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OPEN MARKET REPURCHASES AND STOCK PRICE INFORMATIVENESS: EVIDENCE FROM MALAYSIA STOCK MARKET

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ABSTRACT

The aim of research paper is to examine the effect of stock price informativeness, which is conveyed by stock prices, on firm's open market repurchases (OMRs) activity. The finding of study is to provide evidence of presence of managerial learning whereby managers could use firm-specific stock return variation to buy back their shares via open market. Evidence is found in the subsample analysis where target sample is separated to two subsamples periods and test separately based on stock market performance. The finding of the 1st subsample (Q12008-Q42013) for OMRs activity indicates that variation of stock return and firm size significantly and positively explains OMRs activity. The finding of 1st subsample is robust in terms of random and fixed effect model. The finding implies that managers observed and learned information from firm-specific variation in stock return during financial crisis and recovery periods when performing open market repurchases.

Keywords: Open market repurchase, managerial learning hypothesis, stock price informativeness, firm-specific return variation, informed trading

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INTRODUCTION

A stock repurchase is beneficial to shareholders as firm's earning distributed by fewer shares to shareholders as if owning a bigger stake of ownership in a firm without having to buy more stock. Although earnings per share does not increase in lockstep with share prices, they are closely related, which has helped to sustain the stock market rally going even in a slow-growth environment. Since the past few decades, research work has been devoting to observe and examine post-repurchase performance, reaction or response of stock price as well as stock price behavior after the firm stock repurchase. Based on repurchase literature and empirical evidence, firm repurchase or buyback stock for several motives: signaling undervaluation, price support and others. Furthermore, several research hypotheses such as cash flow hypothesis, signaling theory and market-timing theory are discussed in repurchase literature and tested empirically on stock repurchases. Particularly, the presence of market-timing theory is evidenced in some research findings (Brockman & Chung, 2001; Chan, Ikenberry, & Lee, 2007; A. Dittmar & Field, 2015; Yook, 2010), nevertheless it is still controversial on the presence of market-timing skills on repurchase as no such evidence found in some empirical research (Ginglinger & Hamon, 2007).

Though insider possessing more information than outsider that being well-accepted in finance literature, another growing strand of literature assert that outsiders possess information that manager do not and manager learn that information (Chen, Goldstein, & Jiang, 2007; Durnev, Morck, & Yeung, 2004; Dye & Sridhar, 2002; Foucault & Fresard, 2012; Fresard, 2012; Luo, 2005). Investment bankers, fund managers, investment analyst, industrial experts and financial news journalists may be superior than firms at analyzing and interpreting publicly-available information in multi-perspectives, often more superior to firms by looking things at broader view and producing useful private information from analysis. Furthermore, advancement of information technology and system make financial database available and accessible for analysis and research, is a catalyst for producing useful information.

Stock prices can carry private information, as highlighted by (Q. Chen et al., 2007), that owned by market traders on the products demand, the investment opportunities, the competitive environment firms operates, and the effects of the past decisions made by managers. The information mechanism underlying managerial learning derives from the well-established idea that diverse pieces of information aggregated and transmitted into stock prices via the trading activities of a myriad of different investors and speculators (Fresard, 2012). Thus, managers can obtain novel information on from their observation of the level and dynamics of the firm's valuation on secondary financial markets (Bond, Edmans, & Goldstein, 2012). Not denying that investors and market traders may have lack of detailed information, such as business model, strategy, innovation and technology used. Still, stock market may deliver information impounded in stock price that is auxiliary to the information held by the firm's managers. Thus, stock market is not simply an exchange in that it could influence decision making in the real side of the economy via an informational channel.

The usefulness of information content of stock price and the managerial learning hypothesis has become an intriguing research area and start to draw research attention. In fact, a recent strand of empirical evidence supports managerial learning hypothesis that indicate manager learn information from stock price when making investment decision (Ben-Nasr & Alshwer, 2016; Q. Chen et al., 2007) and corporate finance decision (Kalok Chan & Chan, 2014; De Cesari & Huang-Meier, 2015). Luo (2005) opined that the presence of managerial learning hypothesis is not only applied in merging and acquisition but also other corporate finance decision such as stock repurchase, stock issuance, corporate strategy change and the appointment of top managers. Based on that reasoning, it leads the researchers to suspect that success of managerial market-timing in repurchase could be associated with information learned from the stock price.

