

Influencing Factors Of Futures Contract – Evidences From Indian It Companies Equity Futures

Dr. P.G.THIRUMAGAL , Dr. S. SURESH

Abstract:Theoretically, both the spot and futures market must move together and adjust or respond to the information and events in a similar manner. The main objective of this paper is to analyze the factors influencing futures contract. Eight top market capitalization Indian IT companies were used. Number of Contracts, Spot Return and Turnover were the major factors have significant impact on the futures return.

I. INTRODUCTION

Derivatives are the contracts or assets whose values are changed on the basis of the changes in the underlying assets. Primarily derivatives markets are identified for price discovery, arbitrage and risk protection or risk reduction. There are many products such as futures, options and swaps in the derivatives markets. Among these products futures are more popular in India. Futures market is the market which basically depends on the spot market. Ideally there is perfect relationship between spot and futures markets. It is paradoxical that, in practice such close relationship is not evident in Indian spot and futures markets as per researches done. It is interesting to note that most of the time futures markets lead the spot market and very rarely spot market leads futures markets. Literature indicates that futures market is leading the spot market because of high trading volume, multiple trading patterns, less transaction cost, high leverage and less restriction in short sales. The main objective of the paper is to find the factors influencing futures contract.

II. LITERATURE REVIEW

Robert J. Myers (1991) estimated time varying optimal hedge ratio on futures markets. This study attempted to compare two approaches such as moving sample variances and covariance of past prediction errors for cash and futures prices and GARCH model was used for estimating time varying optimal hedge ratios on futures markets. Leo Chan and Donald Lien (2001) examined the cash settlement and price discovery in futures market in USA. The effects of cash settlement ability of the futures market to predict futures spot price was thoroughly examined here. Sang Bae Kim, Francies In and Christopher Viney (2001) investigated modeling linkage between Australian financial and futures markets. K. Kiran Kumar and ChiranjithMukhopadyay (2002) made a comparative study on short term dynamic linkage between NSE Nifty and NASDAQ composite. Asjeet S. Lamba (2005) analyzed the dynamic relationship between South Asian and developed equity market for analyzing the short and long run relationship between each of equity market in the South Asian Region and the major developed equity markets during July 1997-February 2003. Joel Hasbrouck (2003) studied on intraday price formation in US equity index markets. This study empirically investigated in the price discovery of US equity index market in the new

environment. Haiwei Chen, Honghui Chen and Nicholas Valerio (2003) investigated the effects of trading halts on price discovery for NYSE stocks. In this study, intraday data from the institute for the study of security market was used for the year 1992. Louis.T.W.Cheng, Li.Jiang and RenneW.Y.Ng (2004) made a study on information content of extended trading for index futures exchange. In this study the authors employed the S&P 500 and Hang Seng London reference index to control for a possible spillover effects. Minutes by minute's quotes of the HSI from Hang Seng index services limited and HSIF transaction data from the Hong Kong Exchange were obtained for the period of 20th November 1998 to 31st May 2000. Yusif E. Simaan (2006) analyzed price discovery in the U.S option market. The aim of the study was to investigate the price discovery process on the most actively traded option that was listed on all five stock option exchanges. Hung Neng Lai (2007) made a study on price discovery in hybrid markets on the London markets. This study attempted to provide evidence that while SETS and dealers both contributed to the price discovery process and to understand the role of SETS in the price discovery process. MaosenZhong Ali F. Darrat and Rafael Otero (2010) had investigated the price discovery and volatility spill over in index futures market of Mexico. Ajay Shah and Syed AbuzarMoonis (2019) tested time-variation in Beta in India. There are two approaches on time variation beta such as kalman filter model and bivariate GARCH model in this study. P.G.Thirumagal & S. Suresh (2019) analysed to find the payoff of short and long position of stock index futures and the impact of various investments attributes on frequency of investment in stock index futures. Nifty PSC, Nifty MIDCAP 50, Nifty IT, Bank nifty and Nifty 50 were used to calculate payoff. It was found that during the study period long position gained in most of the contracts and investment attributes how long have been investing trading in derivative market, your total investment is invested in derivative market and Total annual investment had an impact of frequency of investment in stock index futures. P. Suriyadheepa and Dr. P.G.Thirumagal (2019) analysed the difference in gain of short or long position for Equity Index Futures of NIFTY 50, NIFTY MIDCAP, NIFTY INFRA, NIFTY IT and NIFTY BANK. It was found that there was significant difference between in Short/Long position gain or loss in Nifty, Midcap, Nifty IT, Nifty Infra and Nifty bank quarter wise during 2014-2018. There was significant difference in gain/loss for Nifty

50, Nifty Midcap, Nifty IT, Nifty Infra and Nifty bank between the years of 2014 – 2018

