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Open market share repurchase and price volatility in Indian stock market

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Abstract

This paper examines the causality between open market repurchase announcements and price volatility in Indian Stock Market. To assess the stock price reactions to open market repurchase public announcements, a random sample of two companies (Infosys and IIFL) have been selected from all companies that declared open market repurchase between June 2020 and March 2022. The analysis is conducted using the GARCH model, which is based on the diagnostic features of time series data, and the outputs of the repurchase announcement analysis of both sample companies are negative. There appears to be a slight decrease in price volatility, however, the dummy coefficient is considered to be statistically insignificant in case of Infosys and significant in case of IIFL, indicating that impact on price volatility leads to asserted outcomes. This can be explained by the fact that, in India, annual and interim dividend payments have been the preferred forms of dividend payment for many years, and open market share repurchases were not accepted as cash payments by investors. In India, the sentiments and dynamics of investor community seem to be changing fairly recently and the preconceived notion of share buybacks in terms of acceptance as cash payments appears to be polemic.

Keywords: Share repurchase open market offer, causality, GARCH

1. Introduction

The Signaling Theory is a controversial concept that is often used to justify the initiation of share buyback programs. This theory is based on two scholarly dimensions: the first dimension, which suggests that management is making buyback announcements to communicate expectations of future earnings growth and the second dimension, which emphasizes the inefficiency of the market, as current prices do not reflect all available information which can cause an increase in price without resulting in an increase in earnings. While there have been numerous studies conducted on the issue of the Signaling Theory, the results vary across countries due to the varying regulatory environments, investor segmentation, investor protection, size of programs, market efficiency, information asymmetry and repurchase methods.

The issue of repurchase programs has been extensively discussed in recent years and there is a wealth of literature available on the short-term impact of buyback programs on the stock market. It has been suggested that buyback programs may be a means for managers to share confidential information with shareholders in order to drive up the share price. Academics and investors have argued that buyback programs can have a positive impact on the pricing of securities. Numerous studies have been conducted by passionate researchers in various countries on the effects of share repurchase announcements on share price. The magnitude of the announcement impact varies depending on the manner in which the buyback is announced. One of the most operative reasons for buying back is when a company's stock price is not in line with its intrinsic value. If this is the case, the strategic advantages of buying back can be seen. Dittmar, A. K., & Dittmar, R. F. (2002) ^[5] opine that the use of stock repurchases has fluctuated dramatically over the last two decades: Aggregate repurchases peaked in 1999, when the use of repurchases came close to surpassing the use of dividends, and reached a low in 1991, when the repurchases amounted to only a quarter of dividends. Though several researchers document this trend in repurchases, there has been little explanation provided for why it occurs.

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In this paper, we investigate why stock repurchases occur in waves by explaining how the trends in aggregate payout policy relate to earnings and the overall economy. Specifically, we estimate the cointegration relation between earnings and GDP and use the residual from this relation, the deviation in earnings from its trend, as a measure of transitory earnings. We find that repurchases increase with increases in both permanent and transitory earnings. However, the change in dividends paid is not related to transitory earnings but rather only permanent shifts in earnings that result from changes in the macro-economy. Further, transitory earnings are the primary driver in the choice between repurchases in dividends. These results indicate that dividends and repurchases are substitutes for distributing permanent earnings but that repurchases are also a mechanism to distribute transitory earnings.

It has been documented in empirical studies conducted in the United States that the most commonly used explanation for open market share buybacks is signaling. Peyer and Vermaelen examined the notification effect of buybacks for four different repurchase strategies: Fixed Price Tender Offers, Open Market Repurchases, Dutch-Auctions Offers and Private Repurchases. It was found that, regardless of the method of repurchase, stock prices tend to rise on average as a result of buyback announcement.

Dixon, R., Palmer, G., Stradling, B., & Woodhead, A. (2008) [6] results indicate that a primary motive of share repurchases in the UK is to achieve an optimal capital structure, and that the requirement to cancel shares is fundamental to buy-back decisions in the UK.

