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GRANTING EMPLOYEE STOCK OPTIONS (ESOs), MARKET REACTION AND FINANCIAL PERFORMANCE

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ABSTRACT

This paper examines several issues related to the implementation of ESOs among Malaysian companies. We examine a total of 52 companies, 26 ESO firms and their matched industry peers over a span of 12 years. We find ESO firm stocks to have marginally higher mean returns and lower volatility than do their pre-ESO peers. Malaysian companies are more likely to initiate ESOs when the market valuation of their stocks is low. If there is any timing, ESO initiation is timed to be most favourable to employee recipients. Market reaction to ESO announcements is significantly negative. Furthermore, stock prices do not seem to recover to pre-announcement levels during at least the subsequent 20 trading days or one calendar month. In line with US findings, operating performance deteriorates for ESO companies. Comparative analysis of control firms rules out industry or external factors as elements of the deterioration. Firm size has been identified in previous studies as a determinant of market reaction and post-ESO performance. Indeed we find this to be the case for Malaysian ESOs. We find a positive announcement effect for large firms but a significantly negative one for small firms. Though puzzling, the market reaction makes sense when we consider the poor operating performance post-ESO of small firms relative to large ones. It appears that the impact of an ESO is negative for small firms but neutral for large ones. The market appears to anticipate this outcome and react accordingly. An ESO realigns the interest of the stakeholders of a company. Employee recipients gain, while shareholders mostly lose. Bondholders of large ESO firms are only marginally affected, but those of small firms stand to lose from the diminution of profits and increased leverage post-ESO. Based on our results, it will be difficult to make a case that the objectives of and rationale for an ESO are being fulfilled.

Keywords: Employee Stock Options, market reaction, financial performance

INTRODUCTION

Making employees owners through the use of either ESOPs (Employee Stock Option Plans) or ESOs (Employee Stock Option Schemes) has enjoyed widespread support in developed markets since at least the 1980s. While an ESOP is a private pension plan that mainly invests in shares of the employer, thereby linking the wealth or savings of employees to the company's stock prices, an ESO is the granting of options for employees to purchase the company's stock. The offer price usually represents a discount off current prices, with the offer period extended over several months or years. In an ESO, an employee is essentially being granted an *in-the-money* call option on the company's stock for free. Perhaps due to the statutory requirement for a centralised government-managed retirement fund, ESOPs are not as popular in Malaysia as ESOs. The use of ESOs has definitely been on the upswing in Malaysia. Many publicly listed companies use them as part of compensation and/or incentive packages. While ESOs seem to be increasingly popular in emerging markets like Malaysia, the initial euphoria about ESOPs and ESOs appears to have dissipated in developed markets. ESOs used to be touted as a type of *"worker capitalism"* where shareholders and employees work together to achieve the same goals of increasing profitability and firm value. However, in the case of developed markets, the empirical evidence in favour of this perspective appears to be mixed thus far. As Davidson and Worrell (1994) put it, "The ESOP fable of enhanced firm performance may often be based more on wishful thinking than hard analysis".

The Rationale for ESOs

As is the case with all economic phenomena, there are pros and cons to executive stock options. The main argument in favour of ESOs is that they will reduce the agency problems of equity – that is, the conflict between owners/shareholders and employees of the firm. This reduction is supposed to arise from the alignment of interests that should occur now that employees are also co-owners of the firm. The alignment of interests also causes managers and employees to be more risk-averse. This tendency towards risk-averse behaviour among employees is a second advantage of ESOs. A third advantage often cited by proponents of ESOs is that for many new industries with a globally competitive demand for skilled workers, ESO-type compensation packages that allow an employee to earn upside potential may be necessary to attract and retain talent. A fourth advantage of ESOs (and ESOPs) is the tax advantage that one enjoys when one is compensated with stocks rather than with cash. Finally, proponents would argue that implementing an ESO can serve as a takeover defence tactic or least as part of a takeover defence plan.

While many of the arguments in favour of ESOs are intuitively appealing, critics have pointed out several problems with ESOs. First, several studies, such as Davidson and Worrell (1994), have shown little if any improvement in operating performance following ESO adoption. Second, it has been pointed out that rather than encouraging risk-averse behaviour, the ownership of options may actually give decision-makers an incentive to increase underlying asset volatility. This is because an increase in underlying volatility will increase the value of the option held. Additionally, Yermack (1997) as cited in Duffhues, Kabir, Mertens and Roosenboom (2002), documents the opportunistic behaviour of managers who own stock options and strategically time the release of good news. Others have criticised the fact that the true cost of granting options is never adequately disclosed in financial statements and that oftentimes, reported profits are overstated. A final criticism is that ESOs, by placing more stocks in the hands of management, act as a hindrance to takeovers and thereby help entrench existing management.

Who Gains, Who Loses?

Since an ESO involves the issuance of new stock, its adoption will cause a realignment in the interests of nearly all stakeholders in the company. The two categories of stakeholders who will be most affected will be existing shareholders and employees eligible for the ESOs. Employees typically make up the biggest group of beneficiaries. They receive what is usually an in-the-money call option for free. This gain for employees comes directly as a cost to existing shareholders. The most obvious way by which shareholders lose is through the dilution in ownership and earnings. The fact that the new shares are issued at a discount to employees translates into an immediate loss for shareholders equivalent to the aggregate value of the discount. In addition, if the ESO is introduced as a defensive tactic, shareholders will lose again because this will discourage potential bidders and the value creation they generate. While these losses accrue immediately upon adoption of the ESO, shareholders tolerate this state of affairs in hopes of enjoying the long-term benefits of a better motivated workforce and a reduction in agency problems.