A question whether of how the information content of stock price (in other words, stock price informativeness) would affect managerial market-timing of repurchase has never been studied thus far. This paper intends to review how stock price informativeness (SPI) affect corporate finance decision and discuss the potential effect of SPI to stock repurchase. To the best of our knowledge, this empirical paper is the first to discuss potential relationship between SPI and firm stock repurchase. Contribution of this review paper is twofold. Firstly, it documents an insight on how manager exploit the information they learn from the stock market when decide on repurchase, this paper adds to the growing literature on managerial learning. Secondly, the informational role played by stock price on firm stock repurchase determine when manager should buyback or not, this paper helps to bridge this gap theoretically. By developing strong theoretical knowledge, this paper supports future empirical research to empirically assess managerial learning hypothesis that applied in firm stock repurchase. Such evidence is very crucial to managers and practitioners as it will have a great implication on the improvement managerial market-timing skill in their stock repurchase using informational content of stock price.

If variation of firm's stock return is useful to learn in the context of stock repurchase, one may ask: could managers learn and use information conveyed by firm's stock prices to take advantage of stock market? The rationale of firm performing stock buyback instead of cash dividend based on information-signalling hypothesis, documented mostly in finance literature, is that stock repurchase is perceived as a signal to manager's belief that firm's stock is undervalued. However, it could be also due to different motives such as stabilizing stock price, altering capital structure and cumulating shares for employee stock option plan. Furthermore, how do managers know the current stock price is lower enough to perform stock repurchase even though they know the stock is currently undervalued? The market-timing hypothesis contends that managers purchase stock when they own more favourable information than when not buying stock. We do not oppose that hypothesis, instead the researchers address the issue of poor managerial timing on repurchase. Leading to key question of whether private information is useful to tell managers the right time to repurchase. The research paper intends to extend and complement the existing literature on private information conveyed by stock

prices toward OMRs, that has essentially overlooked its possible role play as determinant of OMRs, by testing with stock price non-synchronicity developed by Roll (1988) – a measure of private information.

The main research objective of this paper is to examine the effect of SPI on open market repurchases (OMRs) activity. The finding of this study is expected to be useful in managerial market timing ability whereby managers could use private information conveyed stock price to decide their open market repurchase. With the market timing ability presented in OMRs, managers could repurchase shares at lower prices at which increasing firm value and shareholders' wealth. The article is designed the following sections; the second will describe literature review and research framework. The data collection procedure and the methodology discussion will be explained in Section Three. The next part includes the empirical results in addition to the discussion of the finds. Final section will explain the conclusions of the study.

LITERATURE REVIEW

Empirical evidence of Market-Timing of Repurchases

Brockman and Chung (2001) examine in managerial timing ability hypotheses in open market repurchases (OMRs) and find that managers could time open market repurchase (OMRs) via private information which is gauged by widening bid-ask spread. Ginglinger & Hamon (2007) find that stock repurchase significantly reduce liquidity of the market based on reduced bid-ask spread after repurchase (support liquidity hypothesis and hence reject the market-timing hypothesis). Opposing to the finding of Brockman and Chung, (2001); Ginglinger and Hamon (2007) claim that share repurchase largely reflect contrarian trading rather than market timing. Lie (2005) documented evidence of operating performance improvement in post-actual repurchase suggesting that actual repurchases, and not announcements itself, foretell firm's future performance improvements. Chan et al. (2007) report evidence of abnormal stock performance following buyback announcements. Evidenced by Bozanic (2010), that the amount of share repurchase is negatively related to the stock return of the previous month but is positively related to that of the following three months. Yook (2010) finds strong evidence that repurchase shares actually experience significant long-term abnormal returns. Those empirical evidences of post-buyback performance are supporting the notion that managers possess timing ability.

Review on Informational Content

Stock returns fundamentally reflect to new market-level and firm-level information capitalized into stock prices. French and Roll (1986) and Roll (1988) suggest that a significant portion of stock return variation is not attributable to general market and industry movements

and suggests that these residual movements represent the impounding of firm-specific information into prices. A process of incorporating information into stock price is continuous from time to time. Roll (1988) shows firm-specific variation is largely unrelated with public announcement but due to trading by investors with private information. The less firm-specific impounded into the firm's stock price, the lower firm-specific variation of stock price leads to higher correlation between stock returns and market returns, thereby indicating higher level of stock price informativeness (SPI), in other words higher stock price synchronicity. If the more reflective of stock price to firm-specific information firm's stock price will have less synchronous movements (high level of SPI). SPI or stock return non-synchronicity is commonly referred to the amount of firm-specific information impounded in stock prices, supported by considerable empirical researches in finance (Bai, Hu, Liu, & Zhu, 2017; Ben-Nasr & Alshwer, 2016; Kalok Chan & Chan, 2014; Crawford, Roulstone, & So, 2012; De Cesari & Huang-Meier, 2015; Ferreira, Ferreira, & Raposo, 2011; Fresard, 2012; Vo, 2017). These studies argue that firm specific return variation is a good proxy which reasonably measures the rate of private information incorporated into prices via trading.

