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# Taxes and Firm Values: Reduce to Induce

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## Abstract

*Traditionally, a reduction in corporate income tax rate is expected to increase the values of the firms. However, in a weak corporate governance environment, the presence of managerial diversion may preclude the positive outcome of such reduction. The present study thus investigates the impact of the reduction in the corporate tax rate on the values of the listed firms on Bursa Malaysia. The study adopts the models in the seminal work of Desai, Dyck and Zingales (2007). Arellano and Bover's system GMM estimator is used in analysing the dynamic panel data of 1814 firm-year level observations over a period of 14 years (1999-2013). The results of this analysis show a negative significant relationship between the measure of the tax burden and q-value (a measure of firm value). Thus, the reduction in the corporate tax rate has impacted the firm value positively. Further, using a self-constructed corporate governance index, the interaction effect of corporate governance on the established relationship is investigated. The result shows no significant interaction effect on the relationship. It is therefore concluded that the gradual reduction in corporate tax rate has not only increased the firm value, but it has also discouraged any form of managerial diversion.*

*Keywords: corporate tax rate; corporate governance, Tobin q; GMM estimator; Malaysia*.

## 1 Introduction

The issue of the corporate taxation is dissimilar from that of personal income taxation in some ways. Individual tax compliance could be determined by tax rates, the probability of detection and punishment, penalties and risk-aversion (Allingham & Sandmo, 1972; Duncan, Larue & Reckers, 1989) as well as intrinsic motivation (Slemrod & Yitzhaki, 2002). While these factors may also be applicable to the corporate taxpayers (Hanlon & Heitzman, 2010), the separation of ownership from control found in the corporate setting gives rise a new form of determinant of corporate tax compliance (Slemrod, 2004). The decision to comply with the tax laws by a company is entrusted in the hands of the professional managers who may have their interests in the company different from that of the fund providers. In some cases, mostly in concentrated ownership setting, the interests of the managers align with that of the majority shareholders which leaves the minority shareholders to their faiths (Salihu, Annuar & Sheikh Obid, 2013; Salihu, 2015).

Thus, the nature of corporate tax system put in place by the government determines the relationship between the majority and minority shareholders. By extension, the relationship between the majority and minority shareholders could also influence the structure of the corporate tax system (Desai et al., 2007). The game of corporate taxation is played by the government, insiders and shareholders. When there is an increase in the corporate tax rate, the insiders may avoid more taxes given the effect of the increased tax rate on the cash flow. Unless there is increased tax enforcement, the managers use the opportunity to divert business income and this worsens corporate governance problems. But when there is a decrease in the corporate tax rate the insiders may still avoid taxes given the increased cash flow and use such tax savings for private benefits unless the governance mechanism is effective. These two ways interactions suggest a hump-shaped relationship between corporate tax rates and corporate tax revenue (Desai et al., 2007).

Given this expectation, Desai et al. (2007) investigated the relationship between corporate tax rates and corporate tax revenue of some countries around the globe. They found that increased corporate tax rates leads to increased corporate tax revenue in the countries with strong corporate governance mechanism. This shows that the effectiveness of corporate governance moderates the relationship between corporate tax rate and corporate tax revenue. They also examined the effect of tax enforcement on stock prices in Russia during tax enforcement crackdown on companies in the oil and gas sector. They found that tax enforcement helps in mitigating the managerial diversion and perquisite consumption given the documented increased stock prices during the period.

Their study provides empirical evidence on the interaction between corporate taxation and corporate governance. It also shows that the design of the corporate tax system determines the nature of corporate governance that exists in the companies. Further, it proves that target increase in a corporate tax rate should be accompanied by a tax enforcement programme for effectiveness in tax policy implementation.

What is not clear from their study is a situation when the corporate income tax rate is reduced. Could it be concluded that corporate tax reduction does need a tax enforcement programme? Does corporate governance mechanism need to be perfectly effective when a country plans to lower her corporate tax rate?

To understand the highlighted scenarios, there is the need to investigate a programme of general reduction in corporate tax rate without increased tax enforcement programme in relatively emerging economies given their levels of corporate governance practices. This enhances our understanding of the interaction among corporate taxation, governance and firm value.