Aside from employees and shareholders, a third category of stakeholders who can be affected is that of bond/debtholders. *Ceterus Paribus*, the immediate impact of an ESO, because it involves the sale of new shares, is to increase the proportion of equity in the capital structure. This implies a reduction in financial leverage and a lower debt-equity ratio. The magnitude of the change in leverage obviously depends on the size of the new equity issuance. The de-leveraging effect of an ESO should work to the advantage of the firm's bondholders. In addition, any benefit that arises from increased operational efficiency because of reduced agency problems should also benefit bondholders indirectly. These two

benefits, however, will have to be balanced against two potential costs. The first is that while the agency problems of equity decrease with ESOs, the agency problems of debt financing may increase. Because managers and executive decision-makers who were previously salaried employees with little to gain from transferring wealth from bondholders to equity holders are now shareholders, the incentive for them to play these games increases. The second potential cost to bondholders incur if the risk-inducing behaviour mentioned earlier hurts bondholders. As the volatility and risk profile of the firm increases, bondholders will be hurt.

Motivation and Justification

Overall, it appears that there may be as many disadvantages as there are benefits to ESO adoption. In addition, there will be a realignment in the interests of several stakeholders. Whether the benefits outweigh the costs is obviously an empirical question. Much depends on the company and on market-specific factors like tax treatment, the market for corporate control and disclosure requirements, etc. This, then, is the motivation for this paper. The efficacy of an ESO plan in achieving desired goals depends to a large extent on market-specific goals. It would therefore be interesting to examine the impact of ESOs on post-adoption performance and whether its effectiveness is different in the Malaysian context relative to documented evidence from elsewhere. This motivation, and the fact that there has been no previous study, justifies this research. The paper is divided into five parts. Section two describes relevant previous studies. Section three lays out our research questions and methodology. The subsequent section presents our results and analysis. The final section, section 5, concludes.

LITERATURE REVIEW

Given the absence of any previously published work on ESOs in Malaysia, we examine published work on other countries – mostly those with developed markets. Taking a bird's eye view of the research findings across markets on issues related to ESOPs/ESOs, one can only conclude that the impact of giving employees stock options is equivocal. Such initiatives appear to have an ambiguous effect. While some studies find a strongly positive effect, others find opposite results.

In a broad-based study of more than a thousand US companies that have adopted ESOPs, Conte, Blasi, Kruse and Jampani (1996) examine the impact on financial returns. They report that ESOP-sponsoring companies had significantly better returns in 8 of the 13 years of their study than non-ESOP firms. They also show that size matters. Whereas the difference in financial performance was

marginally higher for large ESOP firms than for their industry peers, it was much higher for small ESOP firms relative to the sample of small non-ESOP firms. The relative superiority of ESOP firms remained even after controlling for risk. The authors also report generally lower standard deviations of stock returns for ESOP firms. Interestingly, though, ESOP firms performed better relative to non-ESOP firms, and they experienced lower financial returns post-ESOP relative to their returns in the pre-ESOP period. In explaining this apparent paradox, the authors conclude as follows. First, ESOP companies appear to be a self-selected group of superior performers, and second, most ESOPs of large companies are adopted for defensive purposes.

In another wide-ranging study, Blasi, Conte and Kruse (1996) compare 562 firms that had more than 5% employee stock ownership with other public companies. They find that ESOP firms had levels of profitability no different from those of non-ESOP firms. Once again, they find firm size to be an important determinant of ESOP impact. Small firms had the strongest profitability growth among ESOP firms. The authors conclude that despite the many arguments in favour of ESOPs, there is no automatic connection between employee ownership and firm performance.

Davidson and Worrell (1994) report findings similar to those of Blasi, Conte and Kruse (1996). Examining both the market reaction and the operational performance of 48 ESOP firms two years before and after implementation, they report that while there is a significant short-run positive stock market reaction to the ESOP announcement, there are no long-term improvements in operational performance. In fact, they find financial performance to have deteriorated in the second year following ESOP implementation. Financial performance was measured using four ratios: ROA (Return of Assets), NPM (Net Profit Margin), Asset Turnover and Debt-to-Asset. Interestingly, the asset turnover ratios had large increases, especially in the first year following ESOP. In explaining the contradiction between the positive market reaction and lack of financial improvement, the authors propose two possibilities: first, that an ESOP announcement could signal takeover defence; and second, that it could signal that managers believe the firm is undervalued and will offer cheap stock as a reward to employees.

Duffhues et al. (2002) examine employee stock option grants and firm performance in the Netherlands. Their findings are contrary to those of the US where they find a positive relationship between stock option grants and firms' operating performance. Based on a sample of 113 Dutch firms that granted employee stock options in 1997, they show that granting stock options led to better financial performance in the subsequent year. These are results consistent

with Jones and Kato (1995) as cited in Blasi et al. (1996), who find ESOP adoption to be associated with higher productivity for Japanese firms.

Examining employee stock options from a different angle, Zhang (2004) shows that in a general equilibrium setting, ESOs can be a means for firms to sell overvalued stocks in the future. Thus, investors who purchase these overvalued stocks are subsidising the firms that then issue stock options to their employees. He concludes that ESOs are strategies by which firms can capture a part of the overvaluation and that this is a key motive for granting ESOs. While this work was also based on US firms and data, the conclusion at which Zhang (2004) arrives is diametrically opposite that of Davidson and Worrel (1994), who conclude that ESOPs signal that managers believe the firm is undervalued and want to reward employees with cheap stock offers.

Finally, examining the impact of ESOs on firm's equity volatility, Mehran and Rosenberg (2007) look at US banks that have issued ESOs. They report that a bank's equity and asset volatility increase as CEO stock option holdings increase. They point out that CEOs of banks with larger stock options have an incentive to increase risk. Since non-financial firms typically have larger grants for employee options than do banks of comparable size, they argue that the incentive is likely to be magnified for non-bank firms.