In a study conducted in 1991 by Comment and Jarrell, three types of buybacks were compared to determine the relative signaling effect. The study found that all of the types of buybacks had positive externality on announcement, however, the most effective type was the fixed price tender offer, which generated positive externality of approximately 11%, followed by the Dutch-Auction offer at 8% and the open-market at 2%. Additionally, the study found that the signaling effectiveness of buybacks was related to the firm-specific performance of the company, but not to the general market performance.

Dittmar, A. K., & Dittmar, R. F. (2002) [5] opine that the use of stock repurchases has fluctuated dramatically over the last two decades: Aggregate repurchases peaked in 1999, when the use of repurchases came close to surpassing the use of dividends, and reached a low in 1991, when the repurchases amounted to only a quarter of dividends. Though several researchers document this trend in repurchases, there has been little explanation provided for why it occurs. In this paper, we investigate why stock repurchases occur in waves by explaining how the trends in aggregate payout policy relate to earnings and the overall economy. Specifically, we estimate the cointegrating relation between earnings and GDP and use the residual from this relation, the deviation in earnings from its trend, as a measure of transitory earnings. We find that repurchases increase with increases in both permanent and transitory earnings. However, the change in dividends paid is not related to transitory earnings but rather only permanent shifts in earnings that result from changes in the macro-economy. Further, transitory earnings are the primary driver in the choice between repurchases in dividends. These results indicate that dividends and repurchases are substitutes for distributing permanent earnings but that

repurchases are also a mechanism to distribute transitory earnings.

Cudd, M., Duggal, R., & Sarkar, S. (1996) [4] employs event methodology to explore the relationship between shareholder wealth effects and management's motives for repurchase. The repurchase motives are derived from a questionnaire survey, rather than from the public announcement approach used in prior studies. Study findings reveal a positive relationship between event premiums and the control motive for repurchase. Partial support for the signaling hypothesis also is observed, which is consistent with prior studies. All other repurchase motives-reissuance, undervaluation of stock, lack of investment opportunities, and leverage-are observed to be unrelated to shareholder wealth effects.

Research on the abnormal returns realized by security-holders of firms that repurchase their own shares has been the subject of a number of studies, including those conducted by Woods and Brigham in 1966 [22], Elton & Gruber in 1968 [7], Stewart in 1976 [18], Masulis in 1980 [14], and Vermaelen in 1981 [19] and 1984 [20]. The majority of these studies conclude that, on average, the wealth effect of buyback firms on security-holders is positive.

Vermaelen, 1981 [19], reported average abnormal returns of approximately 15% after repurchase tender offers were announced. Masulis, 1980 [14], concluded that positive announcement period returns support a semi-strong form of market efficiency; Vermaelen, 1984 [20], provides empirical evidence for the hypothesis that repurchase tender offers are interpreted as positive signals, and the proportion of insider positions, premium offered, and target fraction influence them. Stewart, 1976 [18], examined performance of stocks following all types of buybacks over multiple time-periods, and concluded that it takes several years for the success of these decisions to be statistically significant in the stock market and suggested a weak form of market immaturity.

According to Rasbrant et al. (2013) [17], firms announcing an open market repurchase program at the initiation date show a 2-day abnormal return in Europe of approximately 2%. According to Rau et al. (2002) [24], firms announcing on-market repurchase programs show a statistically significant excess return of 1.38% over the -2- to +2-day period. These findings are similar to those reported by other researchers looking at repurchase announcements (Zhang, Oswald and Young, Lamba and Ramsay, Li and McNally, 2004) [23]. According to Lasfer (2000), share prices increase on the announcement date by 1.64 % in the UK and by 1.06 % in Europe. Li and McNally examined the buybacks using the conditional event study approach, and found average excess announcement period returns for fixed price tender offers of around 9.8% over 3- days buy and hold.

The purpose of this paper is to unfold whether share repurchase is effective as a company strategy in India and what is the magnitude of the market reaction over share price due to open market repurchase announcement in India. As it has been argued in the literature that in a situation of information asymmetry, the decision of the executive with regard to the form of cash disbursement is biased towards repurchasing shares, it will be helpful to know whether the managers of Indian companies implement buyback from this point of view. More specifically, the purpose of this article is to ask whether share repurchase announcement has an impact on share price in India.