The gradual reduction in the corporate tax rate in Malaysia since 1988 to date provides the unique opportunity for investigating the impact of reduction in the corporate tax rate on the firm value in a concentrated ownership setting. Thus, this study investigates the relationship between a measure of tax burden and Tobin's q (a measure of firm value) over a period of fourteen years for 232 listed companies on bursa Malaysia. The measure of tax burden is found to be significantly related negatively to Tobin q. This provides evidence for the traditional objective of tax policy of inducing productivity (Zodrow, 1991). It also proves that a tax reduction programme does not require the strengthening a tax enforcement to be effective.

Further, the study investigates the interaction effect of corporate governance on the relationship between the measure of tax burden and Tobin's q. Using a self-constructed corporate governance index, the study documents no significant interaction effect in the relationship. This shows that effectiveness of corporate governance is not pre-exquisite for an effective tax reduction programme. By extension, this plausibly measures the effectiveness of corporate governance practices among Malaysian listed firms.

The next section of this paper discusses the literature related to corporate tax studies in Malaysia and develops the testable hypotheses. Details of the empirical methods – sample selection; model specification and variable measurements; estimation method – are presented in

section 3. Section 4 presents the results of the of estimation and discussions of the findings. The conclusion of the study is delineated in section 5 of this paper.

## 2 Literature review and Hypotheses development

While several studies have been conducted in Malaysia on corporate tax non-compliance recently, none has attempted to investigate the effect of the reduction of corporate tax rate on the firms' values, and by extension, assess the effectiveness of corporate governance system. For instance, Choong and Lai (2008) had some questions related to tax evasion as part of the survey questionnaires administered on a spectrum of business owners in tax seminar in June 2007 at both Petaling Jaya and Johor Bahru. The respondents cut across various sectors of the economy and represented different firm size. The analysis of the responses related to tax evasion showed that the majority of the corporate taxpayers are not aware of the distinction between the reporting of private and domestic expenses for individuals and businesses. This finding is contingent on their low level of tax knowledge established in the study.

Taking a different approach, Rohaya, Nor'azam, Norashikin and Alizan (2009) investigated some indicators of fraudulent financial reporting among 73 Malaysian private firms accused of tax aggressiveness. Indicators such as the amount of revenue; liquidity ratios; the level of inventories and receivables; leverage; and the effective tax rates were examined for the study sample. The results of the multiple regression analysis showed that the amount of revenue; liquidity ratio as well as leverage have significant relationships with the measure of tax evasion.

Looking at corporate tax avoidance directly for the first time in Malaysian tax studies, Zaimah (2012) examined the link between corporate tax avoidance and industrial differences among Malaysian listed firms from 2001 to 2005. Using the Thomson Analytic Database, 5,000 firm-years observations were obtained. The analysis of the data using Tobit regression estimation method showed that tax avoidance practices are more common among companies in sectors such as basic materials; industrial; consumer goods and services.

Using a similar approach, the author also investigated the relationship between corporate tax planning (measured as effective tax rates) and engagements in foreign activity among Malaysian listed firms over the same period of 2001 to 2005 (Zaimah, 2013). With 1,645 finally selected companies, the Tobit regression estimator was used for the analysis of the panel data. The results of the analysis showed that "companies with more extensive foreign activities" (p. 212) seemed to be more tax avoidant.

With the official permission from IRBM, Lai et al. (2013) used raw data from the completed audit cases in 2011 to examine the characteristics of the audited companies; the reasons for such tax audit; the forms of tax evasion; the time an audit case took to completion; and the nature of the penalty imposed. The study also investigated whether the tax audit framework guidelines for the conduct of tax audit were being properly observed by the tax auditors. The results of the analysis of the 421 cases showed 58.2% and 41.8% of the companies are small and large firms respectively. The highest percentage of the cases was selected based on risk analysis of the financial statements. The audit cases were mostly conducted within 3 years of assessment, but certain cases had longer period. The natures of the tax aggressiveness discovered were over-claimed expenses; fraudulent financial reporting and overstated purchases. The time taken to the completion the audit case is mostly more than one year, while the penalty imposed ranged from 10% to 100% of the actual tax.