If one synthesises the studies above, a number of common testable themes becomes evident. First, companies that implement ESOs have superior financial performance and lower returns volatility than do non-ESOs firms. Second, firm size matters. The efficacy of ESOs varies by size. Third, following the implementation of an ESO, there appears to be an increase in the riskiness of the firm and in returns volatility. Fourth, while the long-term impact on productivity and financial performance is mixed for US-based studies, research elsewhere has found a more positive impact. Market reaction to ESO announcements has also been mixed in the US case. Where the reaction has been positive, it has been short-lived. Finally, it appears that firms may be timing ESO issuance, either to take advantage of overvalued stocks (Zhang, 2004) or to signal undervaluation and reward employees with an offer that has a large upside (Davidson & Worrell, 1994).

DATA AND METHODOLOGY

Given the above synthesis, the rest of this paper is designed to address the following five research questions:

(i) Do ESO-granting firms have higher returns and volatility relative to their industry peers?
(ii) Do companies time their ESO issuance based on market valuation?
(iii) What is the market reaction to the ESOs announcement?
(iv) How does the operating performance of ESO firms compare to that of their peers pre- and post-ESO implementation?
(v) Does firm size influence the announcement effect and/or operating performance?

Data Description

We began with a database containing market data for all main-board companies that have been continuously listed since 1990. From these, we identified companies that had granted ESOs. After eliminating firms for incomplete data and other inadequacies, we identified a total of 26 firms that met our requirements. We then identified 26 non-ESO firms that could be matched with each of the sample ESO firms. Thus, our total sample size is 52 listed firms. Most of the data were sourced from Bursa Malaysia and Bloomberg. Our sample of ESOs spans the 12-year period from 1993 to 2005 and cuts across a wide range of industries.

Methodology

We use methodologies that are standard in the literature. In addressing the first question, we compare the stock returns and volatility of ESO firms both with their matched industry peers and on a pre/post basis. Stock returns and volatility are measured over a 4-year period that is divided into the two years pre- and two post-ESO. We determine the group mean daily stock returns and volatility as follows:

$$MDR = \sum_{J=1}^{J} \left[\frac{\left[\sum_{t=1}^{t} \frac{R_{it}}{N} \right]}{J} \right] \tag{1}$$

$$MDV = \sum_{J=1}^{J} \left[\frac{\left[\sum_{t=1}^{t} \sigma_{it} \right]}{J} \right] \tag{2}$$

$$R_{it} = ((P_t - P_{t-1})/ P_t) \times 100 \tag{3}$$

where

MDR = Group Mean Daily Stock Return
MDV = Group Mean Daily Stock Volatility
R_{it} = % Return of stock i at time t
σ_{it} = % Standard deviation of daily return for stock i
P_t = Price of stock at time t
P_{t-1} = Price of stock at time $t-1$

Following Zhang (2004) in addressing the second research question, regarding whether companies time their ESOs based on market valuation, we examine the ratio of book value to market value (BV/MV). We compute the (BV/MV) on an annual basis over the 15-year period of our database, 1990 to 2005. Identifying the year of the ESOs for each of our sample companies, we then compare the mean (BV/MV) of the ESO year with mean (BV/MV) for all other years.

In Malaysia, a listed company intending to implement an ESO scheme first gets its board of directors to approve the new issuance of shares. Once this approval is acquired, the listed company is required to immediately inform the stock exchange, Bursa Malaysia, and submit an application to the Securities Commission (SC). The exchange publicly announces the ESO application on both its website and its stock monitor. Upon the approval of the SC, the firm applies to the stock exchange for the listing of the new issues of stocks. Approval is granted by the exchange subject to the firm's getting shareholder approval for the ESOs at either the firm's Annual General Meeting or an Extraordinary General Meeting. Once shareholder approval of the ESOs is received, the firm has to determine the book closure and entitlement dates, about which it then informs the exchange. The final step is for the firm to allot and implement the ESOs. Based on this chronology of events, it appears that the point at which information about ESOs first become public is when the exchange announces the ESO proposal. Accordingly, we take the exchange announcement as the announcement date of the ESOs.

The market reaction to the ESO announcement (the third research question) is analysed using event-study methodology. We examine the Cumulative Average Returns (CARs) for the twenty days before and after the announcement date and for several shorter windows within. The Cumulative Average Returns (CARs) are determined as:

$$CAR = \sum_{i=1}^{i} \left[\left(1 + R_{it}\right) \cdot \left(1 + CR_{it-1}\right) \right] - 1 \quad (4)$$

where

CAR = The Cumulative Average Returns for Sample group
R_{it} = Return on Stock i at time t
CR_{it-1} = Cumulative Return for Stock I as at $t - 1$

We use a series of financial ratios—profitability, efficiency and leverage ratios—to measure and compare operating performance pre-/post-ESOs and across firms. In all cases, we use the t-test and the non-parametric Wilcoxon Z-test to test for differences in means. In determining whether firm size is a determinant, we sorted the 26 sample ESOs companies by market capitalisation and designated the top half (13 companies) as 'large' and the remainder as 'small'. This categorisation resulted in two groups of firms that were substantially different in size. The mean market capitalisation of the large-firms group was RM12.72 billion, whereas that of the small-firms group was RM289 million, with a difference in size of approximately 44 times. Means tests of these two size groups and analysis by size segments are used to determine the impact of size.

RESULTS AND ANALYSIS

Are ESOs Firms Superior Performers?

Our first research goal was to examine if previous findings indicating that ESO-granting companies are superior performers relative to their industry peers (Conte et al., 1996) holds in the Malaysian context. We do this by examining both the stock returns and the profit performance of ESO companies relative to their peers for a two-year period prior to the ESO announcement. Table 1 shows the results.

