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Causal Nexus Between Ownership Structure And Stock Price Volatility – Evidence From Listed Service Sector Firms In India

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Abstract
This paper investigates the causal nexus between the pattern of ownership structure in Indian service sector companies and its stock price volatility. Ownership structure consists of promoter holdings, public shareholdings, institutional and non institutional holdings. Media and entertainment sector 16 listed firms sample was taken for the study and it is found that largest shareholder in this sector is promoters, who hold more than 58% stake in the firm. Public shareholding is the second largest. Institutional and non institutional investors have less than 25% shareholdings. Volatility is measured using standard Deviation and GARCH (1,1) is used to check the volatility persistence. It is found that price volatility is not significantly influenced by the firm ownership structure. This agrees with the notion that the price volatility is largely influenced by external macro economic variables and speculative forces of the market and internal factors like leverage and ownership structure has no significant influence on stock price volatility.
Key Words: Ownership structure, volatility, GARCH, Promoter holdings
JEL category: G23, G21

Introduction

Stock price volatility thou influenced by both internal and external factors, corporate governance related issues always drives the price volatility in a significant manner. The percentage of stocks held by each category of investors is imperative information, as it determines the number of stocks available for trading in the market at a given point of time. When a firm has less percentage of shares issued to the public and largest shareholder is the proprietors, it leads to less liquidity due to less number of shares available for trading in the market. SEBI in India has mandated 25% minimum public shareholding to bring in more retail participation and infuse liquidity in to the market. Proprietors with better access to information will have information advantage and abnormal return as compared to public shareholders. Compared to investors, managers have superior information about their firm's investment opportunities and issue stock when it is overvalued; security prices therefore fall upon issuance since investors are wary of an information asymmetry problem (Myers (1984)). This information asymmetric causes for price volatility. This is a matter of corporate governance and needs attention of the regulatory system and curtails market volatility. In this study it is observed that the largest shareholders in the media and entertainment sector in listed companies are promoters. Public shareholding is less and more volatile stocks have more promoter shareholdings. This leads to conflict of interest between agent and principal. As per the agency cost theory internal cost that arises must be paid to an agent acting on behalf of a principal. Agency costs arise because of core problems such as conflicts of interest between shareholders and management. Shareholders wish for management to run the company in a way that increases shareholder value. But management may wish to grow the company in ways that maximize their personal power and wealth that may not be in the best interests of shareholders. As per pecking order theory the cost of corporate financing increases with asymmetric information. Financing comes from three sources, internal funds, debt and new equity. This leads to liquidity and stock return volatility.

Literature review

(Martin T. Bohl, Janusz Brzeszczyn ski b, and Bernd Wilflinga (2009)), provide empirical evidence on the impact of institutional investors on stock market returns dynamics. Performing Markov-switching-GARCH analysis evidences prove that the increase of institutional ownership has temporarily changed the volatility structure of aggregate stock returns. (Yabei Hu and Shigemi Izumida (2008)), laid the empirical evidence on the relationship between ownership structure and corporate performance from two perspectives namely, ownership concentration and managerial ownership. It focused on reasons for discrepancies among previous empirical research on ownership structure comprising of corporate governance environments, data issues, variable measurements, and estimation methods. (Nendi Juhandi, Made Sudarma, Siti Aisjah, Rofiaty (2013)), studied the effects of internal factors and stock ownership structure on dividend policy and their impacts on company's value. It also examined the influence of dividend policy on company's value. The results found proved that

managerial ownership has no effect on dividend policy but on company's value, while institutional ownership positively and significantly affects dividend payment and company's value. This shows that corporate management is a representation of company's ownership as a company's control. (Baskin, 1989) has found significant negative relationship between dividend yield and volatility of stock's price. Findings of (Hussainey et al., 2011) also failed to support the study of (Baskin, 1989).