Managerial Learning Hypothesis

An important channel for manager obtaining novel information on their firm is based on the observation of the level and dynamics of the firm's valuation on secondary financial markets (Bond et al., 2012). The managerial learning hypothesis suggests that managers can learn new private information from their stock prices that helps improving their decisions efficiency (Ben-Nasr & Alshwer, 2016; Kalok Chan & Chan, 2014; Q. Chen et al., 2007; Fresard, 2012; Hayek, 1945), hence increases the value of the firm. In fact, managers use all available information, which contains their own private information and investors' private information capitalized in stock price, to decide level of investment that maximizes the expected value of their firms (Foucault & Frésard, 2012).

Review on association between stock price informativeness and corporate finance decisions

Some prominent theoretical researches embed managerial learning theory into their research theoretical framework or model to study effect of stock price informativeness (SPI) in different context of corporate finance decision making: investment (Dow & Gorton, 1997; Dow & Rahi, 2003; Foucault & Gehrig, 2008; Strobl, 2014), merger and acquisition (Luo, 2005). Together with some growing empirical evidences support the managerial learning hypothesis that managerial decisions reply in part on information conveyed in stock prices. To the best of our knowledge, only these empirical researches associating SPI with corporate finance decision are found available hitherto in finance literature, as shown in Table 1.

Table 1 Literature review matrix on the effect of stock price informativeness on corporate finance decisions

Author	Research Objective	Measure of stock price informativeness (SPI)	Findings: Effect/ relationship
Durnev, Morck, & Yeung (2004)	To find relationship between stock price informativeness (SPI) and **efficiency of corporate investment**	• Firm-specific stock return variation	**Positive**
Luo (2005)	To examine relationship between SPI and **mergers & acquisitions (M&A) decision**	• High-tech status • Bidders size	**Positive**
Chen, Goldstein & Jiang (2007)	To test effect of SPI on **investment sensitivity to stock price**	• Price nonsynchronicity • Probability of informed trading	**Strong positive**
Wang, Wu, & Yang (2009)	To find linkage between SPI and **firm level investment** in China	• Firm-specific stock return variation	**No**
Foucault & Fresard, 2012	To study effect of SPI on **investment decision** among cross listed firms	• Firm-specific stock return variation	**Positive**
Fresard, (2012)	To determine whether manager use SPI to decide on **corporate cash saving**	• Firm-specific stock return variation • Amihud Illiquidity ratio • Llorente private information trading measure	**Positive**
Chan & Chan (2014)	To analyze effect of SPI on the **pricing of seasoned equity offering (SEO)**	• Price nonsynchronicity (firm-specific stock return variation	**Negative**
Zhu, Jog, & Otchere (2014)	To test SPI (reflected by idiosyncratic volatility) and **M&A decision**	• Firm-specific stock return variation • Idiosyncratic volatility	**Positive**
De Cesari & Huang-Meier (2015)	To examine the effect on SPI on of **dividend changes**	• Firm-specific stock return variation • Amihud Illiquidity ratio • Probability of informed trading	**Positive**
Ben-Nasr & Alshwer (2016)	To investigate impact of SPI on **labor investment efficiency**	• Firm-specific stock return variation • Amihud Illiquidity ratio • Probability of informed trading	**Positive**

Observed from the review matrix above, recent researches have intended to answer whether managerial learning assists in making more informed corporate finance decision which varies ranging from investment to merger & acquisition. In term of construct, more generally, firm-specific stock return variation is adopted to measure stock price information.

With respect to investment decision, Durnev et al. show that more informative stock prices help improving investment efficiency. Similarly, Chen et al. (2007) report evidence suggesting that SPI is associated with higher investment-stock price sensitivity, hence more efficient investment. Foucault and Fresard (2012) finding, which supports managerial learning hypothesis, indicates higher investment sensitivity to stock price with its large sample of cross listing firms in United States and they address that SPI affect other corporate decisions. Nevertheless, Wang, Wu, and Yang (2009) found no relationship between SPI and investment decision yet they address their finding due to substantial government ownership in many listed firms in China that dampens free trading. In the context of M&A, positive impact of SPI found by Luo, (2005) though other proxies of gauging SPI employed, unlike the literature suggesting firm-specific stock return variation. Similar finding (positive) found in Zhu, Jog, and Otchere (2014), their finding indicate that acquirers who are informationally disadvantage are likely to take over other firm and pay higher premium.