Stocks of ESOs firms have higher mean returns but also have lower stock volatility relative to their peers. However, neither difference is statistically significant. Looking at the three ratios, one can see that ESO firms have higher net profit margins but marginally lower ROE than non-ESOs. The lower ROE despite higher profitability may be due to the lower leverage of ESO firms, as seen from the total debt to total assets ratio. Though the mean net profit margin for all ESO firms is almost three times higher than for their non-ESOs peers, there is no statistical significance to these findings. Thus, based on these results, we cannot conclude that ESOs firms enjoy superior profitability or return performance relative to their peers. This is a result consistent with the work of Blasi, Conte and Kruse (1996).

Table 1

ESO firms versus industry peers. Profit and stock returns performance two years prior to ESO announcement.

Variable	ESO firms	Non-ESO firms	*t*-stat	*Z*-stat
			Prob-value	Prob-value
Mean daily stock return	0.0046	–0.0372	0.3127	0.5422
Volatility of daily stock return	2.9705	3.2403	0.4879	1.0000
NPM	11.73%	3.71%	0.7593	0.4310
ROE	6.96%	7.83%	0.8782	0.0164*
Total debt to total assets	17.80%	19.12%	0.8871	0.7847

Note: *significant at 5%.

Do Firms Time Their ESOs on Market Valuation?

Table 2 shows the results of our analysis of the ratio of book value to market value (BV/MV). Recall that our objective is to determine whether companies time their ESOs announcements/implementation based on market valuations of the firm.

Table 2
(BV/MV) market valuation of firms in ESO year versus non-ESO period.

	ESO year	Non-ESO period
	(mean BV/MV)	(mean BV/MV)
Mean	1.5095	1.0545
Std. deviation	1.3400	0.7670
Min	0.2656	3.3365
Max	5.0151	3.3365
Sample	26	26
	t-stat	*Z-stat*
	2.8853	2.9208
	(0.0079)	(0.0035)

The mean (BV/MV) in the year of the ESOs is 1.51, while in non-ESOs years, it averages 1.05; obviously, BV/MV is higher in the ESO year than in other years. Because higher (BV/MV) implies lower market valuation, these results imply that ESOs are announced and implemented at a time when market value is *lower* – that is, when a firm is *"undervalued"*. Timing the ESO issuance to coincide with lower market valuation would make it more favourable for employees to whom the options are granted. Because the ESO exercise price is typically some fraction of current market price, implementing it when market valuation is low essentially means granting options that would be *deep-in-the-money* under normal valuation. These results contradict the arguments of Zhang (2004) but are strongly supportive of Davidson and Worrell (1994).

Market Reaction to ESOs Announcement

In examining stock market reaction to ESO announcements, we investigate the behaviour of the Cumulative Average Return (CAR) over 20 trading days both pre- and post-announcement. Tests for difference in mean returns over several window periods are undertaken. Figure 1 and Table 3 show our results. Figure 1 plots the mean CAR aggregated across all 26 of our ESOs firms. For most of the 20 days prior to announcement, mean CAR fluctuates within a narrow band of 0.08% and 0.06%. The impact of the announcement is obvious. Mean CAR, which averages 0.08% on day –1, falls to zero on ESO announcement day – a fall of 100%. Though there is a small bounce on the day following announcement, this bounce appears temporary. By the seventh day following announcement, mean CAR is again at zero. Over the subsequent period, it moves marginally between negative and positive returns. Based on the evidence of Figure 1, it is obvious that the market reacts negatively to the ESO announcement. The fall in stock returns is sharp, and returns are nowhere near pre-announcement levels over the subsequent 20 trading days, an interval that approximates one calendar month. It also appears that the fall in stock prices is not necessarily short-lived.

Table 3 presents the results of our analysis by window period. The means test confirms what Figure 1 showed. Mean CARs in the post-announcement period are lower in each window period. The reaction is statistically significant based on both the *t*-test and Wilcoxon *Z*.

These findings are contrary to those of Davidson and Worrell (1994), who report a significant short-run positive market reaction to the ESO announcement. Even so, our finding of a negative market reaction is logical given our earlier argument that the benefits that employees receive from the option granted represent an immediate cost to shareholders.

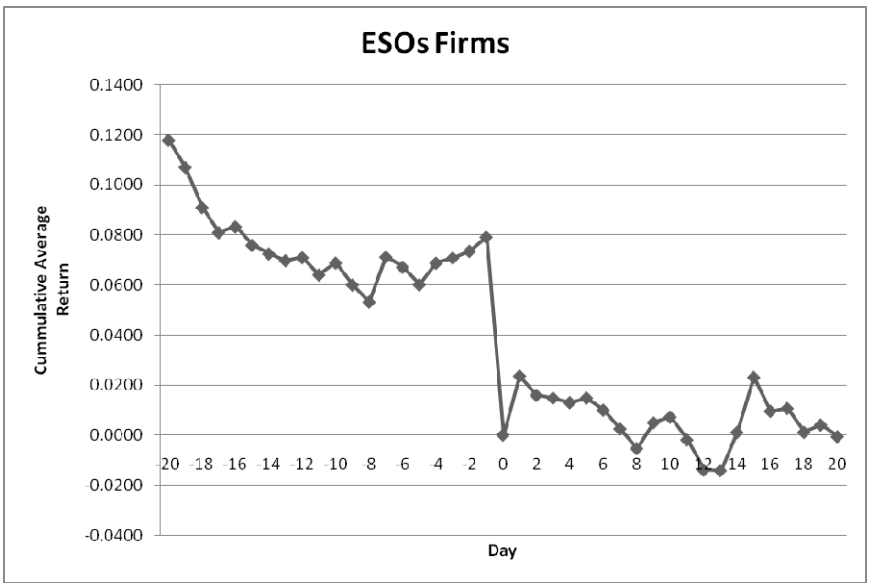

Figure 1. Plot of mean cumulative average returns (±20 days).