Using data related to cases of tax non-complaint companies in the service industry, Noor, Jamaludin, Omar and Abdul Aziz (2013) examined the nature of and factors influencing tax evasion among firms in the industry. With a sample 275 cases, the study documented significant difference between the actual payable amount of taxes and the declared amount of taxes. Also, factors such as threshold level; the size of the audit firm; and non-submission of tax returns were found to be associated with tax evasion.

The above reported Malaysian studies have investigated only the potential determinants of corporate tax non-compliance. However, this present study looks into a scenario where the corporate tax is lowered in a concentrated ownership setting with corporate governance interaction. This complements our understanding of the happenings in the domain of corporate taxation. Furthermore, this study uses a firm level analysis contrary to the macroeconomic level analysis used in Desai et al. (2007). With the firm level analysis, better insight is given to the factors influencing the relationship between the corporate tax burden and firms' values.

### 2.1 *Hypotheses development*

As noted earlier, the reduction in the corporate tax rate, which lessens the firms' tax burdens, should lead to increased firms' values through the increased cash flow (Desai et. al., 2007). This is also in line with the traditional view of tax policy (Nancy, 1986; Zodrow, 1991) which one of the objectives is to encourage further production. However, it will be possible provided the increased cash flow is not diverted by the managers given the level of corporate governance effectiveness. Thus, the following hypotheses are developed:

$H_1$: *there is a significant negative relationship between corporate tax burden and firms' values among Malaysian listed companies;*

$H_2$: *there is a significant interaction effect of corporate governance on the relationship between corporate tax burden and firms' values among Malaysian listed companies.*

## 3 Empirical Method

### *3.1* *Sample data*

The listed companies on the main market of Bursa Malaysia, at time of data collection[1] for this study, totalled eight hundred and fourteen. Table 1 below presented the sectorial classification of these companies. The documented evidence of the impact of industrial affiliation on the tax burdens of Malaysian companies (Adhikari, Derashid & Zhang, 2006) necessitated the sectorial classification.

**Table 1 Sectorial classification of Listed Companies on Bursa Malaysia**

| S/ No. | Sectors | Number of Companies |
|---|---|---|
| 1 | Closed Fund | 1 |
| 2 | Construction | 46 |
| 3 | Consumer | 123 |
| 4 | ETF Fund | 1 |
| 5 | Finance | 34 |
| 6 | Hotel | 4 |
| 7 | Industrial Production | 236 |
| 8 | IPC | 6 |
| 9 | Mining | 1 |
| 10 | Plantation | 41 |
| 11 | Properties | 88 |
| 12 | REITS | 16 |
| 13 | SPAC | 3 |
| 14 | Technology | 32 |
| 15 | Trading and services | 182 |
| | **Total** | **814** |

[1] The data collection process started sometimes in February 2015.

Source: Bursa Malaysia (2015)

From the population frame presented in table 1 above, the companies in the finance and financial related services are excluded as they are subjected to special regulations different from the other sectors. Thus, 34 companies in finance and 16 companies in REITS were excluded. This exclusion is in line with similar studies like Adhikari et. al, (2006) and Zaimah (2013). Furthermore, sectors, such as closed fund; ETF fund; hotel; IPC; mining and SPAC, with less than 10 listed companies were excluded given the potential estimation error in sample selection.

The exclusion resulted in a population frame of 748 companies in the seven sectors of construction; consumer; industrial production; plantation; technology and trading and services. A total of 300 companies were targeted for selection from this frame based the recommendations in Krejcie and Morgan (1970); and Bartlett II, Kotrlik and Higgins (2001).

The targeted 300 companies were selected using stratified and systematic sampling methods from the population frame identified. The selection process produced 289 companies based on the availability of data for the three years minimum threshold required for the measurement of the effect of any structural change to the tax system (Salihu, 2015).