In terms of other corporate finance decision, Fresard (2012) shows that higher SPI improves the efficiency of corporate cash savings decisions. Chan and Chan (2014) study the effect of SPI on seasoned equity offering and found negative relation between stock return synchronicity and discount of Seasoned Equity Offering (SEO). The negative relation is strongest when there is no analyst coverage, and it declines as analyst coverage increases. With respect to the effect of SPI on dividend policy, De Cesari and Huang-Meier (2015) adopt firm specific variation as a measure of private information and find positive relationship between SPI and dividend changes. Their finding suggests that managers learn new information from stock price when deciding dividend policy. Ben-Nasr and Alshwer (2016) find evidence of usefulness of SPI on labour investment efficiency. These theoretical work and empirical evidences discussed provide us some clues or insights on potential formulation of association between SPI to repurchase decisions.

Association between stock price informativeness and stock repurchase

Relating to the afore-discussed repurchase literature, this review paper would like to draw research attention on the effect of stock price informativeness (SPI) on market timing of repurchase. The researchers contend that information that managers already had will move the price as it already affected the past repurchase but not affect the current repurchase decision. Information that manager do not have (in other words, private information from firm's stock price) could affect the current repurchase decision. That argument of how timing of information affecting corporate decision is similar to the assertion by Chen, Goldstein, & Jiang (2007). Based on this reasoning, it is suspected that positive relationship between

repurchase sensitivity to firm's stock price and the amount of private information incorporated into the firm's stock price by speculators would imply that the private information in firm's stock price is new and novel to managers and that managers observe at the stock price to learn this information and adopt it in timing stock repurchase.

Coupled with some reasons that could plausibly explain how SPI can affect managerial stock repurchase in several ways: Firstly, stock prices convey private information that managers do not possess such as information about future investment and growth opportunities (Dow & Gorton, 1997), future demand of the firm's products and services, and financing opportunities (Subrahmanyam & Titman, 1999), resource allocation (Dye & Sridhar, 2002), thus all these guides manager in making repurchase decision (Luo, 2005). Secondly, more informative stock prices are associated with better external and/or internal monitoring of managers (Ferreira et al., 2011; Holmstrom & Tirole, 1993) and lower agency cost (Strobl, 2014), hence mitigate the potential overpaid in buyback or avoid unnecessary buyback. Third, lower of SPI (lower firm-specific variation of stock price) is the outcomes of more disclosures, transparency, better governance environment and a higher quality of financial reporting (Dasgupta, Gan, & Gao, 2010; Farooq & Hamouda, 2016; Hutton, Marcus, & Tehranian, 2009; Jin & Myers, 2006), which alleviate information asymmetries and improve informed trading (Fernandes & Ferreira, 2009), hence promote price correction from undervaluation and price efficiency. As the higher information asymmetry, it strengthens the sentiment-driven mispricing effect (Liang, 2016). SPI is higher in less informative environment since more private information impounded into stock price by speculators, the researchers argue that these allows managers to be superior in timing their stock repurchase. Given no research been conducted thus far, it is intriguing to have deep insight on relating SPI and managerial market timing repurchase, it would be meaningful for the future empirical research in the particular context of stock repurchases.

RESEARCH FRAMEWORK

Referring to the established finance literature that publicly-available information on variables such as debt level (Bagwell & Shoven, 1989), firm size (De Cesari, Espenlaub, Khurshed, & Simkovic, 2012), free cash flow (Chan, Ikenberry, & Lee, 2004; De Cesari et al., 2012). The recent study De Cesari & Huang-Meier (2015) find evidence of the impact of variation of firm's stock return on cash dividend. Yet, the association between the information carried by firm's stock prices and stock repurchase has received little attention, to our best knowledge and considerable ambiguity about the impact of variation of firm's stock return on stock repurchases. Due to the fact that, both public and private information can be used by managers when deciding open market stock repurchase, is neglected by existing literature. The main objective of this study is to close this gap in the literature. In other words, this study provides a vital insight into the determinants of stock repurchase by taking informed trading into account. The research framework of the study is constructed as follow:

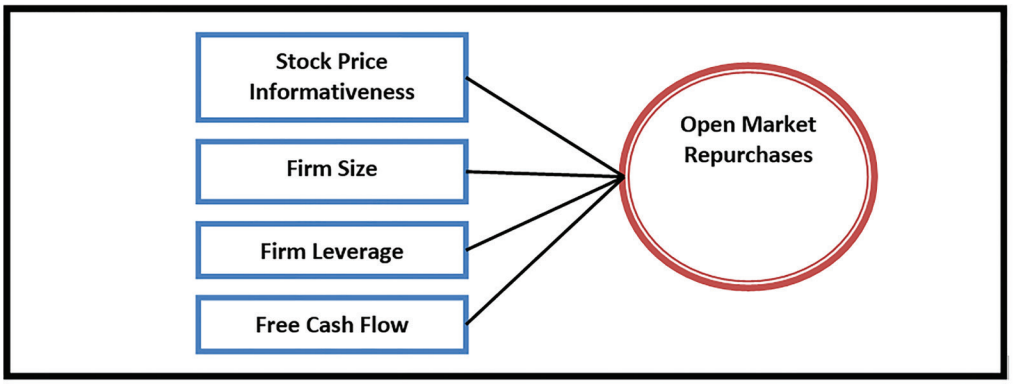

Figure 1 Research Framework

i. Open Market Repurchases

A listed firm can repurchase its own stock by distributing wealth to existing shareholders instead of paying cash dividend in exchange for a fraction of the company's outstanding equity. That is, firm cash is exchanged for a reduction in the number of shares outstanding. The company usually keeps repurchase shares as treasury stock. This paper focuses on open market repurchases as it is most common buyback approach as compared to other method such as privately negotiated repurchase and tender offer repurchase.

ii. Stock Price Informativeness

Firm-specific return variation is a measure for stock price informativeness. Suppose that managerial learning takes place based on information from variations in firm's stock return, lower variation indicates higher informed trading environment. Vice versa, higher variation shows less informed traders. Manager could exploit information of this variation when buyback firm's stock. Consider managers learn this information of variation before repurchases, a lag variable of variation of firm's stock return is applied and regressed on OMRs. The expected of relationship is unknown, but it is expected to be significant. Either positive or negative, its significance would indicate information of firm's stock return variation is useful for stock repurchase activity.

iii. Firm Size

The fair value of the stocks of small companies is probable to be less specifically known by investors than that of large and well-known company. Hence, shares of small companies are likely to be undervalued and leads to more open market repurchase activity than large companies OMRs activity. Firm size is expected to have positive effect on OMRs activity.

iv. Firm Leverage

Firm leverage simply refers to firm debt level. Higher the firm debt, higher the firm leverage. Firm leverage may influence buyback decision. Since repurchasing stock will increase leverage, firm with higher debt are less tendency to repurchase stock because higher level of

firm's leverage will increase expected bankruptcy cost (Boudry, Kallberg, & Liu, 2013). Firm with higher debt ratio would tend not to repurchase, thus it is expected to have negative impact on repurchase. Though there are not standardized measures in the literature, firm debt ratio is the commonly used in the literature.

v. Free Cash Flow

Cash-rich companies are financially very flexible and can always find available cash to repurchase stock whenever their own stocks can be purchase at cheaper price. The firm may use its cash reserve for future investment, dividend distribution, and share repurchase (Jagannathan, Stephens, & Weisbach, 2000). Higher free cash flow the firm has, managers tends to pay out this cash flow to investors in the form of repurchases to avoid agency costs (Boudry et al., 2013). Thus, it is expected to see positive relationship between free cash flow and OMRS.

DATA COLLECTION AND MEASURE OF VARIABLES

A sample of 50 Malaysia firms listed on Bursa Malaysia is manually selected. Firms that have new shares issuance or have outstanding preferred shares are excluded. Only share repurchases conducted via open market are included in the sample. A total of 908 firm-quarter observations is manually-hand-collected data from Bloomberg Database for each quarter over the period 2008–2015. Since certain firms start their repurchases at different quarter and few firms are listed within the sample period and cause some missing values in the data. Due to that, it thus results an unbalanced panel dataset.

Measure of Open Market Repurchases Activity

Most past researches adopt repurchase program announcement as the proxy for open market repurchase, literature has documented that many announced repurchase programs were not executed (Haw, Ho, Hu, & Zhang, 2011). This would cause overestimation on the OMRs. Actual shares repurchased are reflected in the firm treasury shares but repurchase literature contends that increase treasury shares may be related to common stock repurchase. Since firms with outstanding preferred shares are removed from the research sample, firm's treasury shares are still a valid measure for OMRs. Thus, firm treasury shares (TSTOCK) are employed as a proxy to OMRs activity (Firth, Leung, & Rui, 2010). Another measure for OMRs activity is the percentage change in firm treasury shares which intends to capture the impact of public and private information on change in repurchase.