III. METHODOLOGY

This paper used one year data from Nov 2018 to Nov 2019. Eight IT companies. Future Contracts in India were selected based on Market Capitalization. The list of companies' viz., HCL, HEXWARE, INFOSYS, JUSTDIAL, MINDTREE, TCS, TECHMAHINDRA and WIPRO. Correlation and Multiple Regression were used to identify the factors influencing Futures Contract. The independent variables used to find the factors influencing FR - FUTURE RETURN (Dependent Variable) were NOC = No. of contract, OI = Open Interest, SR = Spot Return, TURN = Turnover in Lacs, and VOL = Volatility

IV. ANALYSIS & DISCUSSION

TABLE 1: RELATIONSHIP BETWEEN SPOT AND FUTURES PRICE NOV 2018 TO NOV 2019

COMPANIES	r
HCL	0.512
HEXWARE	0.999
INFOSYS	0.985
JUST DIAL	0.9940
MINDTREE	0.995
TCS	0.992
TECH MAHINDRA	0.996
WIPRO	0.999

It was found from table 1 that the relationship between Spot and Futures price were high for Hexaware and Wipro and low for HCL.

FACTORS INFLUENCING FUTURES CONTRACT

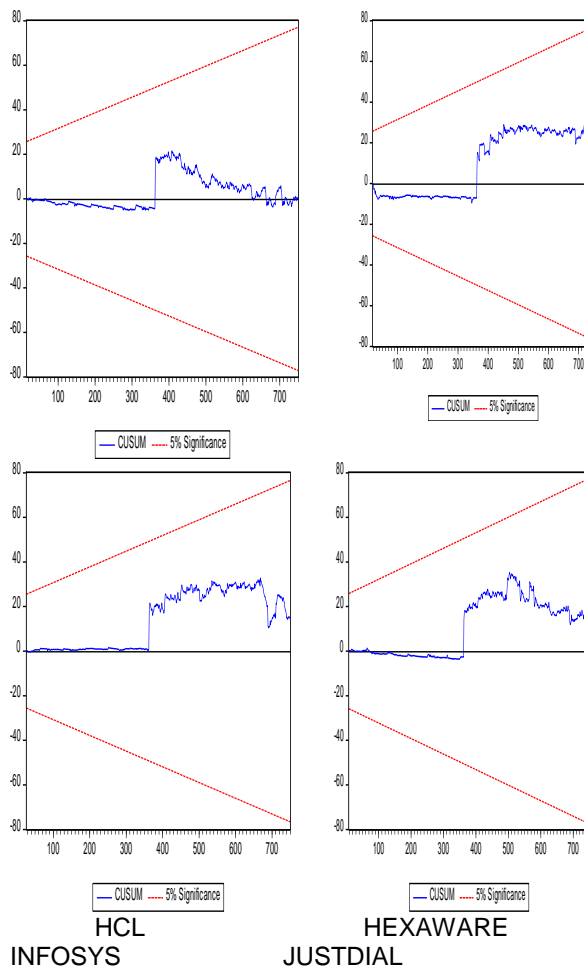
TABLE 2: NORMALITY

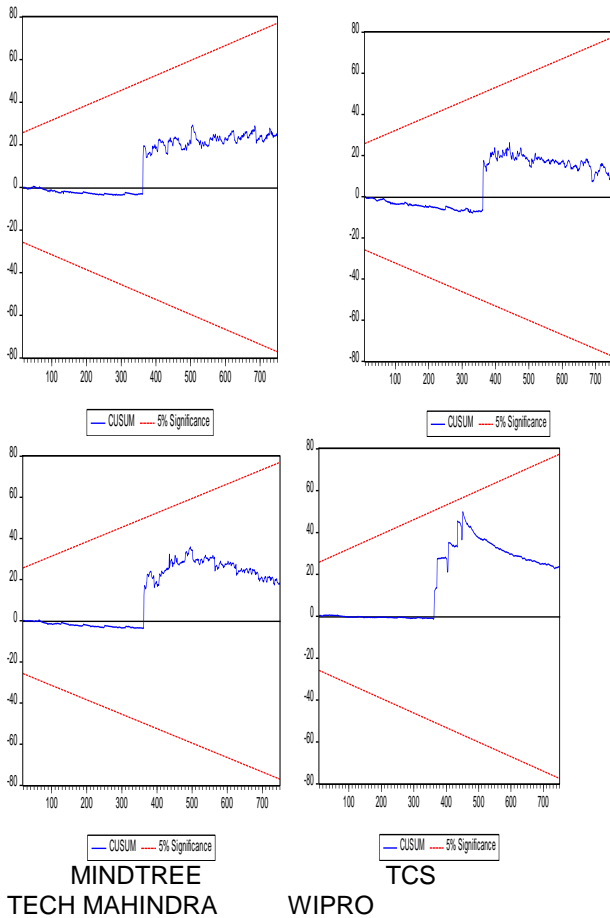
COMPANIES	Jarqu Bera	p
HCL	62.97	0.000
HEXWARE	3697.56	0.000
INFOSYS	2850.22	0.000
JUST DIAL	14085.29	0.000
MINDTREE	5888.20	0.000
TCS	674.78	0.000
TECH MAHINDRA	10753.21	0.000
WIPRO	314442.6	0.000

