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OF MANAGEMENT AND BUSINESS RESEARCH: C

Finance

Based on Net Asset

Role of Primary Agricultural

Highlights

Stock Market Volatility

Analyzing Customer Satisfaction

Discovering Thoughts, Inventing Future

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The Stock Market Volatility and Regime Changes: A Test in Econometrics

By Amaresh Das

University of New Orleans

Abstract- This paper applies the Markov switching hetero scedasticity model to stock return for India. The Markov switching model in our study takes into account the chance of regime shift, a possibility outside the purview of the GARCH model. Our finding tells us that the high variance of the transitory component tends to be short lived. Although parameters estimating the impact of time-varying expected returns and the delivery system are in some cases qualitatively different between the regimes, the differences do not produce significant changes in our model of stock returns.

Keywords: arch process, garch process, markov switching.

GJMBR-C Classification: JEL Code: H54

THESTOCKMARKETVOLATILITYANDREGIMECHANGESATESTINECONOMETRICS

Strictly as per the compliance and regulations of:

The Stock Market Volatility and Regime Changes: A Test in Econometrics

Amaresh Das

Abstract- This paper applies the Markov switching hetero scedasticity model to stock return for India. The Markov switching model in our study takes into account the chance of regime shift, a possibility outside the purview of the GARCH model. Our finding tells us that the high variance of the transitory component tends to be short lived. Although parameters estimating the impact of time-varying expected returns and the delivery system are in some cases qualitatively different between the regimes, the differences do not produce significant changes in our model of stock returns.

Keywords: arch process, garch process, markov switching.

I. Introduction

Although the ARCH process controls the short-run dynamics of stock return, the long-run dynamics are controlled by regime shifts in unconditional variance, while an unobserved Markov switching process drives the regime changes. Hamilton and Susmel (994) propose a switching ARCH model in which they allow the parameters of the ARCH process to come from one set of several different regimes.[1] Regime switching models can match the tendency of financial markets to often change their behavior abruptly and the phenomenon that the new behavior of financial variables often persists for several periods after such a change. While the regimes captured by regime switching models are identified by an econometric procedure, they often correspond to different periods in regulation, policy, and other secular changes[2,3] Suppose the variable u_t is governed by

$$u_t = \sigma_t \, v_t \qquad (1)$$

Where $\{ v_t \}$ is an i. i. d sequence with zero mean and unit variance. The conditional variance of u_t is specified to be a function of its past realization

$$\sigma^2 = g \ (\ u_{t-1}, u_{t-2} \ \dots) \qquad (2)$$

Often it is assumed that $u_t \rightarrow (0, 1)$ and that $g\,(.)$ depends linearly on the past squared realization of u.

$$\sigma^2 = \sum_{i=1}^{q} a_t \, u_{t-1}^2 + \sum_{i=1}^{p} b_i \, \sigma_{t-2}^2 \qquad (3)$$

This is a Gaussian GARCH ($p \ q$) specification introduced by Belterstev (1986). When $p = 0$it becomes ARCH (q) specification of Engle (1982). The popular approach to modelling sock volatility is the autoregressive conditional heteroscedasticity (ARCH) specification introduced by these authors. These authors argue that the variance ratio test that is often used for analyzing mean reversion[4]may need to be

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[1] Contagion plays a crucial role in the short-term transmission of a currency crisis. Its effects rely primarily on liquidity effects experienced by international investors. Thus, the drop in asset values after the Russian crisis represented a capital loss for investors, with the ensuing liquidity problems being countered by a reallocation of their respective portfolios

[2] For example, interest rate behavior markedly changed from 1979 through 1982, during which the Federal Reserve changed its operating procedure to targeting monetary aggregates. Other regimes identified in interest rates correspond to the tenure of different Federal Reserve Chairs..

[3] The notion of regimes is closely linked to the familiar concept of good and bad states or states withlow versus high risk, but surprising and somewhat counterintuitive results can be obtained from equilibriumasset pricing models with regime changes. Conventional linear asset pricing models imply a positiveand monotonic risk-return relation. In contrast, changes between discrete regimeswith different consumption growth rates can lead to increasing, decreasing, flat or non-monotonic riskreturnrelations as shown by, e.g., Backus and Gregory (1993), Whitelaw (2000), Ang and Liu (2007),and Rossi and Timmermann (2011).

[4] After the seminal studies by Summers (1986), Poterba & Summers (1988), an ongoing debate has emerged in the literature as to whether stock prices and stock returns are mean-reverting or not. The substantial amount of recent publications in this field (Goyal & Welch 2008, Spierdijk et al. (2012) illustrates that the meanreverting behavior of stocks is still an important issue

modified to take into account the changes in variance due to changes in regimes[5].The cause of the debate lies in the fact that testing for mean reversion is inherently difficult due to a lack of historical data on stock prices. Accurate estimation of the degree of long-run mean reversion requires very long stock price series, which are not available. For example, if stock prices were to revert back to their fundamental value every twenty years, one would need at least 1,000 to 2,000 yearly observations to obtain reliable estimations. Moreover, the likely structural breaks during long sample periods further complicate statistical analysis of mean reversion (Spierdijket al. 2012). These methodological difficulties explain why mean reversion is a controversial issue in the economic literature.

Analyses suggest that the speed at which stocks revert to their fundamental value is faster in periods of high economic uncertainty, caused by major economic and/or political events. The highest mean reversion speed is found for the period including the Great Depression and the start of World War II. Furthermore, the early years of the Cold War and the period containing the Oil Crisis of 1973, the Energy Crisis of 1979 and Black Monday in 1987 are also characterized by relatively fast mean reversion.

II. THE MODEL

We will to begin with assume that the return series is drawn from a mixture of normal distributions as in Kim and Nelson(1998). These authors have shown that the Markov switching heteroscedasticity model of stock return is a good approximation of the underlying data generating process. This leads us to formulate the return series as follows:

$$r_t = \rho m_t + x_t \tag{4}$$

$$\rho m_t = \mu + (Q_0 + Q_1 \omega_{1,t})\Psi_t \tag{5}$$

$$x_t = \phi x_{t-1} + (h_0 + h_1 \omega_{2t})\varsigma_t \tag{6}$$

Where $\varsigma_t \to N\ (0, 1)$

In this model we use x_t to represent the temporary part of the return and not the prices directly. We include ϕ simply reflecting the fact that the temporary component of the return could be auto

correlated. ω_{1t} and ω_{2t} are unobserved state variables that evolve independently as two state Markov proceses. These state variables determine the underlying regime at any given time. Their associated transitional probability matrices govern the evolution of these state variables. We define the transitional probability of the Markov process as follows

$$\begin{bmatrix} p_{11} & 1- p_{22} \\ 1- p_{11} & p_{12} \end{bmatrix} \tag{7}$$

The parameters h_1 and Q_1 help us identify any shift in variance during periods of uncertainty. The estimation of this model would allow us to comment on the time series behavior of the return volatility and how this is influenced by the switching probability of the transitoy component.