Measure of Stock Price Informativeness

A commonly used measure of SPI is variation of firm-specific stock return, developed by Roll (1988). Follow Roll (1988), the measure reveals the variation in a stock return that unable to be explained by market and industry returns. For a stock i, variation of firm's stock return (denoted as SPI) can be defined as $SPI = ln((1 - R^2)/R^2)$, where R^2 is estimated from the following regression model using Ordinary Least Squares (OLS):

$$r_{i,j,t} = \alpha_i + \beta_{i,m} r_{m,t} + \beta_{i,j} r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the daily stock return for firm *i* that is part of industry *j* at time t, $r_{m,t}$ represents the daily return of a stock market at time *t*, and $r_{j,t}$ is the daily return for industry/sector *j* at time *t*. Firm *i* is excluded from the market and industry indices when computing market and industry returns. The firm-specific return variation is estimated by computing the R^2 generated by the regression above based on its definition. Daily returns of the market index and daily returns of the industrial index are regressed on daily stock over a quarterly sample based on calendar date. R^2 is extracted and manually-hand-collected from each quarter-OLS to make a series of quarterly data from 2008 to 2005. The procedures are repeated for 50 firms.

Roll (1988) claims that there is a relationship between firm-specific return variation and private information. Since trades of investors are holding private information that generally cause stock price movement, and finance literature relate that information held by traders to price non-synchronicity (e.g. Durnev et al., 2004; Piotroski & Roulstone, 2004). There are substantial empirical researches give credence to the conception that firm-specific return variation is a valid measure of private information in stock prices (Durnev, Morck, Yeung, & Zarowin, 2003; Morck, Yeung, & Yu, 2000). Durnev et al. (2003) validates this measure in the most convincing way in their empirical research. Their finding reveals a negative relationship between R^2 and the strength of the relationship between current stock returns and future earnings, implying that the information conveyed by the current stock prices is more useful in anticipating future earnings when firm-specific return variation represents a larger portion of total return variation. In fact, firm-specific return variation is commonly adopted by finance researchers to gauge private information in stock prices.

Measure of Publicly Known Variables

Variables	Measure or Proxy
Firm Size	Natural logarithm of firm market capitalization (similar proxy as in De Cesari et al., 2012)
Firm Leverage	There is not a standardized measure, different measures are used in the literature. Firm leverage is defined as the ratio of long-term debt to total assets. (similar proxy to that of Bonaime, Hankins, & Jordan, 2016)

Free Cash Flow	Free cash flows (FCF) is calculated as: (Net Income + Depreciation &Amortization – Change in Net Working Capital – Capital Expenditure)/ Sales. (Similar proxy adopted in Chen & Lu, 2015)

Econometric Model

Two panel regression models are estimated:

$$OMR_{i,t} = \alpha_{i,t} + \beta_1 SPI_{i,t} + \beta_2 Size_{i,t} + \beta_3 Debt_{i,t} + \beta_4 FCF_{i,t} + \varepsilon_{i,t}$$

$$\Delta OMR_{i,t} = \alpha_{i,t} + \beta_1 SPI_{i,t} + \beta_2 Size_{i,t} + \beta_3 Debt_{i,t} + \beta_4 FCF_{i,t} + \varepsilon_{i,t}$$

Where:

Variables	Notation in model
Open market repurchase	OMR
Growth in repurchase	ΔOMR
Stock Price Informativeness	SPI
Firm Size	Size
Firm Leverage	Debt
Firm free cash flow	FCF

Firm market capitalization, a measure to firm size, has huge figures in billions, natural logarithm is therefore applied to that variable. LSPI is the lagged-one-quarter variable based on the notion that managers learn information derived by firm's stock returns before repurchase. Once all quarter-R^2 for 50 firms are extracted and computation of variation firm-specific returns is completed, panel data estimator is employed to examine the relationships among variables. The rationale of using panel data estimator is assuming heterogeneity among firms and the independent variables may be subject to firm-invariant and time-invariant that may affect stock repurchase (See: Baltagi, 2013). In other words, the independent variables vary across firm and time.

