



## Employee stock options and real earnings management through accretive share buyback in Malaysia

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### ABSTRACT

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We examine the association between employee stock options and real earnings management through accretive buyback programs. Our study uses unbalanced panel logistic estimation model for a sample of 601 firms' observations that involved in accretive share buyback over the period 2010-2015. The outcomes reveal that stock options exercised by insiders (executives and employees) are associated with high likely to engage in accretive share buyback activities. The results also provide evidence that a large percentage of the independent directors serving the board constrain real earnings management by engaging in accretive share buybacks. Our study contributes to the debate on stock options, and their impact on accretive buyback programs to manage reported EPS. Our findings provide insight to investors and the policymakers that managers holding stock options have more incentive to manage EPS through accretive share buyback activities. Academic researchers could extend this study by separating among executive and employees' stock options and between exercisable and non-exercisable stock options.

#### Keywords:

Employee stock options, real earnings management, accretive share buyback, Malaysia

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## 1. Introduction

The main purpose of stock options is to align the interest of management members and shareholders and also to gain their loyalty to maximise the wealth of shareholders [1, 2]. In the late of eighties of the last century, Malaysian firms have been permitted to involve in employee stock options scheme (ESOS), where the listed firms in Malaysia can issue 15 percent of their issued and paid-up capital as employee stock options. Experience of ESOS in Malaysian market became widely prevalent started from the 1990s of the last century [3, 4], where more than 250 listed firms in Bursa Malaysia engaged in ESOS between the years 1999 to 2007 [1]. Recently, our analysis reveals that more than 30 percent of Malaysian firms with accretive share buyback involve in ESOS for the period from 2010 to 2015. This statistic is an insight that a significant number of listed firms on Bursa

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Malaysia are involved in ESOS which form an incentive for our study to explore some of their determinants. Previous studies [5–7] asset managers holding large stock options are more likely to manipulate earnings to meet performance forecasts.

Management gets involved in earnings management for several incentives; to meet analyst forecasts [8–11], to maximise stock price before security issuance [12–14], and to increase manager's wealth [7, 15]. "Earnings management is an accounting treatment used by managers in their discretion to manage or smooth earnings in financial reports as a kind of 'language' of business reports" [16]. Two categories of earnings management, which are accruals manipulation (accounting choices) or real earnings manipulation (cash flows choices) [8]. Existing literature provides empirical evidence that managers utilised the real activities of the firms, such as production, selling, advertising and research and development, to manage earnings, which directly affect the firm's cash flows [17–19].

Share buyback activities are also employed by managers as a mechanism for manipulating EPS during declining the number of outstanding shares that perform the denominators of the equation of EPS calculation [20, 21]. Existing literature define share buybacks that lead to significant increase in reported EPS as accretive share buyback [20–22]. This accretive share buyback is a real earnings management that affects cash flow choices [20]. Therefore, this paper is questioning the association between employee stock options and real earnings management through accretive share buyback in the Malaysian context.

Previous studies provide evidence that managers of firms held stock options are more aggressive to practice accruals-based earnings management [5–7]. Consistently, some prior studies have empirical evidence that asserts managers with large stock options are more likely to manage earnings to meet analysts, forecasts of performance [5–7]. Further, Efendi *et al.* [23] documented that CEO's stock options have positive linkage with the likelihood of restatement of the financial report. Bedard *et al.* [24] and Cheng and Warfield [7] find that managers held ownership including stock options have more incentive to manipulate earnings to match forecasts of performance, especially when they expected negative earnings surprise. Moreover, Bartov and Mohanram [25] reveal that managers manipulate firm's earnings through discretionary accruals immediately before engaging in stock option exercise to manage the share price.

While, prior studies in accretive share buyback focus on the impact of financial characteristics [22], the board of directors features, audit quality and managerial ownership [11, 22, 26]. Additionally, several previous studies [27, 29, 33] examine the influence of stock options on actual share buyback rather than an accretive share buyback, which is the point of this study. Our study extends the existing literature of stock options and share buybacks by focusing on the role of stock options in motivating managers to involve real earnings management through accretive share buyback activities. Therefore, the outcomes of our paper could provide insight business and academic players on the role of ESOS as an incentive for the management to use accretive share buybacks to manage EPS. The paper is arranged into five sections. Section 1 discussed the introduction. The hypotheses of employee stock options and accretive share buyback are developed in Section 2. Section 3 contains the empirical method that used in the paper. Finally, Section 4 presents the results and Section 5 concludes.