Table 3
Cumulative average returns by window period – All ESOs firms.

	±20		±10		±5		±1	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Mean	0.0753	0.0060	0.0673	0.0101	0.0705	0.0164	0.0792	0.0236
t-test P-value	**0.0000***		**0.0000***		**0.0000***		CR a day before and a day after the ESOS	

	±20		±10		±5	
	Pre	Post	Pre	Post	Pre	Post
Median	0.0711	0.0061	0.0688	0.0115	0.0708	0.0148
Sign rank test P-value	**0.0000***		**0.0002***		**0.0122***	

Note: *significant at 5%.

Impact of ESOs on Operating Performance

To study the impact of ESO implementation on firms operating performance, we compare a set of financial ratios 3 years before and after ESO implementation. We also examine these ratios for the one-year period following ESOs to see if there are immediate or short-term effects. To control for industry and other external factors that may be affecting the results, we also compare these ratios

with those of industry peers. Table 4(a) shows the mean of the ratios aggregated across all ESO firms and the test results for the difference in means. Looking at the three years before and after ESOs, one can see that there is an obvious decline in profitability. All three profitability ratios show a decline. However, only the decline in ROE is statistically significant according to both measures. The sharpest fall in the profitability ratios happens in the one-year period immediately following the ESOs. When we look at the efficiency ratios, we see the opposite trend. With the exception of inventory turnover, the efficiency ratios show improvement post-ESOs. Day sales outstanding shows the most significant improvement. The two leverage ratios, total debt to total assets and total debt to total equity, despite a reduction in the year following ESOs, show no significant change in financial leverage over the 3-year period.

Table 4(a)
Impact of ESOs on operational performance – All ESOs firms.

PANEL A: Comparison of year t – 3 to t + 3				
	Pre t – 3	Post t + 3	t-test P-value	Sign rank test P-value
NPM	15.56%	3.03%	0.2015	0.5822
ROA	4.64%	3.16%	0.0558	0.2165
ROE	7.84%	2.54%	**0.0075***	**0.0311***
Total assets turnover	0.41	0.45	0.2515	0.1618
Fixed assets turnover	1.05	1.07	0.2626	0.0559
Days sales outstanding	94.08	78.16	**0.0241***	**0.0163***
Inventory turnover	166.63	101.45	0.2668	**0.0340***
Total debt to total assets	18.02%	16.44%	0.4781	0.5229
Total debt to total equity	54.55	56.50	0.3740	0.8804
PANEL B: Comparison of year t – 3 to t + 1				
	Pre t – 3	Post t + 1	t-test P-value	Sign Rank test P-value
NPM	15.56%	–10.35%	0.4518	0.6115
ROA	4.64%	2.5%	0.1615	0.3669
ROE	7.84%	2.69%	0.2625	0.7032
Total assets turnover	0.41	0.48	0.1000	0.1700
Fixed assets turnover	1.05	1.15	0.4321	0.3986
Days sales outstanding	94.08	71.98	0.1010	0.1270
Inventory turnover	166.63	93.72	0.5517	1.0000
Total debt to total assets	18.02%	16.27%	0.2552	0.2940
Total debt to total equity	54.55	52.22	0.5245	0.8196

Note: *significant at 5%.

It appears from these returns that while there may be some efficiency gains post-ESOs, there may be a negative impact from a profitability viewpoint. Shareholder returns as measured by ROE are significantly negative post-ESOs. Though surprising, our findings are in line with those of Conte et al. (1996), who

report that ESOP firms had lower financial returns post-ESOP relative to returns in the pre-ESOP period. Similarly, Davidson and Worrell (1994) show that profit performance in fact deteriorated in the second year following ESOP implementation. Interestingly, Davidson and Worrell (1994) report that the efficiency ratios had large increases, especially in the year following ESOP. We, too, found improvements in the efficiency ratios.

Table 4(b)
Operational performance – ESOs and control firms.

	Comparison of year t – 3					
	Mean t – 3 ESOs	Mean t – 3 control	t-test P-value	Median t – 3 ESOs	Median t – 3 control	t-test P-value
NPM	15.56%	8.12%	0.6786	12.5%	10%	0.8183
ROE	7.84%	8.35%	0.8989	7%	11%	0.2439
ROA	4.64%	4.96%	0.8512	4%	4%	0.6827
Assets turnover	0.41	0.56	**0.0101***	0.36	0.45	0.0613
Fixed assets turnover	1.05	3.36	**0.0077***	0.72	0.83	0.0255
Days sales outstanding	94.08	78.60	0.4047	74.75	58.77	0.0851
Total debt to total assets	18.02%	19.06%	0.9992	16.61%	6.39%	0.8330
Total debt to total equity	54.55	80.36	0.3581	25.12	10.64	0.5921
	Comparison of year t + 3					
	Mean t – 3 ESOs	Mean t – 3 control	t-test P-value	Median t – 3 ESOs	Median t – 3 control	t-test P-value
NPM	3.03%	7.31%	0.8737	10%	7%	0.0762
ROE	2.54%	3.76%	0.7433	8%	7%	0.2260
ROA	3.16%	2.81%	0.7433	4.5%	2.5%	0.2260
Assets turnover	0.45	0.63	**0.0067***	0.37	0.45	**0.0466***
Fixed assets turnover	1.07	2.74	**0.0180***	0.76	0.71	0.2930
Days sales outstanding	78.16	93.66	0.4885	69.99	51.78	0.1278
Inventory day sales	101.45	188.91	0.5811	80.40	63	0.6514
Total debt to total assets	16.44%	20.94%	0.3415	11.24%	15.38%	0.2528
Total debt to total equity	56.50%	88.61%	0.2394	21.18%	21.46%	0.3827

Note: *Significant at 5%.