The annual reports of the sampled 289 companies were filtered and 11 companies were excluded for incomplete financial information for the financial periods of 1999 through 2013. 38 companies with tax refunds or operating loss and negative operating cash flow were also excluded given the distortion in the measurement of their tax burdens (Zimmerman, 1983) and finally, 8 companies with measures of tax burden greater than one or equal to zero were also removed to avert potential model estimation problems (Stickney & McGee, 1982).

The filtering process resulted in a sample size of 232 companies, with varying year span from 1999 to 2013. This produced a total of 1814 firm-year observations used for the final empirical analysis based on the available fourteen-year financial periods.

### **3.2** *Model Specification and Variables' Measurement*

The nature of the data described above necessitates the development of a panel data regression model for the analysis. The dataset combines both time series and cross-sectional observations which makes it more informative by providing more variability but less collinearity among variables. Also, by having increased number of data points, panel data generate additional degree of freedom that makes data analysis more efficient (Gujarati & Porter, 2009).

The data were subjected to several statistical tests relevant to the various forms of the data analysis methods to ensure the data reliability and suitability. The results of the tests were discussed while presenting the results of the data analysis. This is considered appropriate as most of the results output come along with the results for these tests.

Besides the statistical tests of data stability and reliability, the data were initially analysed descriptively using descriptive statistics such as means; standard deviations; minimum and maximum values to provide quick descriptions of the variables in the study (Lunenburg & Irby, 2008). The descriptive statistics also provide some insights into the nature of these variables and this serves as the basis for further insightful analyses inferentially.

To test the hypotheses, two empirical regression models were developed given the panel nature of the relevant data. A critical examination of the focus of the present study suggests the nature of the panel data to be dynamic. As such, the study developed a dynamic panel data model. A set of panel data is considered dynamic when there is an inclusion of unobserved individual-specific effects and/or lagged dependent variables. It should be noted that the presence of unobserved individual-specific effects and lagged dependent variables is meant to avert the effects of potential endogeneity of the explanatory variables. The presence of endogeneity in most internal governance researches has been documented in Wintoki, Linck

and Netter (2010). However, it is rarely considered in many of the internal governance studies. Specifically, Robert and Whited (2012) identified three major sources of endogeneity in corporate finance-related studies as omitted variables; simultaneity and measurement errors. Most relevant in this case is simultaneity, as the measure of tax burden and firm value can influence either other.

Given the dynamic nature of the described panel data and in line with models in Desai et. al., (2007) and Minnick and Noga (2010), this study imposes a standard liner relationship between the measure corporate tax burden and firms' value. Also, included in the model are some control variables documented to influence firms' value in prior studies.

These models are written as:

$$FV_{it} = \alpha_i + \Upsilon FV_{it-1} + \beta_1 taxburden_{it} + \beta_2 profit_{it} + \beta_3 fsize_{it} + \varepsilon_{it} \quad \ldots\ldots (1)$$

$$FV_{it} = \alpha_i + \Upsilon FV_{it-1} + \beta_1 taxburden_{it} + \beta_2 (taxburden*corgov)_{it} + \beta_3 profit_{it} + \beta_4 fsize_{it} + \varepsilon_{it} \ldots\ldots (2)$$

The subscripts *i* and *t* denote companies and year respectively. FV is firm values which is the dependent variable in this model. The firm value was measured by the q-value and is defined as the ratio of market value of the firm to the book value of total assets (Tobin, 1969). The q- value is an approximation of Tobin's Q (Morck et al., 1988; McConnell & Servaes, 1990; Chung & Pruitt, 1994; Perfect & Wiles, 1994; Yermack, 1996; Yeh, Lee & Woidtke, 2001; Mishra et al, 2001 & Weir et al., 2002). Tobin's Q measurement is accepted as a better measure of firm performance (Mayer, 2003) as it reflects the market performance measure rather than the accounting performance measures (Amran & Ahmad, 2009). Similar studies on firm value in Malaysia have used q-value to measure firm performance (Amran and Ahmad (2009); Liew, Alfan and Devi (2014); and Mohamad and Saad (2012))

Tax burden denotes amount of tax burden borne by the corporate taxpayers. It is measured as the ratio of cash tax paid to operating cash flow (Hanlon & Heitzman, 2010). This measure of tax burden has been recommended to capture the conforming tax burden especially within the context of this study (Hanlon & Heitzman, 2010). Further, Salihu et. al., (2013) and Salihu (2015) have documented significant difference between this measure and other three similar measures of corporate tax burden.