It was found from the Table 2, that the data were normally distributed for all the companies. All variables were significant at 95% confidence interval. Since the Jarque –Bera was less than 5%, it was concluded that the error terms were not normally distributed. It was proved in Central limit theorem that if there are large number of observation and if the random variables are independently and identically distributed then there is a normal distribution (Gujarati & Porter (2009)). If the observation is more than 100 then it is considered as a large sample. In this the number of observation is 750 for each company. It was assumed that there was normal distribution of error terms.

CUSUM TEST:

Figure 1: CUSUM TEST – STATIONARITY





WIPRO	0.000	0.000	0.000	0.000	0.032
-------	-------	-------	-------	-------	-------

AUTOCORRELATION

Serial correlation refers to the situation in which the residual terms are correlated with one another. It is the correlation of the variable with itself over successive time intervals. Durbin – Watson Statistic was used to test the Autocorrelation which should be in the range of 1.5 to 2.5. It was proved from table 4, the absence of autocorrelation among the selected variables of all the selected companies because Durbin – Watson Statistic was in the range of 1.5 to 2.5.

TABLE 4: AUTOCORRELATION – DURBIN WATSON

COMPANIES	DURBIN WATSON STATISTIC
HCL	2.136
HEXWARE	1.968
INFOSYS	1.974
JUST DIAL	1.958
MINDTREE	2.059
TCS	1.970
TECH MAHINDRA	2.098
WIPRO	1.708

FACTORS CONTRACT - MULTIPLE REGRESSION

$$FR = \beta_1 NOC + \beta_2 OI + \beta_3 SR + \beta_4 TURN + \beta_5 VOL + C$$

It was found from the table 5 that, p value for no. of contracts was significant for HDFC, INFOSYS, JUST DIAL, MINDTREE, TCS AND TECH MAHINDRA. NOC has significant impact on the Future Contracts return on these companies. p value for Open Interest was significant for HEXWARE, INFOSYS and JUST DIAL OI has significant impact on the Future Contracts return on these companies. p value for Spot Return was significant for all the selected companies. SR has significant impact on the Future Contracts return on these companies. p value for Turnover was significant for HCL, INFOSYS, JUST DIAL, MINDTREE, TCS and TECH MAHINDRA. TURN has significant impact on the Future Contracts return on these companies. p value for Volatility was not significant for the selected companies and it has no significant impact on the Future Contracts return on these companies. It was found R square value 2.9% which shows that the independent variables together impact depend variable with 2.9%. It was found that the R squared value was more for WIPRO and less for TCS. F Statistic p value was significant for all the companies which shows that the model is fit.

It was found through CUSUM test figure 1, that the data were stationary because all the variables were within the band with for all the selected companies.

UNIT ROOT

Unit root test was used to check whether the data is stationary by the absence of unit root (Augmented Dickey Fuller test – ADF test). Since the probability was less than 5% for all the variables and for all the selected companies, there was no unit root which has shown and that the data were stationary.

TABLE 3: UNIT ROOT – ADF TEST

VARIABLES	No of contract s	Open interest	Spot price	Turnover in lacs	Volatility
HCL	0.000	0.000	0.000	0.000	0.000
HEXWARE	0.000	0.000	0.000	0.000	0.042
INFOSYS	0.000	0.000	0.000	0.000	0.032
JUST DIAL	0.000	0.000	0.000	0.000	0.023
MINDTREE	0.000	0.000	0.000	0.000	0.043
TCS	0.000	0.000	0.000	0.000	0.049
TECH MAHINDRA	0.000	0.000	0.000	0.000	0.000

TABLE 5: FACTORS INFLUENCING FUTURES CONTRACT.