## 2. Hypotheses Development

Stock options hypothesis predicts that firms may engage in accretive share buyback programs to avoid dilution in EPS caused by the exercise of stock options [27, 28], or to fund stock options exercise [27, 29]. In the same line, agency theory type II assume that agency problem between majority and

minority shareholders is created when majority shareholders employ firm's resource to gain their interests at the expense of minority shareholders [30, 31]. Consequently, controlling managers who are in the same time shareholders of shares and stock options are more likely to involve in earnings management to earn personal benefits, especially in emerging countries with high ownership concentration.

Previous studies, see for example Kahle [27], Dittmar [29], Fenn and Liang [32], Lamba and Miranda [33] and Weisbenner [34], provided empirical evidence that firms with high level of employee stock options are more motivated to engage in share buyback programs to adjust the decline in EPS caused by exercise of stock options. In addition, Lin *et al.* [35] found that managerial stock options have a positive association with the value of actual share buyback. More specifically, firms are more likely to initiate buyback program when executives have large exercisable stock options [36]. These results suggest that managers with higher executive stock options would be more motivated to embark on share buybacks to align the dilution of EPS affected by their options [33].

Moreover, Bedard *et al.* [24] and Cheng and Warfield [7] found that managers who hold a high level of stock options and shareholdings have more incentive to manage earnings to meet analyst forecasts. Previous studies provide empirical evidence that managers with large stock options have a high likelihood to involve in earnings management for matching performance predictions [5–7]. Lin *et al.* [35] also found that managers use share buybacks as a substitute mechanism for discretionary accounting accruals in their earnings management practice. Based on previous debates on stock options and agency theory, we can propose the following hypothesis:

**H1:** Firms' directors holding a high number of employee stock options exercised are more likely to involve in accretive share buyback activities.

**H2:** Firms' directors holding a high number of employee stock options outstanding are more likely to engage in accretive share buyback activities.

### 3. Methodology

#### 3.1 Sample

Hribar *et al.* [20] identify two steps to disunite between accretive share buyback and non-accretive share buyback. First, we begin to compute EPS with removing the influence of actual share buyback activities, which is called AS IF EPS, the value of EPS without considering the actual share buyback or in the absence of share buybacks. Based on the Hribar [20] model, AS IF EPS is calculated by assessing the numerator and denominator impacts of accretive shares buyback on reported EPS as follows:

$$ASIF\_EPS = NI_{it} / (SOUT_{it-1} + 0.5 * SISSU_{it}) \quad (1)$$

where, *AS IF\_EPS* = the estimated EPS in the absence of share buybacks,

$NI_{it}$  = reported earnings before comprehensive income available to ordinary shareholders for current fiscal year,

$SOUT_{it-1}$  = the reported number of ordinary shares outstanding, at the beginning of the current year,

$SISSU_{it}$  = the actual or estimated number of ordinary shares issued during the current year.

The second step based on the model of Hribar *et al.*[20] can be used to compute the difference between the presented EPS as appeared in financial statement and AS IF\_EPS as calculated above in the Eqn. (1). Accordingly, when the difference between reported EPS and ASIF\_EPS is a positive value, it is an accretive shares buyback. Regarding previous studies [20–22], shares buyback is considered as accretive shares buyback when they cause a change in reported EPS by at least one cent. However, if the change in EPS that caused by actual share buyback activities is less than one cent, it called non-accretive buyback activities.