The two Markov switching variables are independent of each other and the respective transition probabilities are defined as.

$$prob(\ \omega_{1t} = 0\ |\ \omega_{1t-1} = 0) = \rho_{00}, \tag{8}$$

$$prob\ (\omega_{1t} = 1| \omega_{1t-1} =1 = \rho_{01} \tag{9}$$

$$prob(\ \omega_{2t} = 0| \omega_{2t-1} = 0) = q_{00}, \tag{10}$$

$$prob\ (\omega_{2t} = 1|_{2t-1} = 1) = q_{11} \tag{11}$$

In order to estimate such a model that involves unobserved components and is subject to Markov switching shocks, we use the procedure used by Kim and Nelson. (1999).[6]This involves generating a probability weighted likelihood function and a recursive algorithm to update the probabilities as new observations become available. This has been written with computer programming in mind. The parameters to be estimated are, therefore,

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[5] The standard sensitivity analysis shows that the choice of the variance ratio may have substantial impact on investment decisions. If the variance ratio is high – meaning that stock prices are strongly mean-reverting – stocks become relatively less risky in the long run, making it optimal to invest a relatively large share of wealth in stocks. However, if the true variance ratio is lower than the assumed value, the perceived risk exposure is lower than the actual risk exposure. Hence, too much wealth is allocated to stocks, resulting in a non-optimal overexposure to risk.

[6] The Markov switching ARCH features and Markov switching autoregressive features could, in principle, be combined into a single univariate specification, through using such a large set of parameters to describe the non-linear dynamics of a single series might pose numerical problems for finding a global maximum of the likelihood function. Moreover, goven the limited predictability of stock returns, it is surely a mistake to overparameterize the mean. By the same token, evidence of the ARCH effects in industrial production is rather weak. By contrast, the tendency of stock market volatility (as distinct from the mean) to exhibit variation and the periodic shifts in mean output growth associated with economic recessions, are fairly significant and well-documented features of these two series The goal of the paper is not to capture the nature of the link between a process for industrial production and a process for stock returns.

$$[\, \rho_{11} \, , \, \rho_{00} \, . \, \omega_0 \, , \omega_1 \, , \mu \, , q_{11} \, , q_{00,} \, , h_0 \, , h_1 \, , \phi \,] \qquad (12)$$

III. DATA AND METHODOLOGY

The stock price index is obtained from the Morgan Stanley Capital International Index, MSCI's All Country World Index (ACWI) is the industry's accepted gauge of global stock market activity. Composed of over 2,400 constituents, it provides a seamless, modern and fully integrated view across all sources of equity returns in 46 developed and emerging markets. The company has used eight factors in developing its indexes: momentum, volatility, value, size, growth, size nonlinearity, liquidity and financial leverage.

The rate of return on stocks for India is calculated as $x_t = (P_t - P_{t-1}) \times 100 / P_{t-1}$ where P_t is the stock price index at time t. The rates of return on stocks are obtained for the period from January 1980 to April 2010.Table 1 summarizes statistics on the rate of return in India, including descriptive statistics on the mean, standard deviation, skew ness, kurtosis and the P - value of the Jarque – Bera test statistic (JB test) for testing the normality of the series. Under the null hypothesis, the Jarque- Bers statistic has a chi-square distribution with two degrees of freedom. When the required probability for the Jarque – Bera statistic is small, the null hypothesis of a normal distribution is rejected. The mean and standard deviation is quite high and the null hypothesis of normal distribution is rejected at the 5 % significance level

Table 1.1: Summary Statistics

Mean(%)	Std dev	Skewness	Kurtosis	JB Test
1.786	7.453	2.312	9.654	.0000

Note: the hypothesis of normal distribution is rejected at the 5 %level of significance if the P value for the JB test is less than .01

[7] A key issue in regime switching models is whether the same regimes repeat over time, as in the case of repeated recession and expansion periods, or if new regimes always differ from previous ones. If "history repeats" and the underlying regimes do not change, all regimes will recur at some time. With only two regimes this will happen if $p_{00} < 1$, i = 0, 1, Models with recurring regimes have been used to characterize bull and bear markets, calm versus turbulent markets, and recession and expansion periods. Alternative to the assumption of recurring regime is the change point process studied in the context of of dynamics of stock returns by Pastor and Stambaugh (2001) andPerez- Quiros, and Timmermann, A (2012) This type of model is likely to be a good approximation of regime shifts related to technological change. Our model has abstracted from such technological changes.

IV. RESULTS

Table 1.2 shows the parameter estimates of the Markov switching heteroscedasticity model for the sample for our given time[7]. The results are computed using the algorithm used by Kim and Nelson (1998). The initial values for the filter are obtained from the observations on January 1980 ending through December 1980.

Table 1.2: Permanent and Transitory Components of Equity Return (Markov Switching Heteroscedasticity Model)

p_{11}	0.9898*
	(0.0004)
P_{00}	0.8767*
	(0.1034)
ω_0	1.5236*
	(0.2341)
ω_1	1.3458*
	(0.6451)
μ	1.5621
	(0.6945)
q_{11}	0.7658*
	(0.1342)
q_{00}	0.9868*
	(0.0666)
h_0	0.0423
	(0.0541)
h_1	6.783 2*
	(3,4571)
ϕ	- 0.3214
	(0.3461)

Note: Standard Errors Given In Parenthesis. Significanc At The 5% Level Is Indicated By*

The estimates of the transition probability p_{11} (high variance state of the permanent component) and the probability p_{00} (low variance state of the permament component) are both highly significant for India. The low variance state estimate ω_0 appears to be statistically significant. In contrast the additional variance (ω_1) of the permanent component due to the high volatility regime is also significant. It is also interesting to find that the magnitude of the overall variance of the permanent component during the high volatility state, i.e., $\omega_0 + \omega_1$ says very little for the Indian market. The

3

parameters relate to the transitory components of our model. The transitional probabilities q_{11} (high variance state of the transitory component) and q_{00} (low variance state of the transitory component are highly significant for India. This is an indication that the low volatility state dominates in India. The expected duration of the high volatility state is 4.41 months and the expected duration of the low volatility state is 26.12 monthsThe average duration of the low volatility state is 54.32 months while the average duration of the high volatility state is 11 months, This means that the high volatility transitory state fades in about 11 months on average for India. In order to check for the performance of the table, we analyze the residuals from the model using a variety of diagnostic tests.