VARIABLES		1	2	3	4	5	6	7	8
C	<i>p</i>	0.907	0.217	0.344	0.903	0.901	0.754	0.413	0.790
	<i>Coff</i>	-0.000	-0.002	0.001	-0.000	0.000	-0.000	0.001	0.001
NOC	<i>p</i>	0.068*	0.980	0.016**	0.025*	0.093*	0.035**	0.054*	0.379
	<i>Coff</i>	-1.20E-05	-1.42E-07	-2.68E-06	9.33E-06	-2.15E-05	-4.20E-06	-6.42E-06	-1.14E-05
OI	<i>p</i>	0.245	0.004**	0.029**	0.063*	0.468	0.893	0.450	0.806
	<i>Coff</i>	2.27E-10	-2.04E-09	1.10E-10	-2.03E-09	-5.05E-10	-3.46E-11	1.60E-10	-5.10E-11
SR	<i>p</i>	0.000***	0.000**	0.000***	0.000**	0.000**	0.000***	0.000**	0.000***
	<i>Coff</i>	0.022	0.055	0.041	0.145	0.051	0.020	0.058	0.305
TURN	<i>p</i>	0.080*	0.117	0.031**	0.095*	0.056*	0.033**	0.086*	0.384
	<i>Coff</i>	1.89E-06	1.00E-06	5.15E-07	-1.13E-06	3.89E-06	6.96E-07	1.16E-06	1.73E-06
VOL	<i>p</i>	0.342	0.167	0.625	0.668	0.663	0.530	0.9215	0.352
	<i>Coff</i>	0.010	0.030	-0.006	0.016	0.008	0.007	-0.002	0.036
<i>R squared</i>		0.030	0.107	0.087	0.154	0.062	0.024	0.068	0.308
<i>F statistic</i>		4.594	17.817	14.242	27.084	9.853	3.651	10.848	66.123
<i>Prob (F – statistic)</i>		0.000***	0.000**	0.000***	0.000**	0.000**	0.000***	0.000**	0.000***
1 – HCL, 2 – HEXAWARE, 3 – INFOSYS, 4 – JUST DIAL, 5 – MINDTREE, 6 – TCS, 7 – TECH MAHINDRA AND 8 – WIPRO (* - 10% Significant, ** - 5% Significant and *** - 1% Significant)									

CONCLUSION

This paper on factors influencing futures contract on Indian IT companies found the Number of Contracts traded, Spot

price return and Turnover were the major factors impacting the future price return and Volatility has no impact on it. The investors who wish to invest in Equity Futures could look into these factors before investing to get maximum return.

Future researchers could also include some other factors that may influence future contract.

REFERENCE

- [1] Baillie, Richard & Myers, Robert. (1991). Bivariate GARCH Estimation of the Optimal Commodity Futures. *Journal of Applied Econometrics*. 6. 109-24.
- [2] Chan, Leo & Lien, Donald. (2001). Cash Settlement and Price Discovery in Futures Markets. *SSRN Electronic Journal*. 10.2139
- [3] Kim, S., In, F., & Viney, C. (2001). Modelling linkages between Australian financial futures markets. *Australian Journal of Management*, 26(1), 19-34.
- [4] Kumar, K. K., & Mukhopadhyay, C. (2002). A Case of US and India. *NSE Research Paper*, 16.
- [5] Haiwei Chen, Honghui Chen & Nicholas Valerio (2003) The effects of trading halts on price discovery for NYSE stocks, *Applied Economics*, 35:1, 91-97
- [6] Hasbrouck, J. (2003). Intraday price formation in US equity index markets. *The Journal of Finance*, 58(6), 2375-2400.
- [7] Cheng, L. T., Jiang, L., & Ng, R. W. (2004). Information content of extended trading for index futures. *Journal of Futures Markets: Futures, Options, and Other Derivative Products*, 24(9), 861-886.
- [8] Lamba, Asjeet. (2005). An Analysis of the Short- and Long-Run Relationships Between South Asian and Developed Equity Markets.
- [9] Holowczak, R., Simaan, Y. E., & Wu, L. (2006). Price discovery in the US stock and stock options markets: A portfolio approach. *Review of Derivatives Research*, 9(1), 37-65.
- [10] Lai, Hung-Neng. (2007). The Market Quality of Dealer versus Hybrid Markets: The Case of Moderately Liquid Securities. *Journal of Business Finance & Accounting*. 34. 349-373.
- [11] Darrat, Ali & Gilley, Otis & wu, Yanhui & Zhong, Maosen. (2010). On the Chinese B-share price discount puzzle: Some new evidence. *Journal of Business Research*. 63. 895-902.
- [12] Thirumagal, P G & Sugumaran, Suresh. (2019). PAYOFF AND THE IMPACT OF VARIOUS INVESTMENT ATTRIBUTES ON FREQUENCY OF INVESTMENT IN STOCK INDEX FUTURES. *International Journal of Mechanical and Production Engineering Research and Development (IJMPERD)* Vol. 8. 8-15.
- [13] Moonis, Syed & Thomas, Susan & Shah, Ajay. (2019). Using high-frequency data to measure conditional beta.
- [14] P. Suriyadheepa and Dr. P.G.Thirumagal (2019), Comparative Analysis on Equity Index Futures, *International Journal of Research in Engineering, IT and Social Sciences*, ISSN 2250-0588 Page 44