Corgov is an index measure of the quality of corporate governance in the selected companies. We chose to develop a comprehensive index to measure the quality of corporate governance mechanisms in order to capture the mechanism holistically. The details about the process for development of the corporate governance index are presented in the next subheading. $\alpha_i$ is the firm specific effect, $\Upsilon$, $\beta_1$ to $\beta_4$ are slopes to be estimated and $\varepsilon$ is the error term of the model. *PROFIT* and *FSIZE* represent profitability and firm size are control variables found to impact firms' value and firms' tax burden. While profitability is measured as the return on assets (Derashid & Zhang, 2003; Noor et al., 2008), firm size and growth is measured as the natural log of total assets similar to Derashid and Zhang (2003); Haniffa and Cooke (2002); Mohd Ghazali (2010). The coefficient of lagged dependent variable, $\Upsilon$, is expected to be positive. If the reduction in the corporate tax rate has positive effects on the firm performance, as hypothesized, $\beta_1$ is expected to have negative signs for equations (1) and (2). $\beta_2$ in equation (2) is expected to positively impact the taxburden and thus strengthen its relationship with the firm value. Therefore, $\beta_2$ should have a negative sign following the sign in $\beta_1$. For the slopes of the control variables, though not hypothesized, positive signs are expected for $\beta_2$ and $\beta_3$ in equation (1) and $\beta_3$ to $\beta_4$ in equation (2) based on the empirical findings in prior studies (Adhikari et al., 2005; Chen et al., 2010; Derashid & Zhang, 2003; Salihu, Annuar & Sheikh Obid, 2015).

### 3.2.1 *Corporate Governance Index*

As noted earlier, we developed a comprehensive index to measure the quality of the corporate governance from the corporate governance statements provided in the annual reports of the selected companies. In line with Bebchuk, Cohen and Ferrell (2009) and Gompers, Ishii and Metrick (2003) we constructed indicators for the best practice of corporate governance using the recommendations in the Malaysia Code of Corporate Governance (MCCG) 2012 and published empirical studies on the corporate governance in Malaysia. Three main crucial components of corporate governance - characteristics of the board; board committee; and ownership structure - are considered. The details of the indicators together with criteria for scoring each indicator and the related literature are presented in Appendix I.

The information about the indicators, based on the criteria set in the appendix I, was extracted from the statement of corporate governance contained in the annual reports of the selected companies. A simple average of the total score obtained by each company with the sum of the total obtainable score gave the corporate governance index.

## 3.3 *Estimation Method*

The use of standard pooled regression (OLS) model, fixed or random-effect models are appropriate analysing the equations 1 and 2 above given the presence of firm specific effects or time-invariant firm-specific variable and the lagged dependent variable (Arellano & Bond, 1991). This may be due to serial correlation of error term($\varepsilon_{it}$). Even when it is can be assumed that the error term is not autocorrelated, the pooled OLS estimators are still biased and inconsistent due to the likely correlation of lagged dependent variable ($\Upsilon fv_{it-1}$) with the error term. In fact, for omitted variables (one of the sources of endogeneity in corporate finance studies) the OLS estimators are biased upward (Nickell, 1981). A similar scenario of lagged variable being correlated with the error term is feasible while estimating using random or fixed effects models (i.e. least square dummy variable estimators). In addition, the fixed effects estimators will be biased downward in situation of omitted variables (Nickell, 1981).