DISCUSSION ON FINDINGS

The findings are very disappointing since none of variables are significantly contributing any explanation to OMRs activity for both measures, as presented in Table 2. The variation of firm's stock return, LSPI, does not affect firm stock repurchase activity. The public information

variables do not affect firm's OMR activity. Particularly on firm size, the finding of this paper makes inconclusive comparison with past empirical findings. De Cesari et al. (2012) finding show evidence of small size firms having better timing profits in repurchase than large firms. There is however no significant relationship between firm size and firm repurchase activity found in this paper. Both leverage and free cash flow are found have no effect on: stock repurchase activity(Firth et al., 2010); decision to repurchase (a dummy variable equal to one when firm repurchased shares) (Boudry et al., 2013); relative repurchase price - timing measure (A. Dittmar & Field, 2015). Similarly, this paper finds no support for the notion that both debt and free cash flow that play significant role in determining the repurchase activity for the 50 firms in the sample. In term of firm leverage, its insignificance is in line with Chen and Lu (2015) findings.

Table 2 Finding for the main sample (Q12008 to Q42015)

Model	Dependent variable: OMR		Dependent variable: ΔOMR	
	Coefficient	*t*-statistic	Coefficient	*t*-statistic
Constant	−18.0464	−0.65	−1.4845	−0.04
LSPI	0.6787	0.17	0.7963	0.14
Size	5.1630	1.16	0.0455	0.01
Debt	0.1858	0.32	−0.9682	−0.12
Fcf	−0.0037	−0.04	−0.0241	−0.19
R^2	0.0016		0.0001	
F-statistic	0.8115		0.9994	

OMR = firm's open market repurchase; ΔOMR = changes in firm's open market repurchase

Sensitivity Analysis

The data covers financial crisis periods such as US subprime mortgage crisis and European financial crisis are suspected to have big variation (volatility) in stock return since Malaysia stock market is somehow affected and stock prices were experiencing sharp decline and great fluctuation. Thus the sample is deliberately separated to two subsamples periods and test separately based on overall stock market performance. The 1st subsample covers period of 2008 – 2013 and 2nd subsample covers period of 2014 – 2015.

The finding of the 1st subsample (Q12008 – Q42013) for OMR measure of firm's open market repurchase activity, shown in Table 3, appears to be in line with past empirical findings discussed in previous section. The findings are quite robust when different model specifications like random and fixed effect model are applied, reported in Table 4. A successful rejection for H0 in Breush-Pagan LM test leads to random effect model. However, a failing rejection for H0 in Hausman test indicates that the random effect model is better than the fixed effect model.

A measure of ΔOMRs activity, which is ΔOMR, all independent variables do not significantly explain on the dependent variable.

Variation of firm's stock return is then significant and positive related to stock repurchase activity. Managers seem to learn from greater firm-specific variation in stock return and increase their repurchase activity during financial crisis and recovery period. In addition to that, managers have more chance and advantage to time repurchase as stocks are more likely to be undervalued during the downtime. (Dittmar & Dittmar (2008) claim that there will be increasing need for repurchase during uncertain periods and they find that volatility in GDP growth positively and significantly explains repurchase activity. In addition to that, firm size is found positively affects to OMR activity indicating that larger firms are buying back more shares through open market.

Table 3 Finding for the subsample (Q12008 to Q42013)

Model	Dependent variable: OMR		Dependent variable: ΔOMR	
	Coefficient	*t*-statistic	Coefficient	*t*-statistic
Constant	−14.6400	−6.65**	−0.1958	−0.73
LSPI	0.5642	1.89*	0.0048	0.13
Size	3.7173	10.4**	0.0636	1.46
Debt	0.0286	0.64	−0.0064	−1.17
Fcf	−0.0077	−0.12	0.0009	1.2
R^2	0.1403		0.0075	
F-statistic	0.0000		0.2589	
Breush-Pagan LM test		6758.8***		

OMR = firm's open market repurchases; ΔOMR = changes in firm's open market repurchases ***, **, * Significance at the confidence level of 1%, 5%, 10% respectively

Table 4 Finding of Random and Fixed Effect Model for the subsample (Q12008 to Q42013)

Model	Random Effect Model		Fixed Effect Model	
	Dependent variable: OMR		Dependent variable: OMR	
	Coefficient	*t*-statistic	Coefficient	*t*-statistic
Constant	−2.9477	−1.19	−2.5171	−1.74
LSPI	−0.1187	−1.74*	−0.1205	−1.76*
Size	1.7994	6.82**	1.7448	6.51**
Debt	0.0127	0.59	0.0116	0.53
Fcf	−0.0001	−0.06	−0.0001	−0.08
Hausman test	–	–	1.53	

OMR = firm's open market repurchases; ΔOMR = changes in firm's open market repurchases ***, **, * Significance at the confidence level of 1%, 5%, 10% respectively

The result of the 2nd subsample (Q12014-Q42015) for OMR measure, reported in Table 5, shows that variation of firm's stock return is no useful for managers to time repurchase. It is also vital to note that managers could still repurchase in the absence of learning information of firm's stock return variation. Intuitively, the insignificance of information of stock return variation could be partly due to that the stock market in Malaysia is experiencing upward trend after financial crisis and recovery periods. The possible explanation to that finding is that stock undervaluation is fading and dying off or stock price tends to be fair- or over-priced for that period, managers would have lack of advantage to time repurchases. Ditmar and Ditmar (2008) argue that wave of financing activity (either equity issuance or shares repurchase) are due to differing response to the economic stimulus. Specifically, economic expansion reduces the cost of equity relative to the cost of debt, inducing many firms to issue equity when stock price is higher instead of buying back shares.

