later when the partial adjustment model of capital structure is tested.

Table 2
Estimation results of the static model.
The financial Leverage ratio (L_{it})

Variables	*Fixed Effects Model*	*Random Effects Model*
Intercept	–3.054	–2.541
	(0.000)	(0.000)
P_{it-1}	–0.112	–0.131
	(0.020)	(0.023)
T_{it-1}	0.020	0.018
	(0.033)	(0.038)
S_{it-1}	0.187	0.172
	(0.000)	(0.000)
GR_{it-1}	–.241	–.233
	(0.010)	(0.012)
R^2	0.38	0.36
F~statistic	124.21	126.98
p~value	(0.000)	(0.000)
Breuch - Pargan ~ Ch^2	1.064*	
	(0.217)	
VIF – Mean	1.24**	

*Hetrosckodasticity Test is made by using residuals obtained from pooled OLS regression,
**The Variance Inflation factors (VIF) used to test for the multicollienrity

The results in Table 2 shows that profitability, growth opportunity, the firm's size, and tangibility are found to be statistically significant at 1 % and 5% level suggesting that these variable have considerable impact on a firm's financing decisions. The results also indicate that the negative impact of profitability on leverage is consistent with the predictions of pecking order theory, while the impact of firm's size, growth opportunities and tangibility are consistent with the expectations of modern trade-off theory which consider the agency costs and benefits when determining the target capital structure. The obtained results from this model will be used for estimating the fitted values that will be used in partial model of capital structure to estimate the target deviations and then the speeds of target adjustment. In the following section, the study introduces the partial adjustment model used for investigating the impact of target proxies heterogeneity on the speeds of target adjustments by considering three proxies for target capital structure.

The Partial Adjustment Model of Capital Structure

The modern trade-off theory of capital of capital structure state that the firm identifies its target level of capital structure by balancing the costs and benefits of debt. The firm will always be at its optimal as long

as no transaction costs exist. But in imperfect capital market, transaction or adjustment costs and other market frictions are relevant, creating target deviations and affecting the impetus of making target adjustment and thereby the speed of that adjustment. This partial adjustment can be attributed to the fact that there are a cost associated with altering the existing level of leverage until to match the target which is the adjustment costs (Flannery and Rangan, 2006). Olinear and Rudebusch (1992) provide evidence suggesting that, in USA capital market, transaction costs consumed just about 0.14 of the proceeds of small debt issues.

Following Shyam-Sunder and Myers, (1999), the following model will be tested and analyzed for the purpose of achieving the study objective:

$$ALV_{it} - ALV_{it-1} = \delta(LV^{*}_{it} - ALV_{it-1}) \quad (2)$$

For regression purposes, model 2 can be rewritten as follows:

$$\Delta ALV_{it} = \delta_0 + \delta_1 TLAL_{it} + \varepsilon_{it} \quad (3)$$

where,

$\Delta ALV_{it} = (ALV_{it} - ALV_{it-1})$ is the change in debt ratios which is the difference between current **t** and past year actual leverage ratio $\boldsymbol{t-1}$.

$TLAL_{it} = (ALV^{*}_{it} - ALV_{it-1})$, measure the actual leverage- target deviations, (ALV^{*}_{it}) is the target leverage ratio where three proxies for the target are used: the fitted values estimated from model 1, the industry average and firm's leverage average over the study period. δ_1 represents the adjustment rate or the speed rate of target adjustment. Shyam-Sunder and Myers, (1999) argue that the speed of target adjustment is a decreasing function of the adjustment rate. This suggests that the higher the statistically significant value of δ_1, the lower the adjustment costs and consequently, the faster the target adjustment toward the target and vice versa. Zero (or statistically insignificant) value of δ_1 suggest that no adjustment is made while δ_1 equals one implies that the actual leverage ratio is 100% closed to is target level, or suggests that no transaction costs exist for making target adjustment. For $\delta_1 > 1$, firm makes over-target adjustment. More precisely, the company increase or decreases debt more than required.

For the purpose of testing whether the estimated coefficient are statistically different for the three proxies of target capital structure, the current study uses two techniques:

It uses first the F ratio which can be formulated as follows (Gujarati, 2003):

$$F = \left(\frac{R^2_y - R^2_x}{1 - R^2_y}\right) \times \left(\frac{NT - N - K}{N - 1}\right) \approx F(N-1, NT-N-K)$$

Under Null hypothesis (H_0) that the mean differences are equals. The calculated F values the three proxies were 5.276, 5.814 and 4.897 respectively which are higher than the critical value (4.62), While for the second null hypothesis, it is calculated to be the 6.378 which is higher than the critical value ..

For the purpose of testing whether the estimated coefficient are statistically different for the three proxies of target capital structure, the current study uses the ANOVA analysis to test whether the mean difference between the three proxies are statistically significant or not.

Results of Partial Adjustment Model

Table 3 reveals the results of the fixed effects estimation for partial adjustment model by considering three proxies for the target leverage ratio. These proxies are the estimated fitted values from model (1), the firm average leverage ratio over the study period and the average industrial leverage ratio over the study period. Table 3 provides the results of the model that has been found as the best specification to test the empirical model and obtain efficient results.