Table 4(b) presents the evaluation of ESO companies' operational performance in comparison with that of their peers for the 6-year period surrounding ESO implementation (3 years ±). Broadly speaking, the non-ESO companies show more stability relative to the ESO companies across all three categories of ratios. Thus, the volatility of profitability for ESOs firms, especially the net profit margin, shows up here. While NPM was much higher pre-ESO for ESO companies relative to their peers post-ESO, mean NPM is less than half that of the control firms. By the Wilcoxon measure, the lower NPM is statistically significant at a 10% level. The other variable that showed substantial change post-ESO, DSO (day sales outstanding) once again shows up here. Though DSO

for ESO companies was higher than for the control firms pre-ESO, the substantial improvement post-ESO leads to ESO firms' having much lower DSO post-ESO relative to their industry peers. At a 10% level, the hypothesis that mean DSOs are equal comes close to being rejected according to the Wilcoxon measure.

In essence, the results seen in Table 4(b) not only confirm the changes ESOs companies experience post-ESOs but also, and more importantly, enable us to rule out industry or macro factors of the changes experienced by ESO companies post-implementation.

Impact of Firm Size

Because several previous studies have identified firm size to be relevant to market reaction to ESO announcements and post-ESO operating performance, we address this issue. When we decomposed our sample by size and retested the announcement effect and post-ESO performance, we found some interesting results. Figures 2 and 3 show the plot of CARs for the 20-day window surrounding announcement for our sample of large and small firms, respectively. There is an obvious difference in the reaction on announcement day. There is a clear positive reaction among large firms, whereas small firms record a very sharp fall in CAR upon the announcement. For large firms, Mean CAR falls steadily in the pre-announcement period to reach a negative 0.12% on the day prior to announcement. On announcement, however, the favourable reaction causes mean daily CAR to rise to slightly above zero. It remains in positive territory over the subsequent 20 days. Quite the opposite seems to be the case for small firms. Mean CARs are positive and range from 0.25% to 0.30% in the 20 days prior to announcement. In fact, CARs seem to be rising over the few days just prior. The announcement sets off a sharp negative reaction, with CAR falling close to zero. Mean CARs remain mostly in negative territory over the subsequent 20 days. The ESOs announcements appear to elicit very different market reactions depending on market size. Tables 5(a) and 5(b) show the results of our tests for difference in Mean CARs by firm size. While the results for small firms [Table 5(b)] are largely in conformity with those of our overall sample (Table 3), the numbers for large firms are somewhat different. This is to be expected given the very different plot of CARs for large firms. The two main differences for large firms are in the ±20 days and ±1 day windows. Mean CARs pre-/post-20 days is not significantly different according to either the *t*-test or Wilcoxon *Z*. For the 1-day window, unlike with the negative reaction for the overall sample and small firms, we see higher Mean CAR on day +1 relative to day –1.

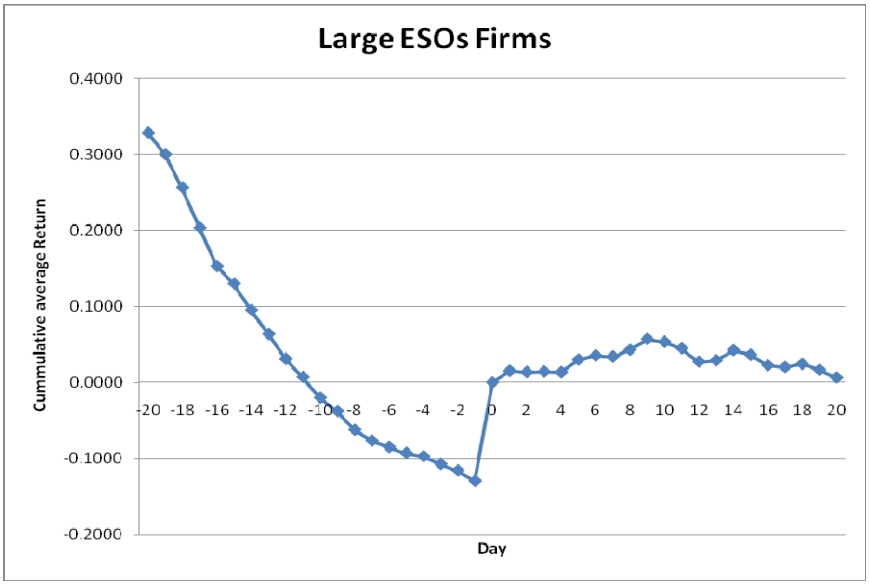

Figure 2. Plot of mean cumulative average returns (±20 days).

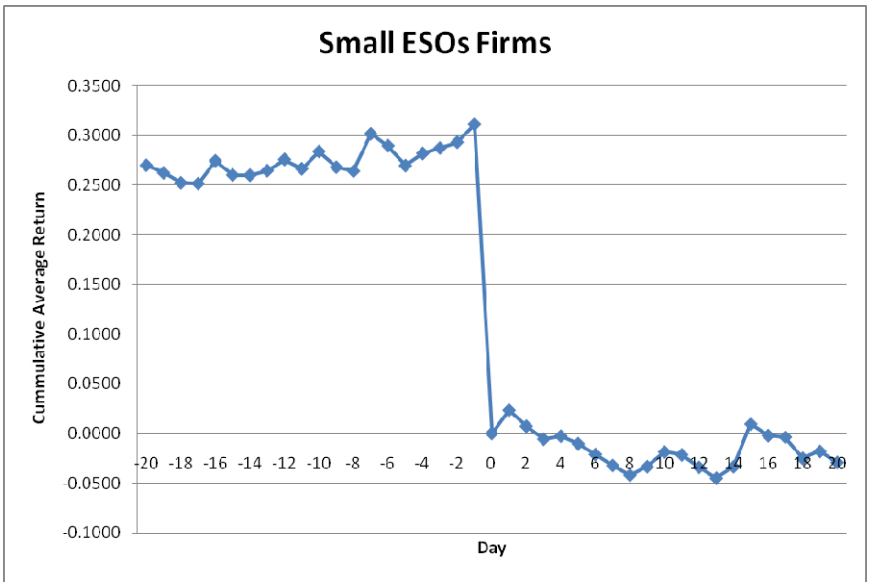

Figure 3. Plot of mean cumulative average returns (±20 days).