Section-III
Data and Methodology

For the present study, Infosys Technologies Limited and IIFL have been selected at random from among the companies listed and traded on the Mumbai Stock Exchange that opted to repurchase shares through open market offer. Considering the date of public announcement of share repurchase, the daily close share price data of Infosys and IIFL from June 1, 2020 to March 31, 2022 have been used. Further, to isolate the exclusive impact of share repurchase,

the daily closing prices of the S&P Sensex Index are also used in this study.

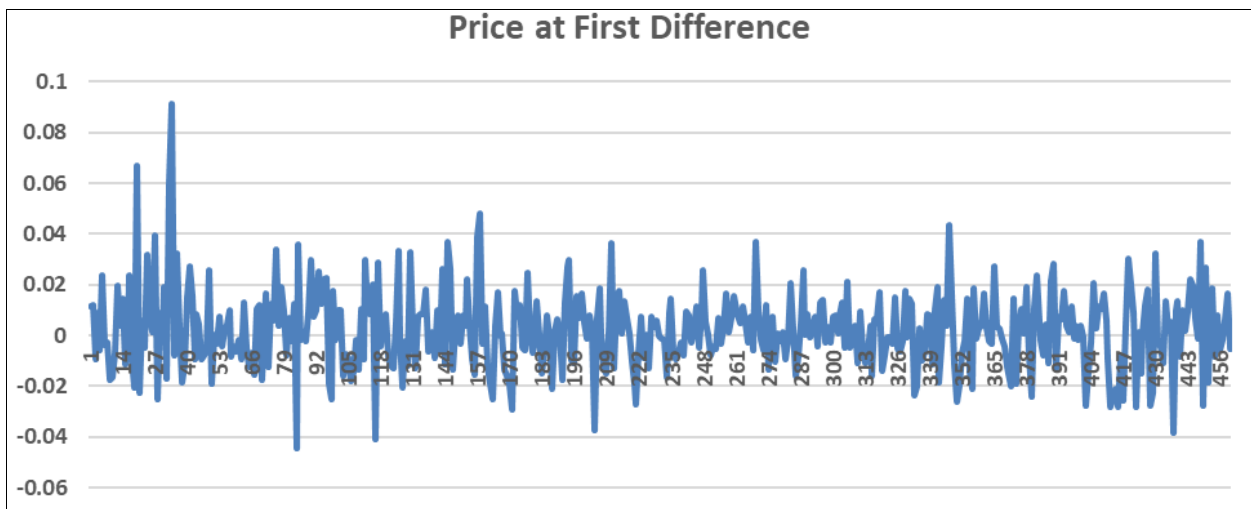
Using descriptive statistics like skewness and Kurtosis as well as Jarque-Bera, can give a basic understanding of changes in the behavior of a time series. It also explains about the distributional properties of time series which is not normally distributed and that is well known in the financial world.



Graph 1: Price Series at Level of Infosys Technologies Limited

Further, the graphical presentation of price series in Graph 1 to Graph 4 at level and at first difference of Infosys & IIFL