The test results are presented in Table 1.3

Table 1.3: Residual Diagnostics Tests

Portmanteau	0.412
ARCH	0.333
KS	0.013
RB Test	0.041
MNR	0.889
Recursive T	0.771

Entries are *P* values for the respective statistics. The residuals in the portmanteau test is that the residuals are serially uncorrelated. The ARCH test residuals are for no serial correlation in the squared residuals up to lag 18. MNR is the Von Neuman ratio test using recursive residuals for model adequacy. If the model is correctly specified then Recursive T has a standard t- distribution. (Harvey (1990)). KS statistic represents the Kolmogorov Smirnov test statistic for normality. 95% confidence level in this test is .071 When KS statistic is less than 0.071 the null hypothesis of normality cannot be rejected at the given level of significance We also applied a pair of tests specifically designed for the recursive residuals produced by the state space system used in in this study. The first, the modified Von Neuman ratio, test against serial correlations of the residuals; the second, the recursive t test to check for correct model specification. The adequacy of the model is overwhelmingly supported.

V. Conclusion

We applied the Markov switching heteroscedasticity model to stock returns in India. The modelling approach is superior to GARCH model. In particular, the Markov switching model explicitly considers the possibility of regime switch whereas the GARCH model does not. In terms of our estimate the high variance state of the transitory component lasts for an average of only 4 months.

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Analyzing Customer Satisfaction of Internet Banking: A Comparative Study in India

By Dr. Fozia

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Abstract- Purpose: The aim of this paper is to study the dimensions of internet banking and investigates the impact of these dimensions i.e. Accuracy, Ease of Use, Cost Effectiveness and Security & Privacy on Overall Customer Satisfaction.

Design/Methodology/Approach: A convenience sampling technique was used to recruit 216 customers through a well designed questionnaire from three public banks i.e. SBI, Punjab National Bank and Bank of Baroda and three private banks i.e. ICICI, HDFC and Axis Bank. Findings – This research showed that dimensions of Internet banking (Accuracy, Ease of Use, Cost Effectiveness, Security & Privacy and Overall Customer Satisfaction) in which Accuracy has no positive effect on Overall Customer Satisfaction but Ease of Use, Cost Effectiveness Security & Privacy have an influence on Overall Customer Satisfaction.

Practical Implications: Banks managers should know what type of services customers want from the banks and what type of services they have satisfied or not so there should be a proper assessment of customers' needs and expectations.

Keywords: internet banking, overall customer satisfaction and multiple regression.

GJMBR-C Classification: JEL Code: E58

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I. INTRODUCTION

nternet banking creates unprecedented opportunities for the banks in the ways they organize financial product development, delivery, and marketing via the Internet (wu, et al, 2006) and provides number of benefits to its customers like reduce physical presence in the branch, anywhere and anytime banking (Geetha, K.T. & Malarvizhi, V.). It also provides various Internet e-channels to the customers i.e. ATM, Credit card, Debit card, Internet banking, Mobile banking, Electronic Fund Transfer (EFT), Tele-banking and core banking solution (CBS) that enables banks to extend the full benefits of ATM. However, as per Indian e-banking scenario ATM is most preferable e-banking channel as compare to other e-channels and allowing banks to offer a multitude of customer-centric services on a 24x7 basis from a single location, supporting retail as well as corporate banking activities (Kumbhar, V.M., 2011).

Customer satisfaction is an ambiguous and abstract concept. Actual manifestation of the state of satisfaction will vary from customer to customer, product to product and service to service. The quality of service is one of the major determinants of the customer satisfaction, which can be enhanced by using ICT to survive and grow. The banks in India are using Information Technology (IT) not only to improve their own internal processes but also to increase facilities and services to their customers (Kumbhar, V.M., 2011). In recent years, many banks try to provide a quality online service to satisfy their customers. These banks are introducing e-banking as an assurance to their customers that they will be able to maintain a competitive quality of service in the future, in efforts to avoid losing their customers or retain good customers' base. Offering e-banking is no longer regarded as a competitive advantage but a competitive necessity for banks to retain their customers (Khalil, K. M., 2011)

II. LITERATURE REVIEW

a) Accuracy

Accuracy refers to the aspects such as how quickly and accurately customers can perform their banking transactions through the bank's website" (Dhurup, Surujlal & Redda, 2014, p. 592). Vivekanandan and Jayasena (2012) in their research have reveals that the accuracy is the top most services demanded from the bank customers.

H1: Accuracy has a relationship on customer satisfaction toward Internet banking.

b) Ease of Use

Ease of use is refers to the easy to accessing and using the bank's website for searching, navigating and transacting" (Dhurup, Surujlal & Redda, 2014, p. 592). Kumbhar (2011) in their research have showed that ease of use had significant impact on customers' satisfaction.

H2: Ease of use has a relationship on customer satisfaction toward Internet banking.

c) Cost Effectiveness

Cost effectiveness is an important factor in the transition to the employment of online banking services; lower price for banking service and lower cost for internet access leads to adopting internet banking service. Generally customers compare new services with old ones. If they realize that the new services are more cost effective than old services, they adopt new

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services (Kumbhar, 2012, p. 15). Kumbhar (2011) in their research have showed that cost effectiveness were important factors in determining the customers' satisfaction in internet banking.

H3: Cost effectiveness has a relationship on customer satisfaction toward Internet banking.

d) Security & Privacy

Security can be defined as a form of protection to ensure the customers' safety and to prevent hackers from invading the customers' privacy (Dixit and Datta, 2010). It can be assured by providing a privacy statement and information about the security of the shopping mechanisms and by displaying the logos of trusted third parties" (Ahmad& Al-Zu'bi, 2011, p. 52)."Privacy risk means customers may sacrifice their privacy when they are required to provide personal information in making e-banking transaction" (Chaung and Hu, 2011, p. 4). Kaur *et al* (2013) in their research have showed that Security & privacy had a major factor that strongly led to customer satisfaction in the online bank.

H4: Security and privacy have a relationship on customer satisfaction toward Internet banking.

e) Overall Customer Satisfaction

Customer satisfaction is defined as a customer's overall assessment of the performance or experience that the bank has offered to them. This overall satisfaction across the products and services is provided by e-banking has a strong positive effects on customer loyalty (Ping, Suki & Suki, 2014, p. 743).