Table 5(a)
Cumulative average returns by window period – Large ESOs firms.

	±20		±10		±5		±1	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Mean	0.0373	0.0291	–0.0825	0.0311	–0.1086	0.0174	–0.1295	0.0154
t-test P-value	**0.8061**		**0.0000***		**0.0000***		CR a day before and a day after the ESOS	

	±20		±10		±5	
	Pre	Post	Pre	Post	Pre	Post
Median	–0.0065	0.0283	–0.0890	0.0321	–0.1075	0.0144
Sign rank test P-value	**0.4735**		**0.0002***		**0.0122***	

Note: *significant at 5%.

Table 5(b)
Cumulative average returns by window period – Small ESOs firms.

	±20		±10		±5		±1	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Mean	0.2744	–0.0170	0.2851	–0.0136	0.2887	0.0024	0.3112	0.0235
t-test P-value	**0.0000***		**0.0000***		**0.0000***		CR a day before and a day after the ESOS	

	±20		±10		±5	
	Pre	Post	Pre	Post	Pre	Post
Median	0.2698	–0.0200	0.2856	–0.0146	0.2873	–0.0027
Sign rank test P-value	**0.0000**		**0.0002***		**0.0122***	

Note: *significant at 5%.

An analysis of operational performance also shows some contrast by firm size. Table 5(c) presents our results for the 3-year window by firm size category. As with the overall sample, ROE is significantly lower for large firms. For small firms, ROE is also lower; in fact, it is negative and would be significant at a 10% confidence level. The biggest difference where profitability is concerned is with NPM. The net profit margin for large firms is hardly different between periods. However, small firms experience a very substantial fall in NPM. These results are in stark contrast to those of Conte et al. (1996) and Blasi et al. (1996), who show better profit performance for small ESO firms relative to large ones. For efficiency ratios, the results are largely consistent with those of the overall sample. The exception, however, is in the inventory turnover ratio. For large firms, inventory turnover is significantly higher post-ESOs. This is in contrast to the overall sample and small firms that had lower turnover post-ESO. For small firms, inventory turnover, though lower, is not statistically significant.

Table 5(c)
Impact of ESOs on operational performance – Large and small firms.

PANEL A: Comparison of year t – 3 to t + 3 (large ESOs firms)				
	Pre t – 3	Post t + 3	t-test P-value	Sign rank test P-value
NPM	24.13%	23.24%	0.5534	0.9999
ROA	5.71%	4.67%	0.1515	0.2385
ROE	11.11%	8.64%	**0.0434***	0.0640
Total assets turnover	0.31	0.33	0.8263	0.5189
Fixed assets turnover	0.77	0.71	0.4755	0.5075
Days sales outstanding	105.12	84.19	**0.0079***	**0.0041***
Inventory turnover	63.00	66.06	**0.0380***	**0.0202***
Total debt to total assets	20.24%	14.49%	0.1767	0.5068
Total debt to total equity	82.26	60.43	0.5620	0.6509
PANEL B: Comparison of year t – 3 to t + 3 (small ESOs firms)				
	Pre t – 3	Post t + 3	t-test P-value	Sign rank test P-value
NPM	7%	–15%	0.2255	0.6185
ROA	3.59%	1.81%	0.2751	0.7116
ROE	4.67%	–2.89%	0.0845	0.3814
Total assets turnover	0.51	0.56	0.1276	0.1314
Fixed assets turnover	1.25	1.32	0.5988	0.5362
Days sales outstanding	86.16	74.19	**0.0497***	**0.0143***
Inventory turnover	299.87	143.48	0.8230	0.5294
Total debt to total assets	15.92%	18.13%	0.4469	0.3663
Total debt to total equity	29.92	53.09	0.0795	0.2294

Note: *Significant at 5%.

The leverage ratios also show sharp contrast across size categories. For small firms, both leverage ratios are higher post-ESO. Though both ratios are not significantly higher at 5%, the total debt to equity ratio would be significantly higher post ESOs if a 10% level were used. Thus, small firms appear to increase their gearing post-ESO. For large firms, on other hand, leverage is actually lower post-ESO. Both ratios show a substantial fall in leverage in the 3 years post-ESO relative to the earlier period. All in all, it appears that from an operational viewpoint, large firms experience a more positive impact of ESO implementation than do small firms. Interestingly, the market seems to know this and therefore reacts positively upon ESO announcement for large firms and negatively for small ones.

SUMMARY AND CONCLUSION

This paper examined several issues related to the implementation of ESOs among Malaysian companies. Examining a total of 52 companies, 26 ESO firms and their matched industry peers over a span of 12 years, we find results that both

conform to and contradict US-based studies of ESOs/ESOPs. Beginning with a comparison of ESO firms with their industry peers, we found that ESO firm stocks have marginally higher mean returns and lower volatility. However, the profitability picture was mixed. These findings are consistent with those of Blasi et al. (1996), who find US ESOs firms to have profitability levels no different from those of non-ESOs firms. In examining whether companies time their ESOs to sell overvalued shares (Zhang, 2004) or signal that their shares are undervalued and thereby reward employees with shares that have a potential upside (Davidson & Worrell, 1994), we find the evidence to be strongly supportive of the latter. It appears that Malaysian companies are more likely to initiate ESOs when the market valuation of their stocks is low. If there is any deliberate timing, it is that most favourable to employee recipients. Given the typical discount off market prices, such timing implies that employees can obtain a deep *in-the-money* call option for free.