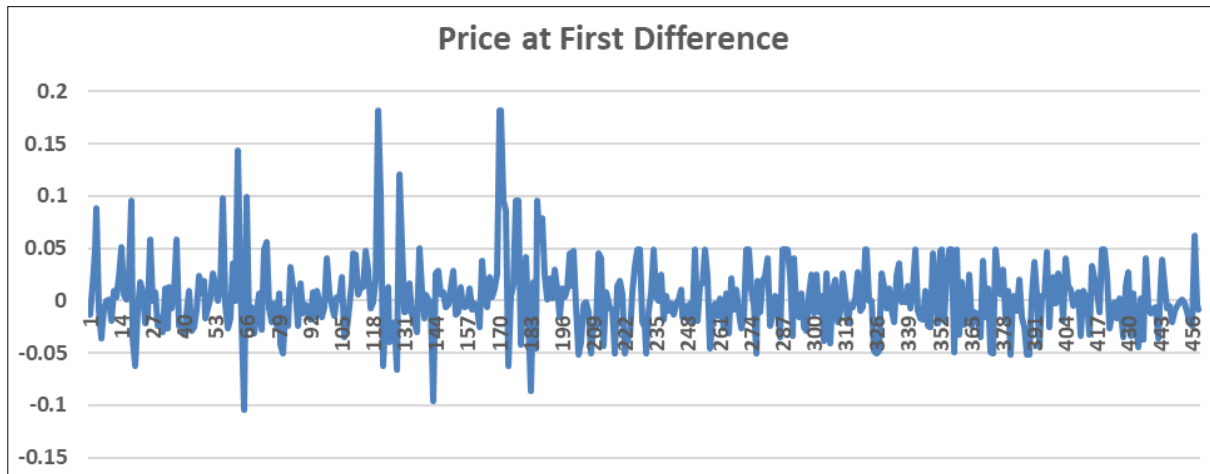
respectively provides an impression that price series is stochastic at level but deterministic at first difference.



Graph 2: Price Series at First Difference of Infosys Technologies Limited



Graph 3: Price Series at Level of IIFL



Graph 4: Price Series at First Difference of IIFL

Further, given the fact that the presence of a stochastic trend or deterministic trend in a financial time series or its stationary or non-stationary in levels is a prerequisite for conducting any analysis, the study begins with testing of price series for a unit root using Augmented Dickey Fuller (ADF) tests. The coefficient of ADF test of sample companies having zero probability indicate that the series is stationary at first difference. Further, property of heteroscedasticity in index returns is well documented (Fama 1965, Bollerslev 1986) [25, 26]. The presence of heteroscedasticity in the time series calls for the use of ARCH family of models to study volatility. The standard GARCH (p, q) model introduced by Bollerslev (1986) [26] suggests that conditional variance of returns is a linear function of lagged conditional variance and past squared error terms. A model with errors that follow the standard GARCH (1, 1) model can be expressed as follows:

$$R_t = c + \varepsilon_t \text{ where, } \varepsilon_t / \psi_{t-1} \sim N(0, h_t)$$

Equation 1

$$\text{and } h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \alpha_2 h_{t-1}$$

Equation 2

The underlying asset being the sample companies, the term R_t is replaced by $R_{Infosys,t}$ and $R_{IIFL,t}$ in the mean equation. Further, the impact of buyback announcement on stock price volatility can be isolated by removing from the time series, any predictability associated with other factors contributing to the volatility. S&P Sensex has been used as the independent variable in mean return equation to isolate market wide factors other than those which are associated with the buyback announcement day. The mean equation to be estimated is as follows:

$$R_{Infosys,t} = \gamma_0 + \gamma_1 R_{Sensex,t} + \varepsilon_t$$

Equation 3

$$R_{IIFL,t} = \gamma_0 + \gamma_1 R_{Sensex,t} + \varepsilon_t$$

Equation 4

In the conditional variance equation, a dummy variable is introduced to investigate the relationship between open market repurchase announcement and price volatility. The dummy takes on a zero value for pre announcement days, and a one value for post announcement days. The conditional variance equation to be estimated is as follows:

Equation 5

Where, D_t is a dummy variable and α_3 is the coefficient of the dummy variable. If α_3 is statistically significant, it can be said that open market repurchase announcement has had an impact on price volatility of Infosys and IIFL. Further, a significant positive value for α_3 would indicate that announcement effect increases the volatility.

Section-IV

Empirical Results

The descriptive statistics pertaining to skewness and kurtosis indicate that the series is not normally distributed. Further, the Jarque-Bera test statistics for share prices of sample companies are 27.2753 & 60.6428 and statistically significant. The ADF test for presence of unit root in Nifty Index series have been compiled in Table 1. The results show that the series are stochastic at level having a t-statistics of -1.3323 & -1.4064 for Infosys and IIFL respectively with insignificant probability value. However, the series are deterministic at first difference with a t-statistic of -20.3649 & -18.3853 with a significant probability value.