III. Research Methodology

a) Sample and Data Collection

A structured questionnaire that was adapted from prior research (Prameela, 2013; Maheswari, 2011; Dharmalinga & Kannan, 2011; Mohideen, 2011; Nupur, 2010; Dixit & Datta, 2010; Kumbhar, 2011; Siu & Mou, 2005; Jun & Cai, 2001) was used to obtain relevant data for this study. The questionnaire was randomly distributed to 216 full time working adults who worked in Delhi, India. The data gathered were analyzed using various statistical methods such as Descriptive analysis; reliability test and multiple linear regression tests were used.

b) Respondents' Demographic Profile

In this study, the respondents comprised 46.0% of females and 54% males. Majority of the respondents in this study, that is, 44%, were in the age group between 20 years old to 29 years old. In terms of their education levels, 43.1% of the respondents have obtained a Masters degree. It is also interesting to note that, in this study, 22.2% of the respondents were earning in between 10000 to 20000 per month.

c) Usage of Internet Banking

All the respondents that involved in this survey had experience in using Internet banking. In fact, 24.4% of the respondents are using Internet banking for more than four years. Most of the respondents used Internet banking on fund transfers because it can be done at anytime and anywhere. The data showed that only 9.7% of the respondents are using Internet Banking from 6 to 12 months.

d) Measurement of Constructs

A reliability test was performed with the Cronbach's alpha value for all the variables were above 0.6 as shown in Table. Therefore, all the variables in this study are at the acceptable level.

Table 1: Cronbach's Alpha for each variable

S. No	Variables	Cronbach's alpha (α)
1.	Accuracy	0.791
2.	Ease of Use	0.819
3.	Cost Effectiveness	0.873
4.	Security & Privacy	0.862
5.	Overall Customer Satisfaction	0.821
	Overall Reliability	0.932

IV. Results and Discussion

The table 2 shown the result from regression analysis of the overall independent variables in the model used to describe the satisfaction level in the study. The Adjusted R Square is .406 which means that 40.6% variation is explained by dimensions of e-banking i.e. Accuracy, Ease of Use, Cost Effectiveness and Security & Privacy. The F value is 30.353 and Sig. Value is .000, which is less than 0.05, which indicates that the independent variables have statistically significant effect on Customer Satisfaction (Zafar et al 2012). Therefore, H1 is not supported in this study. However, the other three independent variables are significant in this study and therefore H2, H3 and H4 were supported in this study.

Table 2: Summary of Regression Analysis

Variables	t-value	Sig.	Results
Accuracy	1.868	.063	Not Supported
Ease of Use	2.840	.005	Supported
Security & Privacy	3.747	.000	Supported
Cost Effectiveness	3.362	.002	Supported

R Square =.406

α=.000

The finding in this research matches with Ahmad and Al-Zu'bi (2011). Ease of use was positively related to customer satisfaction toward Internet banking too. The outcome shows H2 is supported. The results proved that Ease of use has a relationship with customer satisfaction toward Internet banking. An increase in the degree of Ease of use to customer will increase the level of customer satisfaction.

The finding in this research matches with Kumbhar (2011) in their research have showed that cost effectiveness were important factors in determining the customers' satisfaction in internet banking. The results show that H3 is supported.

The finding in this research matches with Ahmad and Al- Zu'bi (2011) in this research have showed that Security and Privacy had a positive significant influence on customer satisfaction toward Internet banking. According to Zhao & Saha (2005), the results show that H4 is supported. This shows that Internet banking users realize that Internet banking providers play an important role to protect the consumers' privacy.

V. Conclusion

In this research Ease of Use, Security & Privacy and Cost Effectiveness have a relationship with Overall Customer Satisfaction towards Internet banking. Internet banking providers should put more effort to improve on these three factors in order to increase overall customer satisfaction. Even though accuracy variables do not have a relationship with customer satisfaction in this research, the importance of this one variable cannot be ignored by Internet banking providers because prior research had shown that accuracy variable is important in fulfilling customer satisfaction toward Internet banking. This research can help Internet banking providers to know Internet banking users' opinion and find the solution through customers' perspective. It can help Internet banking providers easily achieve customer satisfaction.

There are several recommendations that can help in overcoming this research. The problem of constraints on time can be solved by increasing the range of time in conducting a research in the future. The sample size of the research should be increased because the sample size may affect the reliability of the research. Sample size can help to improve the reliability between independent variables and dependent variable.

Since one hypothesis had been rejected, a broader sample size should be used to ensure the reliability and generalizability of the research results. Increase in sample size can help researchers to choose more working adults who work in different areas in NCR. In addition; this research study is geographically restricted to NCR due to time and financial constraints and also restricted to Public & private banks only. Co-operative & foreign banks are not included in the study. These are some of limitations in this research but they can be solved by applying the recommendations mentioned above. After the limitations are solved an accurate and reliable result can be generated in the future research.

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Role of Primary Agricultural Co-Operative Society (PACS) in Agricultural Development in India

By Dr. Yashoda

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Abstract- PACS are the banks which are situated in rural area and plays a very important role in rural credit system by performing their activities on co-operative principles and also these banks are worked under the District Credit Co-operative Banks. They provide short term and medium term loan to rural people to meet their financial requirements. But, the rural people still depend on unorganized sources such as money lenders in village, mandies, traders etc. So , various measures taken by Government to reduce these unorganized sources through the establishment of PACS in rural areas. In order know the role of PACS in agricultural development in India the study has been undertaken.

Keywords: primary, credit, agricultural, co-operative, society, finance.

GJMBR-C Classification: JEL Code: G00

ROLEOFPRIMARYAGRICULTURALCOOPERATIVESOCIETYPACSINAGRICULTURALDEVELOPMENTININDIA

Strictly as per the compliance and regulations of:

Role of Primary Agricultural Co-Operative Society (Pacs) in Agricultural Development in India

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I. Introduction

The co-operative banks in India play an important role in even today in rural financing. These are registered under the Co-operative Societies Act and also regulated by the RBI. They are governed by the " Banking regulation Act-1949" and Banking Laws (Co-operative societies) Act 1965. The business of co-operative banks in urban area also have increased in recent years due to sharp increase in the number of primary co-operative banks. The co-operative movement was stated in India largely with a view to providing agriculturists funds for agricultural operations, at low rates of interest and protect them from the clutches of money lenders.

II. Objectives of the Study

1. To study the role and performance of PACS in respect of agricultural credit and rural development.
2. To find out reasons for poor recovery of loans in PACS
3. To offer suggestions to improve the performance of PACS

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III. Methodology

The study is based on Secondary data. The data has been collected from books, magazines and websites.

a) Role of Pacs

A co-operative credit society, commonly known as Primary Agricultural Co-operative Society (PACS) may be stated with 10 or more persons, normally belonging to a village. The value of each share is generally nominal so as to enable even poorest farmer to become a member. PACS occupy a predominant position in the co-operative structure and form its base. A Primary Agricultural Credit Society is organized at grass-root level of a village or a group of small villages. It is the basic unit which deals with rural (agricultural) borrowers, gives those loans and collects repayments of loans given. It serves as the final link between the ultimate borrowers on the one hand and higher financial agencies, namely the RBI/ NABARD on the other hand.