Methodology

The objective of the study is to determine the ownership structure of media and entertainment sector and its composition relationship with the stock price volatility. The study attempts to verify the notion of largest public participation in the market leads to abnormal volatility in the sector. Data for this study is taken from the listed media and Entertainment companies in National stock exchange of India. The sample is derived from CNX500 index which includes 16 companies of media and entertainment sector. CNX 500 is India's first broad based benchmark of the Indian capital market. The CNX 500 Index represents about 95.77% of the free float market capitalization of the stocks listed on NSE. The daily stock closing price data is taken from NSE website. Ownership structure data is taken from CMIE prowess data base. The sample period of the study is 2009 to 2015. Stock volatility is the uncertainty or risk about the size of changes in a security's value. A higher volatility means that a security's value can potentially be spread out over a larger range of values. This means that the price of the stock can change considerably over a short time period in either ways. A lower volatility means that a stock value does not fluctuate dramatically, but changes in value at a steady pace over a period of time. Volatility is measured using standard deviation of the log stock returns.

$$S_x = \sqrt{\frac{\sum_{i=1}^{n}\left(x_i - \bar{x}\right)^2}{n-1}}$$

Granger causality test is used to check the causal effect between the variables. It is a statistical concept of causality that is based on prediction. According to Granger causality, if a signal X_1 "Granger-causes" (or "G-causes") a signal X_2, then past values of X_1 should contain information that helps predict X_2 above and beyond the information contained in past values of X_2 alone. It is computed with the help of following equation.

$$Y_t = \sum_{i=1}^{m} \alpha_i Y_{t-i} + \sum_{i=1}^{m} \beta_i X_{t-i} + u_t$$

$$X_t = \sum_{i=1}^{m} \gamma_i Y_{t-i} + \sum_{i=1}^{m} \delta_i X_{t-i} + e_t$$

Jarque–Bera test is performed for sample companies to check the goodness-of-fit and verify whether sample data have the skewness and kurtosis matching a normal distribution. If the data come from a normal distribution, the JB statistic asymptotically has a chi-squared distribution with two degrees of freedom, so the statistic can be used to test the hypothesis that the data are from a normal distribution. It is computed with the help of following equation.

$$JB = n\left[\frac{skewness^2}{6} + \frac{(kurtosis-3)^2}{24}\right]$$

where

$$skewness = \frac{\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^3}{\left(\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^2\right)^{3/2}}$$

$$kurtosis = \frac{\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^4}{\left(\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^2\right)^{2}}$$

If JB > $\chi^2_{(\alpha,2)}$, then the decision rejects the null hypothesis meant that data do not follow normal distribution.

Results and Discussions

Table 01
Descriptive statistics

	Mean	Median	Standard Deviation	Sample Variance	Kurtosis	Min	Max	Count
Promoter Holdings	58.359	61.105	15.029	225.874	-0.929	29.510	78.100	16
Public Holdings	41.599	38.895	14.960	223.787	-0.937	21.900	70.490	16
Institutional shareholders	23.665	21.965	14.919	222.563	-0.019	3.060	53.020	16
Non Institutional shareholders	17.934	17.670	12.631	159.550	-1.094	3.500	39.280	16
ADR/GDR	0.042	0.000	0.177	0.031	18.000	0.000	0.750	16

Among the sample media and health care firms that are listed in Indian National stock exchange, promoter's shareholdings represent largest stake in the sector. Promoters are the largest block holders with mean holding of 58.35% in the industry. Public shareholdings are the second largest with the mean of 41.595. Institutional shareholders and non institutional investors have 23.66% and 17.935 respectively. Largest shareholders influence the market liquidity and volatility of the stock price. Their ability to trade in large quantity influences the market volumes and returns. This also leads to information asymmetric effect as the promoters have better access to vital information. Table 02 shows the descriptive statistics of the sample firms and confirms the normality of the time series data as tested through the Jarque-Bera test. It is significant at 1% level and confirms that there is no unit root.