Table 1: Results of Unit Root Test of Price series

Company	Augmented Dickey-Fuller Test Statistics			
	Price at Level		Price at First Difference	
	t-Statistic	Prob.*	t-Statistic	Prob.*
Infosys	-1.3323	0.6157	-20.3649	0
IIFL	-1.40637	0.5799	-18.3853	0

Source: Computed

Further, as a necessary diagnostic, heteroscedasticity test is conducted to explore the heteroscedastic behavior of financial time series data and the outputs are documented in Table 2. The F-statistics are 30.46182 & 30.1144 with a significant p-value indicate the presence of ARCH effect in

Infosys & IIFL price. The GARCH model is exclusively designed to address the heteroscedastic behavior of financial time series data. It is designed to provide a volatility measure, which can be used in studying volatility.

Table 2: Results of Heteroscedasticity Test

Heteroscedasticity Test: ARCH				
Company				
Infosys	F-statistic	30.46182	Prob.	0
	Obs.*R-squared	28.6796	Prob.	0
IIFL	F-statistic	30.1144	Prob.	0
	Obs.*R-squared	4.971682	Prob.	0

Source: Computed

In consonance with the model specification, it is essential to remove the influence of market-wide factors in order to

isolate the impact of buyback announcement effect on the prices of sample companies. Accordingly, a proxy variable that captures the market-wide fluctuations caused by different economic indicators like, exchange rate, inflation, growth rates etc. need to be used. The S & P Sensex Index daily data has been used as a proxy to capture the market-wide information effects. In order to estimate the impact of buyback announcement on prices of sample companies, GARCH (1, 1) model has been adopted. A dummy variable for repurchase announcement has been incorporated in the conditional variance equation. The results of the estimation for the impact of buyback announcement of INFOSYS and IIFL are presented in Table 3 and Table 4 respectively.

Table 3: Outputs of GARCH (1, 1) Model of INFOSYS

Results of GARCH (1, 1) for the period (June 2020 to March 2022)					
Variables	Description	Co-efficient	Standard Error	Z-statistics	Prob.
γ_0	Intercept	0.006849	0.003538	1.935986	0.0529
γ_1	Sensex	-8.84E-08	7.18E-08	-1.231316	0.2182
α_0	Constant	0.000174	4.43E-05	3.920352	0.0001
α_1	ARCH	0.236142	0.057913	4.077525	0
α_2	GARCH	0.072421	0.189277	0.38262	0.702
α_3	Repurchase Dummy	-2.27E-05	2.32E-05	-0.975976	0.3291

Source: Computed

The coefficient of the INFOSYS buyback announcement dummy α_3 is negative (-2.27E-05) and there seems to have a marginal decrease in price volatility but the dummy coefficient is statistically insignificant, implying that the price volatility is not influenced by the announcement of

open market repurchase decisions. It may be due to assorted opinions conceived by different class of investors as the company is having a blend of domestic & off-shore investors.

Table 4: Outputs of GARCH (1, 1) Model of IIFL

Results of GARCH (1, 1) for the period (June 2020 to March 2022)					
Variables	Description	Co-efficient	Standard Error	Z-statistics	Prob.
γ_0	Intercept	0.001578	0.011935	0.132229	0.8948
γ_1	Sensex	-2.74E-08	2.29E-07	-0.11945	0.9049
α_0	Constant	0.001387	0.000155	8.924647	0
α_1	ARCH	0.326482	0.087626	3.725861	0.0002
α_2	GARCH	-0.13008	0.084359	-1.54198	0.1231
α_3	Repurchase Dummy	-0.00061	0.000115	-5.33657	0

Source: Computed

The coefficient of IIFL buyback announcement dummy α_3 is negative (-0.00061) and there seems to have a marginal decrease in price volatility and the dummy coefficient is statistically significant, implying that the price volatility is influenced by the announcement of open market repurchase strategy. But, the extent of seems to be negligible as the coefficient is very low. It may be due to assorted opinions conceived by different class of investors as the company is having a blend of domestic & off-shore investors.