The use of generalized method of moment (GMM) estimator has been argued for by Arellano and Bond (1991) in the above situation. By the first difference of equations 1 and 2 above, GMM estimator helps wipe out the firm-specific effects or any time-invariant variable. Also, the correlation between lagged dependent variable ($\Upsilon fv_{it-1}$) and the error term ($\varepsilon_{it}$) after taking the first difference is cleared off with the use of instrumental variables (Arellano & Bond, 1991). Ibrahim and Law (2014:5) put this scenario clearly as:

> '…the differenced lagged dependent variables and other endogenous variables can be instrumented with their lags in levels, lagged two or more periods while the exogenous variables can serve as their own instruments. The method is known as the first-difference GMM estimator and it can be either one-step GMM estimator or two-step GMM estimator. The one-step GMM estimator assumes independent error terms and homoskedastic error variance across countries (i.e. firms) and times. Meanwhile, the second-step GMM estimator uses the residuals of the first-step estimation to construct a consistent variance-convariance matrix when the assumptions of independence and homoscedasticity do not hold"

However, the first-difference GMM estimator has been criticized for neglecting the potential information generated while relating the first differences of levels with the respective levels (Ahn & Schmidt, 1995). Specifically, the instruments for the level variables will become weak when the first differences are persistent (Blundell & Bond, 1998). As such, Arellano and Bover (1995) recommended the system estimations of the regressions of the first difference and the levels. Thus, we adopted the Arellano and Bover estimation (i.e. xtabond) with two-step approach in the analysis of the dynamic panel data.

## 4 Results/Findings

### 4.1 *Analysis of Descriptive Statistics*

The summary of the descriptive statistics for the variables are presented in Table 2. These include the sample size, mean, standard deviation, minimum and maximum values of these variables. The various descriptive statistical measures were employed to explore the underlying features of the variables. Given varying financial period over fourteen years from 1999 to 2013 for the final sample of two hundred and thirty-two (232), total sample one thousand eight hundred fourteen (1814) firm-year level observations were recorded.

**Table 2 Descriptive Statistics**

| | N | Mean | Std. Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Firm Value (fv) | 1814 | .8225 | .9067 | .0088 | 8.6317 |
| Taxburden | 1814 | .2365 | .2046 | .0002 | .9930 |
| Profit | 1814 | .8993 | .1013 | -.4218 | 3.2236 |
| Firmsize | 1814 | 6.0737 | 1.4802 | 3.0876 | 11.513 |
| Cgi | 1814 | .6347 | .1116 | .1333 | .9333 |

From Table 2 above, firm value (fv) has a mean of 0.8225 with a minimum value of 0.0088 and maximum value of 8.6317. It means that Malaysian companies, on the average, have 82.25% of their replacement costs covered by the total assets. Prior studies had documented a similar value for the firms in Malaysia. For instance, Amran and Ahmed (2009) documented a mean of 67.46%; Hassan, Hassan, Karim and Salamuddin (2016) found a mean of 75% for the firm value. Also, Liew et. at., (2014) found a mean of 87.80%. The mean value for the measure of tax burden (taxburden) is 0.2365 with 0.002 and 0.9930 as minimum and maximum values respectively. On the average, the effective tax rate of these Malaysian companies is 23.65%. This percentage is higher than the previously documented values of 19.50% in Salihu (2015); 18.23% in Salihu et. al. (2013) and 19.78% in Salihu et. al. (2015). The present study has a wider scope for sample selection than these previous studies which focused on only large companies.

For the control variables, a mean value 6.0737 was documented for the variable firm size and growth (firmsize). This value is lower than 13.122 found in Derashid and Zhang (2003); 13.02 reported in Adhikari et al. (2006) but higher than 5.63 recorded in Noor et al. (2008). Profitability (profit) has a mean of 0.8993. This value is similar to the documented values of 8.1%; 8% and 8.1% reported in Derashid and Zhang (2003); Adhikari et al. (2006) and Noor et al. (2008) respectively. The mean of the corporate governance index (cgi) is 0.6347.with minimum of 0.1333 and 0.9333. This shows that the quality of corporate governance among the selected Malaysian companies is slightly above average. Thus, it further supports the claim of low level of compliance to the recommendations in MCCG 2012.

The general low values of standard deviation observed across all the independent and control variable show that the data's distribution is clustered around the means. Thus, the means are good representations of the centre of the data.