Table 1 presents the sample select process of Malaysian listed firms involved in accretive share buyback activities over the period 2010 to 2015. From 2010 to 2015, we find 106 firms involved in accretive buyback activities. The financial firms on Bursa Malaysia are excluded because they have different financial and regulatory requirements, which are five firms. After excluded the financial firms with accretive share buyback, the sample was 101 firms, which are nonfinancial firms that involve in accretive buyback activities during the sample period. These processes produce a sample consisting of 606 observations of non-financial listed firms involved in accretive share buyback activities over the period from 2010 to 2015 (101 firms \* 6 years). Firms with incomplete data or missing annual report are also excluded, which is five firms' observations, and we get 601 observations as the final sample of our study.

The data on actual share buybacks, EPS, net income and outstanding shares are collected from the firms' annual reports which are available on Bursa Malaysia website. Other variables such as employee stock options, the board of directors' independence and Big 4 auditors are also collected from the annual reports on Bursa Malaysia. Further, the control variables including firm size, the growth of assets, leverage and free cash flow, presented in the model below are collected from the database of Thomson which called DataStream.

**Table 1**  
 Pross of Sample Selection over the Sample Period

Calculation of 601 observations:	A number of observations.
Accretive share buyback firms over 2010-2015	106
(-) Financial accretive share buyback firms	5
Non-financial accretive share buyback firms	101
Total observations of nonfinancial listed firms with accretive share buyback (101 firms *6 years)	606
(-) The observations of firms without prior years' data	2
(-) The observations of firms that unlisted in 2015	3
Total observations of the sample firms used in the study	601

### 3.2 Empirical Models

The dependent variable of our study is accretive share buybacks (ABBD), is a dummy variable. Logistic estimation model is utilised in our study to handle limitation of the dependent variable (ABBD). Our study's data contain 601 observations during the sample period from 2010 to 2015. Thus, panel data analysis is utilised since it considers both time series and cross-sectional characteristics of the sample. Panel data allows for more powerful tests where it provides supplementary useful data, high degrees of freedom and efficiency. It also provides more variability and less collinearity between variables [37]. We use the following model determine the nature of relationship between ESOS and accretive share buyback;

$$ABBD = \beta_0 + \beta_1 ESOSXR + \beta_2 ESOSOUT_{t-1} + \beta_3 BIG4 + \beta_4 BIND + \beta_5 FSIZE_{t-1} + \beta_6 GROWTH_{t-1} + \beta_7 LEV_{t-1} + \beta_8 CF_{t-1} + e \quad (2)$$

where: ABBD represents a dummy variable equal one for an accretive share buyback and zero otherwise [20, 26]. ESOSXR represents the number of stock options exercised scaled by outstanding shares during the current year [27]. ESOSUT<sub>t-1</sub> represents the number of stock options outstanding at the beginning of current year scaled by shares outstanding at the beginning of the current year [27]. BIG4 represents dummy variable equal to one if one of Big 4 audit firms audits the firms during the current year, and zero otherwise. BIND represents the proportion of independent directors on board of directors. FSIZE<sub>t-1</sub> represents the natural logarithm of total assets at the beginning of the current year [20, 38]. GRWTH<sub>t-1</sub> represents the assets growth at the beginning of fiscal year, annual assets growth (total assets of current year – prior year’s assets)/prior year’s assets [26]. LEV<sub>t-1</sub> represents the total debt scaled by total assets at the beginning of the current year [20]. CF<sub>t-1</sub> represents cash and cash equivalents at the beginning of the current year, scaled by total assets [10].

## 4. Findings

### 4.1 Descriptive Statistics and Univariate Tests

Table 2 shows the descriptive statistics for the variables utilised by our study, including Accretive share buyback, stock options variables ESOSXR and ESOSUT as well as the control variables, Big 4 auditors, the board of directors’ independence, firm size, assets growth, leverage and cash flow. The table presents the statistics for the entire sample of the study including 601 observations. It presents that the average of value RM and numbers of shares bought backs by accretive share buyback firms during the sample period, which are 11900000 and 6474393 respectively. The accretive share buyback observation comprises of around 39 percent of the sample observations.