At the end of June 1989 there were 87000 PACS. These societies covered about 90% of 5.8 lakh villages. There membership of 9 crores covered about 65% of the total estimated population of about 14 crore of rural households. More than half of members of PACS are persons of small means- small farmers, agricultural labourers , rural artisans, and 25% of them belongs to SC/ST.

The working capital of the PACS derived mainly from borrowings from Central Co-operative Banks (CCBs) and the small proportion from owned funds and deposits. That the PACS have failed to attract deposits is not so much a reflection of low savings habits of the rural population as a reflection of the availability of better assets to rural savers of both rate of return and riskiness.

High net borrowings from CCBs shows that PACS act mainly as distribution channel for funds mobilized elsewhere. Only the members of a PACS are entitled to borrow from it. Most loans are for agricultural purpose and are such purpose of machinery (mostly pump sets for irrigation) and cattle are also given. But, consumption loans given

mostly to landless labourers, artisans, and marginal farmers. The share of loans given going to weaker sections is usually about 40% of loans. A varying number of PACS also undertake non-credit activities such as handling the supply of farm requisites, distribution of consumer goods , among their members, constructing godowns and marketing of agricultural produce and process of it.

The management of the society is under an elected body consisting of President , Secretary and a Treasurer. The management is honorary, the only paid membership being normally, the accountant. Loans are given for short period normally for one year, for carrying out agricultural operations, and the rate of interest is low. Profits are not distributed as dividends to shareholders but are used for the construction of the well or maintenance of the village school and so on.

The PAC$_S$ have stepped up their advances to the weaker sections particularly the small and marginal farmers. This progress has been quite spectacular but not accurate considering the demand for finance from farmers. However, the primary credit society has continues to remain the weakest link in the entire co-operative structure.

b) Objectives of Pacs
1. For the membership of co-operatives credit society members should belong to located at village of co-operative societies.
2. The work of PACS should limited to its village only.
3. The liability of PACS should be unlimited.
4. PACS is liable for to the deposits and loans on its account.
5. PACS provides loans to its members only.
6. Loans repayment schedule can be decided by the co-operative society as per the significance purpose of the loans.
7. PACS provide the loan only for medium and short term purpose.

c) Functions of Pacs
1. It promotes economic interest of members in accordance with the co-operative principle.
2. It provides short term and medium term loans.
3. It promotes savings habits among members.
4. It supplies agricultural inputs like fertilizers, seeds, insecticides, and implements.
5. It provides marketing facilities for the sale of agricultural products and
6. It supplies domestic products requirements such as sugar, kerosene etc.

d) Management, Membership And Share Capital of Pacs

The general body elects a managing committee which consists of 5 to 9 members and elects a president, secretary, and treasurer to look after the day today functioning of the society. All the office bearers render honorary service. The RBI has given a directive to appoint a full time paid secretary to maintain the accounts for each society.

All agriculturists, agricultural labourers, artisans and small traders in the village can become member of the society. PACS issue ordinary shares of small value depending upon the particular society .i.e. Rs.10 and Rs .50 each to their members. The ownership of shares decides the right and obligations of the holder to the society. Share capital forms an important form or part of the working capital. Members borrowing capacities were determined by the number of shares held by them. Initially, societies were form with unlimited liability. The All India Rural Credit Review Committee pointed out that unlimited liability operates as a restraints on the willingness of the society to liberalize its loan policies, to admit new members and to extend its area of operation. Besides, it hinders the society to receive contribution from the State government, whose liability inevitably has to be limited. In view of these reasons, the societies were formed with limited liability and existing societies were converted into limited liability societies.

To make all Primary Agricultural Society viable and ensure adequate and timely flow of co-operative credit to the rural areas the RBI , in collaboration with State Government's had been taking a series of steps to strengthen the PACS and to correct regional imbalances in co-operative development. These efforts are being intensified by providing larger funds to weak societies to write off their losses, bad debts and overdue.

e) Reasons for Poor Recovery of Loans in Pacs

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A. INTERNAL REASONS

1. laxity in internal control system
2. poor management information system
3. low motivation and involvement of staff
4. poor industrial relations climate
5. improper identification of borrower
6. under or over financing
7. lack of post disbursement follow up
8. lack of appraisal skills
9. failure to ensure adequate, rapport with govt agencies
10. perception of bank as a charity institution
11. delay in loan sanctioning
12. insufficient gestation or repayment period
13. lack of borrower contact and poor understanding of rural clientele
14. no thrust on recovery
15. Personal accident, death etc.
16. misutilisation of loan
17. willful default
18. diversion of funds
19. shifting of place of residence or business
20. lack of technical and management skills
21. poor maintenance of assets

B. EXTERNAL REASONS

1. change in policy environment
2. inadequate market linkages
3. change in economic conditions
4. change in technology
5. political interference
6. target approach under government sponsored programmes
7. legal process
8. geographical factors
9. loan waiver, write off etc.

C. EXCLUSIVE REASONS

1. lack of transparency
2. lack of professional management
3. inadequacy of non-official and member education
4. imbalance among tiers

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IV. FINDINGS

1. Rural credit is mainly focused on the agro sector and PACS plays a major role in rural finance.
2. The society provides only short-term and medium-term loan.
3. It supplies short-term credit on the personal security of the borrowers, while medium –term credit is given by charge on their immovable assets.
4. The society provides loans only relate to agricultural credit to farmers
5. Deposit mobilization in society is less. Because of lack of awareness among the people about the different schemes of the society.
6. The members deposit money for the purpose of compulsion made by banker to open account.
7. The amount of loan distributed to members were in inadequate time .
8. Use of computer is less in these societies.

V. SUGGESTIONS

1. The society should provide long-term loan also to farmers to meet their financial requirements.
2. As society provide loans only related to agricultural credit to farmers it is suggested that it should also provide other types of loans so that it can help the farmers and maintain good standard of living.
3. To improve the deposit mobilization, the society should conduct awareness programs from time to time . This will popularize the different schemes of the society and there by attract new customers and educating the farmers relating to different services provided by society.
4. To help farmers the society should adopt easy procedures for distributing and recovering the loan from farmers.
5. To develop self employment in the rural areas the society should provide training to the rural unemployed people.
6. The adequate amount of loan should be distributed to farmers at adequate time.

7. Political interference in lending operation should be eliminated as per as possible.
8. For early retrieval of information use of computer should also be introduced for maintaining 9echanized accounting system safely.
9. Society should educate the farmers relating to different services provided by society.
10. The society should provide quality necessary agricultural items at reasonable price to the farmers
11. The staff member of society should maintain good co-operative relationship with members by providing all information to farmers.