In addition to the descriptive statistics presented above, we also examined other diagnostics of the data prior to inferential analyses. The multicollinearity diagnosis was checked using correlation matrix; Variance Inflation Factors (VIF) and Tolerance. The results of these examinations are presented in Tables 3 and Table 4 respectively.

**Table 3 Correlation Matrix among the Independent and Control Variables**

| | Fv | taxburden | profit | Firmsize |
|---|---|---|---|---|
| Fv | 1 | | | |
| taxburden | -0.0223 | 1 | | |
| profit | 0.4356 | 0.0227 | 1 | |
| firmsize | -0.0530 | -0.0177 | -0.0872 | 1 |

**Table 4 VIF and Tolerance**

| Variables | VIF | 1/VIF |
|---|---|---|
| profit | 1.01 | 0.991942 |
| Firmsize | 1.01 | 0.992142 |
| Taxburden | 1.00 | 0.999235 |

The correlation matrix among the variables in table 3 showed low level correlation coefficients among the variables with the highest value being 0.4356. This value is far lower than the threshold of 0.7 for the suspicion of the collinearity issue suggested by Tabachnick and Fidell (2008) and Kennedy (2008). Thus, there is non-severity or non-existence of collinearity problem in the data set.

For the VIF and its inverse, Tolerance in table 4, the values are within the acceptable limits set the statisticians. The values are far less than 10 threshold for VIF and higher than the 0.1 for Tolerance suggested by Gujarati and Porter (2009) and Hair, Black, Babin and Anderson (2009).

### **4.2** *Presentation and Analysis of Results of the Relationship between Corporate Tax Burden and Firm Value*

Following the argument above, Arellano & Bover's GMM estimator was adopted in the present study to wipe out the firm specific effects and the likely autocorrelation of first-differenced lagged dependent variable with the regression error term. The specific results of the two dynamic panel models using two-step GMM estimator, together with the discussion about the findings, are presented as follows.

The results of the analysis of the two dynamic panel models are shown in Table 5. This is together with the required tests of autocorrelation and the validity of the over-identifying restriction for the model. These tests are recommended by Arellano and Bond (1991) and

Roodman (2006) for model consistency and accuracy given the assumption of exogeneity of the dependent variable.

The results in the table panel 1 show a significant negative relationship between firm value and tax burden at 5% level of significance. Specifically, a percentage decrease in the tax burden results in a 3.19% increase in q-value (a measure of firm value). With this level of significance, it means that the hypothesized negative relationship between firm values and corporate tax burden is supported. However, the results of the interaction effect of corporate governance, presented in panel 2 of the table, show an unexpected outcome. Coefficients of tax burden changed from negative to positive when we included the interaction variable of tax burden and corporate governance index while the coefficient of the interaction variable came out with negative sign. The lack of significance of the two shows that the corporate governance could not statistically influence the relationship between firm value and tax burden.

The findings here are that the gradual reduction in the corporate tax, reflected in the measure of the tax burden, has a positive impact on the firm value. While Desai et. al. (2007) argued that 'for a given tax rate, an increase in tax enforcement can increase (rather than decrease) the market value of a company' (p. 592), we have documented that a reduction in the tax rate may serve the same purpose of an increase in the market value of firms. We further documented that corporate governance might not necessarily influence the impact of the reduction in tax rate on the firm value. This is true as the corporate taxpayers will be willing to pay given the reduced rate of tax. Another, implication of this finding is the likely absence of managerial diversion or perquisite consumption among the managers.

Thus, a well programmed tax rate reduction strategy will not only foster compliance, but also an increase in the firm value due to the absence of managerial diversion or perquisite consumption. While we expected that the increased cash flow due to the reduced tax payment could be diverted by the managers, these results suggest the contrary. It means, therefore, that in a concentrated ownership setting with a relative level quality of corporate governance, a reduction in the tax rate may the best strategy.

The coefficients of firm size and profitability are significantly related to firm value at 1% level of significance. While profitability is positively related to firm value, as expected, firm size is negatively related to the firm value. This, however, is not also unexpected given the documented negative correlation of firm size with both firm value and profitability in the correlation matrix table reported earlier.