**Table 2**  
Descriptive Statistics of the Independent Variables.

Variables	Mean	Median	Std. Dev.	Min	Max
Number Obs. = 601					
SBBV	11900000	210905	66900000	0	1330000000
SBBN	6474393	240100	35800000	0	722000000
ABBD	0.391	0	0.4883842	0	1
ESOSXR	0.0017	0	0.008	0	0.120
ESOSUT	0.0071	0	0.025	0	0.336
BIG4	0.5024	1	0.503	0	1
BIND	0.4544	0.428	0.120	0.167	1
FSIZE	19.993	19.76	1.610	16.75	24.83
GRWTH	0.0922	0.063	0.281	-0.38	3.979
LEV	0.1813	0.165	0.144	0	0.7601
CF	0.1622	0.120	0.141	-0.037	0.8800

The statistics also display that both of stock options exercised and outstanding are less than 1 percent of firms’ outstanding shares during the sample period between 2010 and 2015. These percentages are low in relative to counter plays in developed countries such as Kahle [27] and Lamba and Miranda [33] who reported the average of stock options outstanding and exercised between 1 and 5 percent. The table also presents that Big 4 auditors audited around half of the firms with accretive buyback. Further, Independent directors in our sample are 45 percent which is satisfied MCCG 2012 recommendations, which require the majority of directors on the board should be

independent when the chairman of the board is non-independent, as well as the chairman of the board, must be a non-executive director.

SBB is valued RM of accretive share buybacks; SBBN is number shares of accretive buyback activities; ABBD is a dummy variable equal one for accretive share buyback and zero otherwise; ESOSXR is stock options exercise; ESOSUT<sub>t-1</sub> is stock options outstanding at the beginning of fiscal year; BIG4 is a proxy for audit quality; BIND is the independence of board of directors; BSIZE is the size of board of directors; GRWTH represents the assets growth; FSIZE<sub>t-1</sub> is the natural logarithm of the total assets at the beginning of the current year; LEV<sub>t-1</sub> is the leverage at the beginning of the current year; CF<sub>t-1</sub> presents the cash flow at the beginning of the current year.

Table 3 below shows the Pearson correlation outcomes of independent variables as well as the control variables. Results in Table 3 show low coefficient correlations which indicate that no considerable multicollinearity problems between independent and control variables, since the large level of correlation is 54 percent between FSIZE and LEV.

**Table 3**  
Correlation Matrix of Variables.

Variables	ABBD	ESOSXR	ESOSUT	BIG4	BIND	FSIZE	GRWTH	LEV	FCF
ABBD	1								
ESOSXR	0.11**	1							
ESOSUT	0.025	0.47***	1						
BIG4	-0.021	-0.065	-0.098	1					
BIND	-0.090	0.022	0.0103	-0.15**	1				
FSIZE	0.047	0.029	0.0325	0.35***	-0.056	1			
GRWTH	-0.075	0.040	0.0384	-0.007	0.046	0.037	1		
LEV	-0.029	0.0015	0.17***	0.14**	-0.19***	0.54***	-0.031	1	
CF	0.034***	-0.017	-0.084	-0.06	0.028	-0.18***	-0.086	-0.30***	1

Notes: \*, \*\*, \*\*\* significant at 10%, 5%, and 1% levels, respectively.

#### 4.2 Multivariate Analysis

The results of panel logistic estimation regression are presented in Table 4. The findings reveal the model is acceptable, where Wald chi<sup>2</sup> (8) equals 20.44 and log likelihood equals -389.164 (Prop >chi2 = 0.008). The findings also provide considerable evidence related to the tested hypotheses. As presented in the table, the stock options exercise (ESOSXR) is positively associated with accretive share buyback activities (z = 2.38, p.value = 0.017). This outcome indicates that firms with high stock options exercised by executives are more probably to involve in accretive share buyback activities. This outcome is consistent with stock options hypothesis predicts that firm involves in share buyback activities to avoid the dilution in EPS caused by stock options exercise[28]. However, our study fails to find a significant association between stock options outstanding (ESOSUT) and accretive buyback activities (p. value = 0.643). This result could give insight that decisions of accretive share buybacks as a proxy for earnings management is not significantly affected by stock options outstanding because they cannot cause a change in EPS. Whereas stock options exercised is considered by managers because reported EPS is directly affected by them.