Section-V Conclusion

This paper examines the causality between open market repurchase announcements and price volatility in Indian Stock Market. To assess the stock price reactions to open market repurchase public announcements, a random sample of two companies (Infosys and IIFL) have been selected from all companies that declared open market repurchase between June 2020 and March 2022. The analysis is conducted using the GARCH model, which is based on the

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References

- Arora A, Pasricha JS. Motivations for buyback among Indian Companies. In XI Capital Markets Conference; c2012. p. 21-22.

2. Badrinath SG, Varaiya NP, Ferling RL. Share repurchase: To buy or not to buy. *Financial Executive*. 2001;17(3):43-43.
3. Comment R, Jarrell GA. The relative signaling power of Dutch-auction and fixed-price self-tender offers and open-market share repurchases. *The Journal of Finance*. 1991;46(4):1243-1271.
4. Cudd M, Duggal R, Sarkar S. Share repurchase motives and stock market reaction. *Quarterly Journal of Business and Economics*; c1996. p. 66-76.
5. Dittmar AK, Dittmar RF. Stock repurchase waves: An explanation of the trends in aggregate corporate payout policy; c2002. Available at SSRN 346548, 160.
6. Dixon R, Palmer G, Stradling B, Woodhead A. An empirical survey of the motivation for share repurchases in the UK. *Managerial Finance*. 2008;34(12):886-906.
7. Elton E, Gruber M. The effect of share repurchase on the value of the Firm. *The Journal of Finance*. 1968;23(1):135-149.
8. Gupta LC, Jain N, Kumar A. Corporate practices regarding buyback of shares and its regulation in India. Study sponsored by Indian Council of Social Science Research; c2005. p.1-76.
9. Hyderabad RL. Market reaction to multiple buybacks in India, *Indore Management Journal*. 2009;1(2):18-49.
10. Hyderabad RL. Analysis of motives for share buyback decisions in India, *Finance India*. 2012;26(1):65-90.
11. Lamba AS, Ramsay I. Comparing share buybacks in highly regulated and less regulated market environments. *Australian Journal of Corporate Law*. 2005;17:261-280.
12. Lasfer MA. The market valuation of share repurchases in Europe. *City University Business School*; c2000.
13. Li K, McNally WJ. Open market versus tender offer share repurchases a conditional event study. *University of British Columbia, Finance Working Paper*; c1999. p. 98-92.
14. Masulis RW. Stock repurchase by tender offer: An analysis of the causes of common stock price changes. *The Journal of Finance*. 1980;35(2):305-319.
15. Oswald D, Young S. What role taxes and regulation? A second look at Open market share buyback activity in the UK. *Journal of Business Finance & Accounting*. 2004;31(1-2):257-292.
16. Peyer UC, Vermaelen T. The many facets of privately negotiated stock repurchases. *Journal of Financial Economics*. 2005;75(2):361-395.
17. Råsbrant J. The price impact of open market share repurchases; c2013. Available at SSRN 1780967.
18. Stewart SS. Should a corporation repurchase its own stock? *The Journal of Finance*. 1976;31(3):911-921.
19. Vermaelen T. Common stock repurchases and market signalling: An Empirical study. *Journal of Financial Economics*. 1981;9(2):139-183.
20. Vermaelen T. Repurchase tender offers, signalling, and managerial incentives. *Journal of Financial and Quantitative Analysis*. 1984;19(02):163-181.
21. Vermaelen T. Share repurchases. *Foundations and Trends in Finance*. 2005;1(3).
22. Woods DH, Brigham EF. Stockholder distribution decisions: Share repurchases on dividends? *Journal of Financial and Quantitative Analysis*. 1966;1(01):15-26.
23. Zhang H. Share repurchases under the commercial law 212-2 in Japan: Market reaction and actual implementation. *Pacific-Basin Finance Journal*. 2002;10(3):287-305.
24. Rau BL, Hyland MA. Role conflict and flexible work arrangements: The effects on applicant attraction. *Personnel psychology*. 2002;55(1):111-36.
25. Fama EF. The behavior of stock-market prices. *The journal of Business*. 1965;38(1):34-105.
26. Bollerslev T. Generalized autoregressive conditional heteroskedasticity. *Journal of econometrics*. 1986;31(3):307-27.