Table 02
Descriptive statistics and Stationarity Test Results

Sample Firms	Mean	Median	Max	Min	SD	Skew	Kurtosis	Jarque-Bera	Prob
Dbcorp	0.001	0.000	0.063	-0.049	0.016	0.425	4.628	32.462	0.000
Den	-0.002	-0.004	0.182	-0.131	0.033	0.546	8.071	258.993	0.000
Enil	0.003	0.001	0.163	-0.055	0.023	1.714	13.202	1114.901	0.000
Erosmedia	0.004	0.001	0.155	-0.088	0.030	0.567	5.671	81.086	0.000
Hathway	0.001	0.000	0.085	-0.069	0.024	0.473	3.850	15.559	0.000
Htmedia	-0.007	-0.001	0.123	-1.654	0.112	-13.843	204.322	397482	0.000
Inoxleisur	0.002	0.000	0.110	-0.063	0.023	0.928	6.450	147.668	0.000
Jagran	0.001	0.001	0.051	-0.063	0.017	0.017	4.474	20.930	0.000
Navnetedul	0.003	-0.001	0.141	-0.063	0.022	1.858	11.290	794.371	0.000
Ndtv	0.002	-0.003	0.182	-0.125	0.041	1.414	8.156	332.852	0.000
Pvr	0.001	-0.002	0.084	-0.055	0.023	0.729	4.594	44.917	0.000
Suntv	0.000	0.000	0.118	-0.088	0.027	0.539	6.386	121.533	0.000
Tv18brdcst	0.001	-0.002	0.103	-0.085	0.025	0.698	5.588	83.208	0.000
Tvtoday	0.003	-0.002	0.182	-0.181	0.036	0.552	10.665	577.209	0.000
Zeel	0.001	0.000	0.056	-0.062	0.019	0.249	3.618	6.063	0.048

Table 03
Ownership Structure and Stock Volatility

	Promoter holdings	Public holding	Institutional shareholders	Non-Institutional shareholders	Volatility (%)	Skewness	Kurtosis
D.B.Corp Ltd.	69.960	30.040	26.520	3.520	2%	0.425	4.628
Den Networks Ltd.	40.050	59.950	22.240	37.720	3%	0.546	8.071
Entertainment Network India Ltd.	71.150	28.850	18.320	10.530	2%	1.714	13.202
Eros Intl Media Ltd.	74.410	25.590	20.480	5.110	3%	0.567	5.671
HT Media Ltd.	69.510	30.490	22.810	7.680	11%	0.473	3.850
Hathway Cable & Datacom Ltd.	43.480	56.520	53.020	3.500	2%	-13.843	204.322
Inox Leisure Ltd.	48.700	51.300	28.270	23.030	2%	0.928	6.450
Jagran Prakashan Ltd.	60.760	39.240	28.460	10.780	2%	0.017	4.474
NDTV Ltd.	61.450	38.550	6.830	31.720	4%	1.858	11.290
Navneet Education Ltd.	61.800	38.200	21.690	16.510	2%	1.414	8.156
PVR Ltd.	29.510	70.490	31.210	39.280	2%	0.729	4.594
Sun TV Network Ltd.	75.000	25.000	19.950	5.050	3%	0.539	6.386
TV Today Network Ltd.	57.420	42.580	4.360	38.220	4%	0.698	5.588
TV18 Broadcast Ltd.	60.400	39.600	11.670	27.930	3%	0.552	10.665
Zee Entertainment Enterprises Ltd.	43.070	56.930	52.150	4.780	2%	0.249	3.618

Table 04 indicates the ownership structure and volatility of stock returns. It is found that most of the stocks have largest shareholding by promoters and public. Promoters have an average of 58% stake in the company and the Network18 has the largest percentage of promoter's shares with volatility of 2%.

Table 04
Correlation matrix

	Institutional Shareholders	Non Institutional Shareholders	Promoter	Public	Volatility
Institutional Shareholders	1.000000	-0.465701	-0.559780	0.559780	-0.155441
Non Institutional Shareholders	-0.465701	1.000000	-0.472610	0.472610	-0.028890
Promoter	-0.559780	-0.472610	1.000000	-1.000000	0.181896
Public	0.559780	0.472610	-1.000000	1.000000	-0.181896
Volatility	-0.155441	-0.028890	0.181896	-0.181896	1.000000

Volatility of stock returns represents the changes in the prices of shares and it is believed to be more, when firm has more public shareholding than promoters. Correlation matrix table shows that stock price volatility and percentage of shares held by promoters is positively correlated, whereas the public shareholding, institutional and non institutional shareholdings has negative correlations. Public, Institutional and non institutional shareholding is positively correlated. As per pecking order theory, firms first prefer internal financing, and then debt, lastly raising through equity. This theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal financing when available, and debt is preferred over equity if external financing is required.