**Table 4**  
 Result of multivariate panel logistic regression

Independent Variables	Coef.	Std. Err.	z	P.value
Constant	-2.326	1.292	-1.8	0.072*
ESOSXR	39.133	16.41	2.38	0.017**
ESOSUT	-2.226	4.801	-0.46	0.643
BIG4	-0.238	0.186	-1.28	0.202
BIND	-1.983	0.748	-2.65	0.008***
FSIZE	0.1592	0.068	2.32	0.02**
GRWTH	-0.976	0.507	-1.92	0.055**
LEV	-1.583	0.783	-2.02	0.043**
CF	0.1755	0.647	0.27	0.786
Log likelihood	-389.164			
Wald chi2(8)	20.40			
Prop >chi2	0.008			
No Obs.	601			
No. Group	101			

Notes: \*, \*\*, \*\*\* significant at 10%, 5%, and 1% levels, respectively.

ABBD is a dummy variable equal one for accretive share buyback and zero otherwise; ESOSXR is stock options exercise; ESOSUT<sub>t-1</sub> is stock options outstanding at the beginning of fiscal year; BIG4 is a proxy for audit quality; BIND is the independence of board of directors; BSIZE is the size of board of directors; GRWTH represents the assets growth; FSIZE<sub>t-1</sub> is the natural logarithm of the total assets at the beginning of the current year; LEV<sub>t-1</sub> is the leverage at the beginning of the current year; CF<sub>t-1</sub> presents the cash flow at the beginning of the current year.

These findings are consistent with previous studies like Bedard *et al.* [24] and Cheng and Warfield [7] who found managers with high stock options exercised have more incentive to manage earnings to match analyst forecasts. Additionally, the results are similar with the results of Bartov and Mohanram [25] who documented that managers practice earnings management immediately before stock option exercise. Regarding control variables used for this study, Big-4 audit firms (BIG4) has non-significantly negative linkage to accretive share buyback activities ( $z = -1.28$ ). This result means that Big4 auditors insignificant role in restricting real earnings manipulation through accretive buybacks. BIND also is significantly associated to accretive share buyback ( $z = -2.65$ ), supporting the role of independent directors in constricting earnings management activities. Firms size (FSIZE) also has a significant positive relationship with accretive share buybacks where p.value is less than 0.05. Further, the leverage (LEV) is negatively associated with accretive buyback activities ( $z = -3.49$ ). LEV is considered as a proxy for an external monitoring mechanism. Thus, the likelihood of earnings manipulations through accretive share buyback is less in firms with a large percentage of leverage.

## 5. Conclusions

The objective of our study is to investigate whether the existence of stock options influence accretive share buyback as a device to earnings management. We use a sample of 601 observations of listed firms that involve in accretive share buyback activities over 2010 to 2015. Our findings show that managers with high magnitude of stock options exercise are more likely to engage in accretive share buyback activities to manage EPS. This finding supports the notion that managers practice accretive share buybacks to adjust the decline in EPS caused by exercises of stock options. In this

context, this result also supports the argument of agency theory type II that predicts agency problem between the majority and minority shareholders, especially on emerging markets with highly concentrated ownership. Practically, this outcome is consistent with existing literature which found considerable impact for stock options and earnings management activities [7, 24, 35].

The outcomes of our study have several implications for regulatory bodies and business players regarding using accretive buyback programs to manipulate financial performance index, where accretive buybacks have a direct impact on EPS. In addition, our findings implicate that employee stock options could become a considerable incentive for managers to practice earnings manipulations to enhance their positions in the firms. Thus, we provide insight for investors and policymakers that managers could involve in accretive buyback activities to substitute the decline in EPS caused by exercised stock options or to maximise share price. This study has limitations in focusing only on outstanding and exercise of stock options over the period from 2010 to 2015, where several other aspects of stock options should be considered in investigating stock options. Thus, researchers in future studies could concentrate more on other features of stock options such as stock options grants and outstanding as well as exercisable and non-exercisable stock options regarding RM value or shares number to provide more accurate implications of exercising employee stock options scheme (ESOS).

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