VI. Conclusion

Primary Agricultural Credit Society is actually organized at the grass-roots level a village or a group of small villages. It is the basic unit which deals with rural credit to farmers for meeting their financial requirements. It provides short-term and medium-term loan to farmers which helps to meet their short-term financial requirements. It supplies agricultural inputs and provides marketing facility for the agricultural products. For the development of agricultural sector and allied activities adequate and timely finance are essential. But many financial problems are cropping up in the process of development of co-operative system they are lack of adequate and trained staff, lack of necessary funds, poor industrial relations climate, lack of professional management, political interference, change in economic conditions, over dues and limited source of income of the farmers and so on these societies are unable to provide adequate finance to the members and they are making delay in the sanctioning of loan. Therefore to increase the efficiency of the society and to serve the rural agricultural people in a better perspective the co-operative banking should be strong and efficient to face the challenges in competitive environment and it needs to take necessary measures.

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Hedging Effectiveness Analysis of High Market Cap Indian Stocks Using OLS and GARCH Hedge Ratios

By Dr. P. A. Mary Auxilia & Dr. G. Y. Vishwanath

Abstract- Managing portfolios is a daunting task in the current environment of complex integrated financial markets. Fund managers are always facing the question of whether to Hedge or not. Though hedging is done for minimizing the value erosion of the portfolio, there have been times where hedging has proved to be a wrong decision. In this context, this research is done to find out the impact of dynamic hedging of a portfolio comprising of high market cap stocks using Nifty index futures during the period from Jan 2007 to Dec 2012. As the study focused on the practical aspects of trading, hedge ratio required to hedge the portfolio was determined with two important econometric methods OLS (Ordinary least squares) and GARC (Generalized autoregressive conditional heteroscedasticity) using Eviews software. The research proves that the equity risk of a portfolio can be offset by hedging the portfolio with nifty index futures. The study concludes that during periods of uncertainty an investor holding a portfolio containing high market cap stocks can do hedging. The traditional simple OLS model is preferred to complex GARCH model in calculating hedge ratio.

Keywords: hedging, high market capitalization, index futures, OLS, GARC.

GJMBR-C Classification: JEL Code: E22

HEDGINGEFFECTIVENESSANALYSISOFHIGHMARKETCAPINDIANSTOCKSUSINGOLSANDGARCHHEDGERATIOS

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Hedging Effectiveness Analysis of High Market Cap Indian Stocks using OLS and GARCH Hedge Ratios

Dr. P. A. Mary Auxilia [α] & Dr. G. Y. Vishwanath [σ]

Abstract- Managing portfolios is a daunting task in the current environment of complex integrated financial markets. Fund managers are always facing the question of whether to Hedge or not. Though hedging is done for minimizing the value erosion of the portfolio, there have been times where hedging has proved to be a wrong decision. In this context, this research is done to find out the impact of dynamic hedging of a portfolio comprising of high market cap stocks using Nifty index futures during the period from Jan 2007 to Dec 2012. As the study focused on the practical aspects of trading, hedge ratio required to hedge the portfolio was determined with two important econometric methods OLS (Ordinary least squares) and GARCH (Generalized autoregressive conditional heteroscedasticity) using Eviews software. The research proves that the equity risk of a portfolio can be offset by hedging the portfolio with nifty index futures. The study concludes that during periods of uncertainty an investor holding a portfolio containing high market cap stocks can do hedging. The traditional simple OLS model is preferred to complex GARCH model in calculating hedge ratio.

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I. Introduction

Economic development of a country to a large extent is dependent on the smooth functioning of its financial markets. A financial market that is robust is expected to foster economic growth and social welfare (Singh, 1991). Financial markets pose a great risk to the investor's in spite of its high returns. The market risk can be reduced by portfolio insurance (Wikipedia). Derivative markets help in increasing the trading volume in financial markets because the objective of trading is not only for investment purposes but also for risk management objectives of market participants (Madhumathi & Ranganatham, 2012). Adams and Montesi, (1995) found that corporate managers prefer futures to options by virtue of the large transaction costs in option trading. Investors recognize that there is a close relationship between changes in the index and changes in the values of their portfolios. This makes index futures contract is used as a tool to show how movements in the market affects the value of a portfolio (Grant, 1982). Forecasting hedge ratio is important for hedgers in derivative market, as forecasting is an important tool in decision making. (Koenker & Bassett, 1978). Hedge ratio can be determined with different models derived by econometrics - OLS, ARCH, GARCH and VECH models to name a few. Ederington (1979) and Johnson (1960) employed portfolio theory to derive the minimum variance hedge ratio (HR) as the "average relationship between the changes in the cash price and the changes in the futures price". Engle (1982) suggested ARCH model. If an autoregressive moving average model (ARMA model) is assumed for the error variance, then the model is known as generalized autoregressive conditional heteroskedasticity GARCH model (Bollerslev 1986).

Individual and institutional investors are exposed to equity risk. Predicting the movement of market is not an easy task as rightly proved by the Nobel laureate (Eugene Fama, 2013 & 1966). Stock prices are extremely difficult to predict in the short run, and that new information is very quickly incorporated into prices. In order to minimize the risk due to the adverse movement in the market there is a need for the investors to protect their portfolio value. For investors in India it is even more challenging as the volatility in Indian market is not constant and it varies over time (Securities and Exchange Board of India, 1998). Mary & Vishwanath, (2013) proved that in high PE stock portfolios, capital can be protected by hedging. With this bckground, this research examines whether hedging the portfolio with Index futures gives economic benefit to the investors.

II. Research Methodology

a) Data collection

The research is done with only secondary data obtained from periodicals, journals, website and magazines. Period of study is from January 2008 – December 2012 and daily stock and nifty index futures closing prices were taken. 2007 data is used for determining the hedge ratio.

b) Population

Population taken for the study is Nifty 50. Nifty consists of 50 companies chosen on the basis of certain parameters set by the National Stock Exchange and it broadly describes the performance of the Indian market.

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c) Sampling Framework

Based on prefixed parameter ten High Market cap stocks are drawn from the population using a non probability sampling technique, judgement sampling method. The sample consists of 10 stocks constituting a portfolio worth 1 crore (10 million) rupees. Each stock is given an equal weightage of rupees 10 lakhs (1 million) worth.