Contrary to US studies that find a significant short-term positive market reaction to the ESOP announcement, we find the opposite. Our results show the market reaction to the ESO announcements to be significantly negative. Furthermore, stock prices have not seemed to recover to pre-announcement levels during at least the subsequent 20 trading days or one calendar month. Thus, not only is the market reaction negative; it is also not short-lived. Looking at post-ESO operating performance, we find profitability to be lower than in the pre-ESO period. The sharpest fall came in the immediate one-year period following ESO announcement. The efficiency ratios, however, did show improvement. Surprising as it may be, these findings are again consistent with Conte et al. (1996) and Davidson and Worrell (1994). To see if industry or environmental factors may be driving the results, we compared the operating performance of ESO firms with that of their industry peers. Here the fall in profitability for ESOs firms, especially the NPM (net profit margin) became more convincing. Though the NPM was higher for ESO firms pre-ESOs, it fell to less than half that of non-ESOs firms in the 3 years following. Similarly, some of the gains in efficiency that ESO firms had post-ESO become more evident when compared to those of their peers. Such comparative analysis effectively ruled out the possibility that the changes seen for ESO firms were being driven by external factors.

Firm size has been identified as a key determinant of the efficacy of ESOs/ESOPs in US-based studies. Indeed, we find this to be the case for Malaysian ESOs. First, upon examining market reaction by firm size, we find a positive announcement effect for large firms but a significantly negative one for small firms. The ESO announcement appears to elicit a very different market reaction based on firm size. Though initially a puzzle, this different market response makes sense when we examine post-ESO operational performance. First, while the NPM was little changed post-ESO for large firms, small firms

experienced a substantial fall in NPM post-ESO. Second, large firms had lower financial leverage post-ESO, but small firms had significantly higher leverage. The D/E ratio for small firms post-ESO was almost double that of their pre-ESOs level. The fact that small firms show falling profits despite the much higher leverage points to the differential impact of ESOs by firm size.

These results obviously raise several questions. Four important ones are (i) Why is the market reaction to ESO announcements different by firm size?; (ii) Why is the ESO impact on operating performance different?; (iii) What do these results imply about which stakeholders gain and which lose?; and finally (iv) Are objectives and rationale for ESOs being met? We address these questions below.

We saw in Figures 2 and 3 the market's reaction to the ESO announcements. The immediate reaction was negative for small firms but positive for large ones. In addition, CARs over the subsequent 20 trading days were in negative territory for small firms, whereas for large firms, they were in positive territory. Given our specification of CARs, this implies that small firm stocks continue to decline in price, whereas large firm stocks rise. Though puzzling, the market reaction seems sensible when we consider the poor operating performance post-ESO of small firms relative to large ones. Based on our results, it appears that the impact of an ESO is negative for small firms but somewhat neutral for large ones. The market appears to anticipate this outcome and react accordingly.

As for why the impact of ESOs on operating performance is different by firm size, we can only conjecture that in the case of small firms, employees – especially management, who by virtue of the ESOs have become shareholders – may be appropriating more benefits to themselves at the expense of external shareholders. In other words, the agency problems may have worsened in the case of small firms. This appears to be the only plausible explanation given the numbers in Table 5(c). The efficiency ratios for small firms show marginal improvement, and financial leverage is significantly higher – which, even if other factors are unchanged, should lead to automatically higher profits. However, we see a sharp reduction in profitability. While the ESOs should align the interests of employees (especially management) with those of shareholders, the reality may be different particularly if the proportion of shares held by employees is small. When the stake is small, the management will continue to have an incentive to appropriate more benefits for themselves because the marginal cost of reduced share dividends will be much lower than the marginal utility of the benefits that accrue to them alone. Such appropriation of benefits away from shareholders assumes that market scrutiny may be lacking. We believe that this is indeed the case for small firms in Malaysia. The Malaysian stock market has a dichotomous

market structure. One could argue that all the smart money and institutional players have their holdings in a small pool of large market capitalisation stocks, while the retail players are mostly in the smaller/lower priced stocks. As such, small firms simply do not have the research coverage or analyst scrutiny that large firms have. It should be noted that the small firms in our sample had a mean market capitalisation approximately 44 times smaller than that of the large firms group.

As for who gains and who loses from ESOs, our results confirm our earlier arguments. Employees obviously gain, especially because Malaysian firms appear to time their ESOs to coincide with periods when market valuation is low —in effect, granting employees free call options that would be deep *in-the-money* under normal circumstances. On the other hand, shareholders obviously lose. They lose in three ways: first, in the discount prices given to ESO recipients; second, by way of dilution; and third, from the deterioration of ROE. It is obvious that the shareholders of small firms lose even more given the greater diminution in profits. As for the third category of stakeholders, the bondholders, the contrast according to firm size is substantial. Bondholders of large firms are affected only marginally. Profits are slightly lower post-ESO, but so is financial leverage. Thus, the impact on them is minimal. Bondholders of small firms, however, may be substantially worse off. Their firms experience sharp falls in profitability with a simultaneous increase in financial leverage. This will undoubtedly hurt the value of their bonds.

Are the objectives and rationale of the ESOs fulfilled? Our results certainly do not seem to suggest that they are. If the goal is to motivate employees, realign their interests with those of shareholders and thereby enhance firm performance, we must also say that these objectives are not being met. Even the takeover defence argument will not hold given Malaysia's regulated environment for corporate control. The ESO story may still be a fable, a matter of wishful thinking. As Davidson and Worrell (1994) put it, *"It appears that sprinkling a little stock around will not necessarily guarantee enhanced firm performance".*

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