Table 05
Table showing Volatility estimates GARCH (1,1) Results

Sample Firms	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
Den	0.137970	0.026254	5.255142	0.0000*
Enil	0.053581	0.034942	1.533436	0.1252
Erosmedia	-0.001756	0.032267	-0.054433	0.9566
Hathway	0.064347	0.038311	1.679601	0.0930
Htmedia	-0.005758	0.038556	-0.149353	0.8813
Inoxleisur	0.006463	0.045394	0.142380	0.8868
Jagran	0.191327	0.064116	2.984090	0.0028*
Navnetedul	-0.015954	0.052671	-0.302906	0.7620
Ndtv	-0.001129	0.026952	-0.041903	0.9666
Pvr	0.029217	0.043197	0.676360	0.4988
Suntv	-0.009831	0.040093	-0.245215	0.8063
Tv18brdcst	-0.043571	0.040267	-1.082040	0.2792
Tvtoday	0.030179	0.035041	0.861236	0.3891
Zeel	0.013531	0.066359	0.203904	0.8384
C	0.000500	0.001013	0.493579	0.6216

Variance Equation				
C	0.000121	4.12E-05	2.951322	0.0032
RESID(-1)^2	0.347956	0.144842	2.402309	0.0163
GARCH(-1)	0.163978	0.209700	0.781962	0.4342
R-squared	0.127564	Mean dependent var		0.000776
Adjusted R-squared	0.057933	S.D. dependent var		0.015930
S.E. of regression	0.015462	Akaike info criterion		-5.455448
Sum squared resid	0.050922	Schwarz criterion		-5.187207
Log likelihood	648.1042	F-statistic		1.831994
Durbin-Watson stat	2.144520	Prob(F-statistic)		0.025833

Volatility clusters, means that the variance appears to be high during certain periods and low in other periods often implies an ARMA process in the variance of the process. If the previous period was characterized as high volatility the present and the near future periods are likely to have a high variance as well. Volatility clusters are typical for financial price and return series, exchange rates and in action rates. In particular, high frequency observations likely to display volatility clustering that can be modelled by ARCH/GARCH methods.

Table 05 shows the GARCH test Results. Volatility persistence is studied with equation of Garch = C(16) + C(17)*Resid(-1)^2 + C(18)*Garch(-1). It is found that the return volatility coefficient is positive for two firms with significance level at 1%. It confirms the GARCH effect and persistent volatility. Granger causality test is a statistical hypothesis test for determining whether one time series is useful in forecasting another. Table 06 shows the granger causality test results for the sample firms volatility and ownership structure. Probability values should be less than 0.05 to reject the null hypothesis. From the above table it is found that null hypothesis is accepted as the P value is greater than 0.05. Therefore, it is proved that ownership structure has no granger cause effect on stock price volatility.

Table 06
Pair wise Granger Causality Tests

Null Hypothesis:	F-Statistic	Probability
Non institutional shareholders does not granger cause institutional shareholders	0.53229	0.60466
Institutional shareholders does not granger cause non institutional shareholders	0.64763	0.54604
Promoter does not granger cause institutional shareholders	0.53230	0.60466
Institutional shareholders does not granger cause promoter	0.18691	0.83266
Public does not granger cause institutional shareholders	0.53230	0.60466
Institutional shareholders does not granger cause public	0.18691	0.83266
Volatility does not granger cause institutional shareholders	2.34041	0.15191
Institutional shareholders does not granger cause volatility	0.20094	0.82154
Promoter does not granger cause non institutional shareholders	0.64761	0.54605
Non institutional shareholders does not granger cause promoter	0.18707	0.83253
Public does not granger cause non institutional shareholders	0.64761	0.54605
Non institutional shareholders does not granger cause public	0.18707	0.83253
Volatility does not granger cause non institutional shareholders	0.89083	0.44361
Non institutional shareholders does not granger cause volatility	3.20854	0.08873
Volatility does not granger cause promoter	0.63351	0.55283
Promoter does not granger cause volatility	1.62000	0.25065
Volatility does not granger cause public	0.63351	0.55283
Public does not granger cause volatility	1.62000	0.25065

Conclusion

Ownership structure of media and entertainment sector firms in India consists of promoter, Public, Institutional and non institutional investors. Largest shareholder in this sector is promoters, who hold more than 58% stake in the firm. Public shareholding is the second largest. Institutional and non institutional investors have less than 25% shareholdings. The study was intended to verify whether the structure of firm ownership shareholding influence the stock price volatility. It is found that price volatility is not significantly influenced by the firm ownership structure. This agrees with the notion that the price volatility is largely influenced by external macro economic variables and speculative forces of the market and internal factors like leverage and ownership structure has no significant influence on stock price volatility.

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