Table 1 : List of sample – High Market cap Portfolio

1	Reliance
2	Infosys
3	HUL –Hindustan Unilever Ltd
4	HDFC
5	HDFC Bank
6	ONGC- Oil and Natural Gas Corporation
7	NTPC
8	Tata Consultancy Services
9	ITC
10	SBI – State Bank of India

Source: www.nse.com

d) Financial Analysis

   i. *Calculation of Unhedged Portfolio return*

Table 2: Equal weightage portfolio representing 10 stocks (10 lakhs each)

Reliance 351 shares	Infosys 572 shares	Airtel 1033 shares	SBI 420 shares	BHEL 387 shares	ICICI 814 shares	ONGC 800 shares	NTPC 3884 shares	TCS 948 shares	RCOM 1352 shares

Source: Authors compilation.

Table 3: Representative table showing calculation of Unhedged Portfolio Return on 1/2/2008

Companies	No. of shares	Value of shares on 1/2/2008 in Rs.
Infosys	572	912111
Airtel	1033	939462
SBI	420	917532
BHEL	387	799155
ICICI	814	975294
ONGC	800	836720
NTPC	3884	798745
TCS	948	881166
RCOM	1352	826275
Reliance	351	892505
Unhedged Portfolio return	8778965

As on 1/1/2008 the portfolio was constructed for 1 crore rupees by giving equal weightage of 10 lakhs (1 million) rupees to each stock. Number of shares bought for a value of 10 lakhs for each stock is as follows:

In similar way unhedged portfolio return is calculated every month for 5 years

ii. *Hedged Portfolio return*

The number of nifty futures contract required to hedge the portfolio worth Rupees 1 crore is determined by calculating the hedge ratio. In this study hedge ratio is obtained using two different econometric methods i) Ordinary Least squares -OLS ii) GARCH , and the results are compared to find out the method which gives better returns.   The hedge ratio for 2/1/2008 is calculated using previous one year data i.e daily closing price of stock and closing price of nifty index futures from 1/1/2007 to 31/12/2007. Hedge ratio is calculated for every 3 months. So, for each stock every year hedge ratio is determined 4 times and for the total period of study it was determined 20 times for rebalancing of the portfolio. Likewise, hedge ratios were calculated for all the stocks in each sample set based on two methods OLS and GARCH with the help of Eviews software.

Hedge ratio calculation:

$$\beta \quad = \quad \rho \, (\sigma S / \sigma F)$$

where

σS is the standard deviation of ΔS, the change in the spot price during the hedging period, σF is the standard deviation of ΔF, the change in the futures price during the hedging period, ρ is the coefficient of correlation between ΔS and ΔF.

Rebalancing is done every three months to adjust the number of contracts to be hedged and the trading profit is calculated.

Number of contracts to be hedged: Vp x h* / Vi

Vp – Value of the portfolio.

h* - Hedge ratio.

Vi – Value of one index future.

The portfolio value without hedging and the hedged portfolio value is compared to prove the hedging effectiveness. For proving this statistical tests are done with the help of SPSS software.

Table 4: Representative table showing calculation of Market Cap portfolio returns using OLS Hedge ratio.

Date	1- Jan-08	1-Feb-08	3-Mar-08
Portfolio Value in Rs.	9998896.1	8778964.8	7977702.3
Hedge ratio	0.7015	0.7015	0.7015
Nifty	6144.35	5317.25	4953
Value of nifties to be hedged in Rs.	7014226	6069806	5736569
Profit/ Loss in Rs.	0	429521	421874.68
Value of extra nifties hedged in Rs.	0	88637.4	-140211
tot hedge in Rs.		6158444	5596358
Un hedged value in Rs.	9998896.1	8778964.8	7977702.3
Trading profit in Rs.		944178.89	1366053.6
Hedged value in Rs.	9998896.05	9723143.69	9343755.82

Source: Authors research output using data from www.nse.com

Table 5: Representative table showing calculation of Market Cap portfolio returns using GARCH Hedge ratio

Date	1-Jan-08	1-Feb-08	3-Mar-08
Portfolio Value in Rs.	9998896.1	8778964.8	7977702.3
Hedge ratio	0.6802	0.6802	0.6802
Nifty	6144.35	5317.25	4953
Value of nifties to be hedged in Rs.	6801249	5885506	5562387
Profit/ Loss in Rs.	0	429521	409065.1
Value of extra nifties hedged in Rs.	0	85946.06	-135954
tot hedge in Rs.		5971452	5426433
Unhedged value in Rs.	9998896.1	8778964.8	7977702.3
Trading profit in Rs.	0	915510.3	1324575
Hedged value in Rs.	9998896.05	9694475	9302278

Source: Authors research output using data from www.nse.com

Table 6: Comparison table of unhedged portfolio value with OLS/GARCH hedged portfolio values

Date	Unhedged portfolio value	OLS Hedged value in Rs.	GARCH Hedged value in Rs.
1-Jan-08	9998896	9998896	9998896
1-Feb-08	8778965	9723144	9694475
3-Mar-08	7977702	9343756	9302278
1-Apr-08	7555383	9162612	9113811
2-May-08	8424073	9480263	9419544
2-Jun-08	7651525	9264630	9215956
1-Jul-08	6433563	9009214	8981359
1-Aug-08	7296548	9167081	9227024
1-Sep-08	7178987	9138187	9187090
1-Oct-08	6620391	9122432	9103742
3-Nov-08	5387486	9218522	9101810
1-Dec-08	4918888	9308613	9150694
1-Jan-09	5374288	9201967	9085503
2-Feb-09	4993423	9170367	9027243
2-Mar-09	4824524	9124227	8971733
1-Apr-09	5377937	9163493	9050244
4-May-09	6449779	9534188	9398719
1-Jun-09	7717239	9762530	9594129
1-Jul-09	7550233	9811931	9650388
3-Aug-09	8241071	10034082	9895867
1-Sep-09	8105053	10007535	9863872
1-Oct-09	8979411	10298128	10183521
3-Nov-09	7907787	9932823	9787841
1-Dec-09	8633103	9913832	9800858
4-Jan-10	9051016	10188779	10081953
1-Feb-10	8590524	10134538	10060727
2-Mar-10	8642354	10041111	9955496
1-Apr-10	8948289	10014283	9901625
3-May-10	8866261	10002144	9887423
1-Jun-10	8520929	9918298	9795859
1-Jul-10	8926718	10030060	9916299
2-Aug-10	9392359	10358432	10193533
1-Sep-10	9543286	10478217	10301716
1-Oct-10	10563767	10974948	10603327
1/11/2010	10524647	10964823	10564207
1/12/2010	10258371	10874342	10329223
14-Jan-11	9945800	10905671	10202263
1-Feb-11	9802455	11055185	10642861