Considering the economic growth and stock market performance were better during this period as compared to that of the period of the 1st subsample, managers may have reserved more cash for investments thus less cash are allocated for firm to perform repurchases. Correspondingly, firm free cash flow is found significant positive. Although the strength of relationship between firm free cash flow and repurchase activity is small, an increase in RM1 free cash flow results a rise in 0.0337 units of repurchase shares, it still indicates that firms would increase repurchase activity if firms have more free cash flow. Firm size is found positively affects to OMRs activity indicating that larger firms are more buying back more shares via open market. Another OMRs measure, ΔOMR, yields similar finding to that of the 1st subsample, all independent variables do not significantly explain on ΔOMR.

Table 5 Finding for the subsample (Q12014 to Q42015)

Model	Dependent variable: OMR		Dependent variable: ΔOMR	
	Coefficient	*t*-statistic	Coefficient	*t*-statistic
Constant	−18.3297	−4.44**	−10.6446	−0.09
LSPI	0.1097	0.19	4.2288	0.26
Size	4.7721	7.03**	−2.2799	−0.12
Debt	−0.0975	−1.11	−1.5758	−0.64
Fcf	0.0337	1.78*	−0.2999	−0.56
R^2	0.0028		0.1850	
F-statistic	0.9568		0.0000	

OMR = firm's open market repurchases; ΔOMR = changes in firm's open market repurchases ***, **, * Significance at the confidence level of 1%, 5%, 10% respectively

CONCLUSION

The finding of main sample (Q12008 to Q42015), the variation of firm's stock returns, firm size, leverage, and free cash flow are found no effect on firm stock repurchase activity. The result for the measure of ΔOMR, is found that no meaningful relationships are identified among variables in main and subsample regression analysis.

In sensitivity analysis, the main sample is separated to two subsamples periods and test separately. The 1st subsample covers period of Q12008 – Q42013 and 2nd subsample covers period of Q12014 – Q42015. The finding of the 1st subsample (Q12008 – Q42013) for OMR measure indicates that variation of firm's stock repurchase and firm size are significantly and positively explaining OMRs activity. In line with past findings discussed in previous section, firm leverage and free cash flow are not significant. The finding of that subsample is robust when random and fixed effect model are applied. In addition to that random effect model is found to the best for the regression of this subsample analysis.

The result of the 2nd subsample (Q12014 – Q42015) for OMR, shows that variation of firm stock return is no useful for managers to time repurchase. Yet, firm size and free cash flow are found to be significant positive on OMRs activity. The finding of sensitivity shows that managers have more chances to time repurchase during market downtime.

Implication of Findings

There are numerous studies to confirm that managers possess market timing ability to time open market repurchases whereby increase firm value and shareholders' wealth. The findings of research paper provide evidences to validate the effect of stock price informativeness on open market repurchasing activity thereby would be useful in timing open market repurchases. The finding of this paper implies that managers should learn information conveyed by firm's stock returns, which are derived from corporate outsiders and exploit the market when the stock market is bearish and weak, where firm's stock price is likely to be undervalued, to take advantages of mispricing and undervaluation. When stock market is strong and bullish, managers may miss the chance to exploit private information for timing repurchases. During this period, decision for open market repurchases must be made prudently and practically since firms need more cash for investments in the environment of good economic growth. Managers should also need to cautious and concern having sufficient free cash flow for investments before allocating cash flow for open market repurchase.

Future Research

A relative small sample size due to manually-hand-collected data is the main limitation of this study. The data sample size can be expanded and segregate into two main groups samples as

infrequent stock repurchasers and frequent stock repurchasers in the future work to validate the finding reported in previous section. This paper relies on the existing literatures to support the presence of managerial market timing ability in repurchases. Based on that, it lends credence to this study to investigate presence of information of variation of firm's stock return on open market repurchase activity that may be useful to time repurchase. For that reason, the study can also be extended to test market timing repurchase in full-scale by relating abnormal stock return and variation of firm's stock return.

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