Table 3
Results of partial adjustment model

Proxies for Target	$TLAL_{it}$ *Fitted Value*	$TLAL_{it}$ *Firm' Average*	$TLAL_{it}$ *Industry' Average*
Intercept	–3.571	–4.035	–5.870
	(0.000)	(0.000)	(0.000)
$TRAC_{it}$	0. 192	0. 146	0.122
	(0.000)	(0.000)	(0.011)
R^2	0.29	0.25	0.22
P-value	(0.000)	(0.000)	(0.000)

The results presented in table (3) are all consistent with the target adjustment theory where, the estimated coefficient of the $TLAL_{it}$ variable for the three proxies confirms that the Jordanian firms identify a target leverage ratio and adjust their leverage ratio towards that target gradually. However, the reported coefficients show that Jordanian firms make target adjustment much slowly. This pattern is generally found under the three proxies for the target. The estimated coefficients of the variable, which is used to measure the speed of adjustment, are 0.192, 0.146 and 0.122 for the three proxies respectively. For the first two proxies, they were statistically significant at 1% level and at 5% for the third one. However, the results show that the explanatory powers of the model when the fitted values are considered as a target the firm's average leverage are higher than for the industry average target ratio. This may be attributed to the fact that the estimated target proxy for capital structure from conventional leverage equation will be better to capture first; the time and individuals variations in determinants of optimal capital structure and second; the variation in the target itself. This will make the estimated rate of target adjustment more flexible than do other proxies for target capital structure, which are exogenously determined. However, the firm's average leverage provided higher explanatory power than do industry average. The firm's average leverage over the study period implicitly take the indicial specific effects not the time specific effects while the industry average does not consider for the both effects as it is totally exogenously determined.

Moreover, the estimated speeds of target adjustments are asymmetric not symmetric under the three proxies. The F~Test regarding the null hypothesis that $\lambda_{\text{fitted value}} = \lambda_{\text{firm's average}}$ indicates that the speed of adjustment is significantly different for the first two proxies, since the F-statistic is found to be statistically significant at 1% level, implying that the two speed rates are identical is strongly rejected. When F~Test has been reapplied for the third proxy against the other two proxies, the estimated F~value was higher than the critical value at 5% level. This result indicates that the null hypothesis that $\lambda_{\text{fitted value}}$ or $\lambda_{\text{firm's average}} = \lambda_{\text{industry average}}$ is strongly rejected at 5 % level. This implies that the speed of adjustment toward the industry average is significantly different from those estimated for the first two proxies for target. This heterogeneity to the fact the later two proxies for long-run leverage ratio do not take in consideration the firm specific

characteristics like the former one. This finding is also confirmed by the results of ANOVA analysis that tests whether the mean differences among the three proxies are statistically significant or not. As can be seen from Table 4, the value of F~statistic is found to be statistically significant at 1% level. This result leads to accept the alternative hypothesis, which states that the mean differences are significantly different.

Table 4
ANOVA Analysis Results

Variable	*Mean of the target proxy*
$TLAL_{it}$ ~ Fitted Value	0.421
$TLAL_{it}$ ~ Firm' Average	0.362
$TLAL_{it}$ ~ Industry' Average	0.394
F ~ Statistic Value	38.24
P ~ value	(0.000)

Although the estimated coefficient indicates that, there is an adjustment toward the average industry leverage ratio but this adjustment occurs in a rate less than the speed of adjustment when the other two proxies are considered. This finding is not consistent with the view of Nuri and Archer (2001) who argue that firms in the industry work to keep their leverage ratio in the line with the industry average. However, this finding is consistent with Scott and Johnson (1982) who found that firms considered the industry averages when they set their capital structure, but were willing to depart from the average if own unique operating conditions suggested that a departure is warranted. This view might explain the slow speed of target adjustment when the industry average is considered as a target leverage ratio. The slow adjustment process of the Jordanian firms toward their target may be attributed to large transaction costs. The small magnitudes of the estimated coefficients confirm that a large adjustment costs exist for the Jordanian non-firms when correction of deviation from the target is made. Moreover, the slow adjustment implies that these costs are much larger than the cost of not moving towards the target.

4. CONCLUSION

The dynamic Trade-off theory predicts that, because of the adjustment costs, firms adjust their leverage partially, depending on the costs and benefits of making target adjustment. Different explanations are given to why firms in different market as well as within the same market, adjust leverage in different rates. No common agreement regarding the factors that may influence the speeds of target adjustment. The current study considers for the heterogeneity of the target proxy of capital structure. Three different proxies are used and tested using panel data analysis. The study findings suggests that time and individuals variations are significant to be considered when selecting the target proxy for leverage ratio. Excluding this effect may affect the value of the target itself and thereby, the estimated speed rate of target adjustment. This is confirmed by the estimation results, which suggest that, for the same sample firms, sample period, and econometric techniques, three different speeds are reported.

Reference

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