The analyses of the dynamic panel data regression models reported in the table assume the exogeneity of the dependent variable. For the same reason, the models imposed a lagged dependent variable and other instrumental variables to prevent potential endogeneity. For the models to be consistent and unbiased the assumption of exogeneity must be valid. To test its validity, two tests of exogeneity as suggested by Arellano and Bond (1991) and Roodman (2006) were run for each of the four regression models. The results of the tests are reported next to the regression results of each model and are discussed here.

The first test of exogeneity reported for the models above is the test of serial correlation. This is necessary as the difference GMM estimator depends on no autocorrelation. As noted earlier, the two methods of GMM estimator could be one-step or two-steps. Thus, the Arellano-Bond (AB) autocorrelation tests above, for the models, have two orders (1 & 2) with null hypothesis of no autocorrelation. The low p-values of the first order autocorrelation test mean that the hypothesis of no autocorrelation is rejected and thus the error term serially correlated. This is expected given the likely imposition of serial correlation while taking the first-difference to eliminate the firm specific variable. This imposed serial correlation is expected to disappear after taking the second-difference i.e. two-steps GMM. That accounts for the high p-values for the AB tests of the second order. Thus, the p-values reported for each of

the models above show the null hypothesis to be insignificant and therefore no issue of auto-correlation (Wintoki et al, 2010) in any of the models.

The second recommended test is the sargan test of the validity of over-identifying restriction. This is to further confirm the exogenous assumption of the instruments. The use of multiple lags of instruments in GMM estimator gives the likelihood of the system being over-identified. Thus, the sargan test of over-identifying restriction was run for each of the models. The null hypothesis as indicated in each the test results above is that the over-identifying restrictions are valid. Since all the p-values of the models are not significant, the null hypotheses stand not to be rejected and thus, the over-identifying restrictions are valid.

By implication, the results of the two suggested (Arellano & Bond, 1991; Roodman, 2006) specification tests indicate that the dynamic panel data regressions models are unbiased and consistent. Thus, the results of the two-step Arellano and Bond's GMM estimator are statistically valid.

**Table 5 Regression Results of Arrelano and Bond GMM Estimation**

| Variables | Panel 1 | Panel 2 |
|---|---|---|
| Constant | .8027<br>(0.000) * | .8191<br>(0.000)* |
| Lag (fv) | .1669<br>(0.000) * | .1672<br>(0.000) * |
| Taxburden | -.0319<br>(0.021) ** | .0404<br>(0.541) |
| taxburden*cgi | | -.1033<br>(0.367) |
| Firmsize | -.0604<br>(0.000) * | -.0637<br>(0.000) * |
| Profit | 2.1485<br>(0.000) * | 2.1505<br>(0.000) * |
| N | 1814 | 1814 |
| Sargan test: p-value | 0.2162 | 0.2272 |
| AR(1): p-value | 0.0005* | 0.0005* |
| AR(2): p-value | 0.0525 | 0.0527 |

The values in the parentheses are p_values. **denotes significance at 0.05 level; *denotes significance at 0.01 level.

## 5 Conclusion

This study investigated the relationship between a measure of tax burden and firm value. It was found that firm value to be negatively related to the measure of the tax burden and therefore concluded that the increased cash flow as a result of the reduced tax payment has translated to shareholders' wealth. This conclusion is further strengthened by the non-significance of interaction of the measure of the quality of corporate governance in the relationship of the measure of tax burden with firm value. It is therefore a step in the right direction that Malaysian government had gradually lower the corporate tax rates over the years. It is recommended that the government should further provide incentives to the corporate taxpayers to foster more compliance. However, as documented in Annuar et. al. (2018), the corporate tax rate should not be lowered than the optimal rate of 25%. Thus, a further lowering of the tax rate away from optimal level could decrease the overall tax revenue and subsequently reduce the firms' value. Since the current corporate tax rate stands at 24% (lower than the optimal rate of 25%), it will be worthwhile to investigate its

impacts tax revenue and firms' value. The government should also strengthen the level of companies' compliance with the recommendations in Malaysian Code of Corporate Governance (MCCG) given the documented low quality of corporate governance among the firms.

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