1-Mar-11	9977395	11096714	10695383
1-Apr-11	10460052	11194389	10824778
2-May-11	10192184	11084961	10690578
1-Jun-11	9840062	10871062	10455069
1-Jul-11	9999376	10986559	10577416
1-Aug-11	9718616	10867920	10436079
2-Sep-11	8722504	10565943	10036920
3-Oct-11	8626524	10742418	10175251
1-Nov-11	9193299	10673808	10186926
1-Dec-11	8750042	10721520	10172601
2-Jan-12	8503163	10939784	10332090
1-Feb-12	9019488	10644507	10024511
1-Mar-12	9429049	10921624	10299620
2-Apr-12	9087347	10608430	9986859
2-May-12	8839367	10450895	9850908
1-Jun-12	8312360	10374691	9882290
2-Jul-12	8933901	10491976	9879232
1-Aug-12	8600267	10205241	9592587
3-Sep-12	8675457	10264616	9651932
1-Oct-12	9249876	10280517	9666759
1-Nov-12	8957466	10079923	9430342
3-Dec-12	9192079	10038634	9496697
6-Dec-12	9190658	9964966	9451217

*Source: Authors research output using data from www.nse.com*
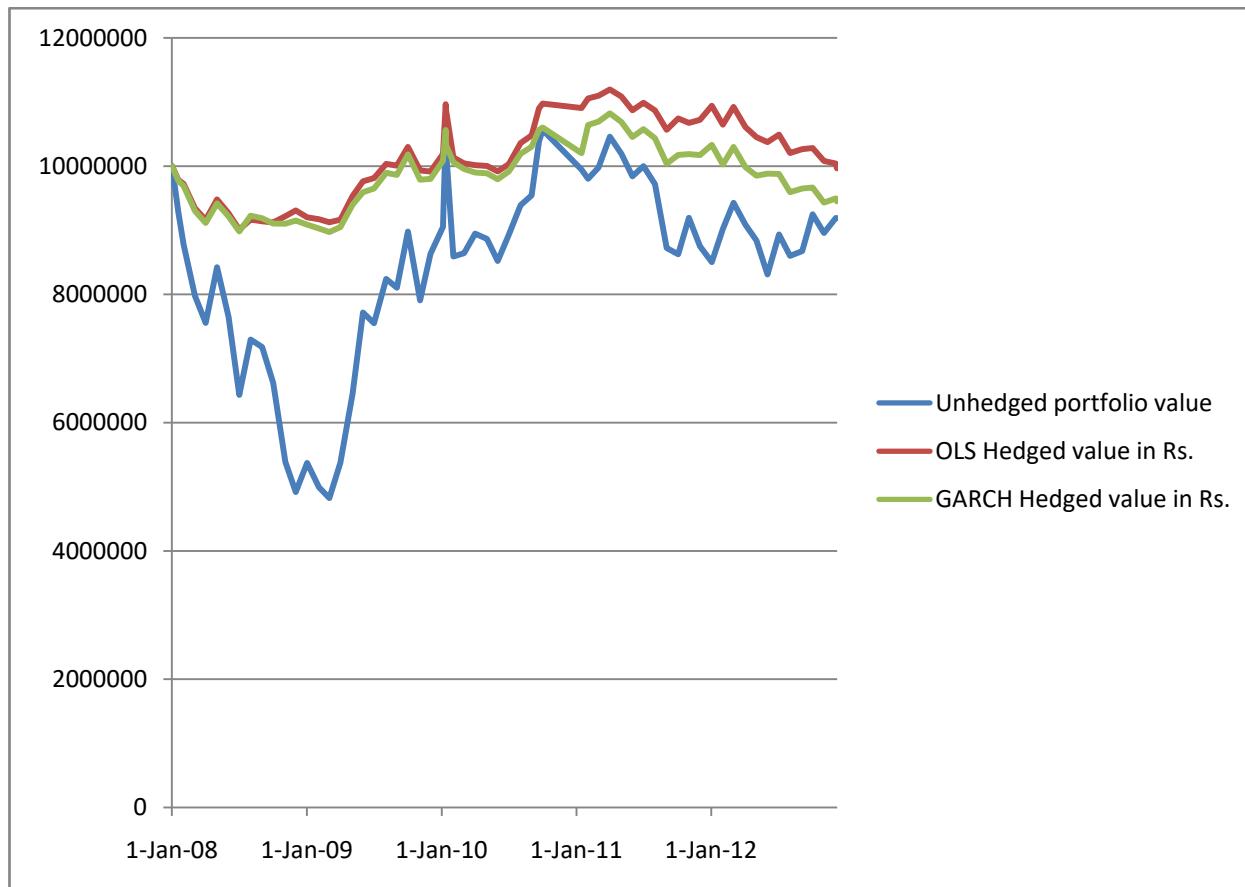
Source: Authors research output using data from www.nse.co

Figure 1: Comparison chart of unhedged portfolio value with OLS/GARCH hedged portfolio values.

e) Statistical Analysis

T-Test - Mcap OLS hedged return and Mcap GARCH hedged return

H1: There is a significant difference between the Mcap OLS hedged portfolio returns and GARCH hedged portfolio returns.

Ho : There is no significant difference between the Mcap OLS hedged portfolio returns and GARCH hedged portfolio returns.

Table 7: Mean and standard deviation of Mcap OLS hedged return and Mcap GARCH hedged return

	Mean	N	Std. Deviation
MCAPOLS	1.01E7	63	642885.676
MCAPGARCH	9.847235E6	63	5.0545330E5

Source: Authors research output using data from www.nse.com

Table 8: T-Test: MCAP OLS hedged return and MCAP GARCH hedged return

Differences		t	df	Sig (2-tailed)
Mean	Std. Deviation			
2.8910411E5	2.2931995E5	10.007	62	.000

Source: Authors research output using data from www.nse.com

Result: Table 7 & 8 show that the Market Cap hedged portfolio calculated using OLS Beta is Rs.1,01,00,000 while that of Market Cap hedged portfolio calculated using GARCH Beta is Rs.98,47,200. Significant value is 000 which indicates that Market Cap OLS hedged portfolio and Market Cap GARCH hedged portfolio are significant (i.e) Ho is rejected and H_1 is accepted.

Inference: The T-Test confirms that there is a significant difference between Market Cap OLS hedged portfolio return and Market Cap GARCH hedged portfolio return.

As Market Cap OLS hedged portfolio value is Rs.1,01,00,000 and it performs better than Market Cap GARCH hedged portfolio which is Rs.98,47,200. So, Market Cap OLS hedged portfolio is taken for further analysis. *Mcap unhedged portfolio value and Mcap hedged portfolio value*

Ho: There is no significant difference between the Mcap unhedged portfolio value and hedged portfolio value.

H_1: There is a significant difference between the Mcap un hedged portfolio value and hedged portfolio value.

Table 8: Mean and standard deviation of Mcap OLS unhedged return and hedged return

	Mean	N	Std. Deviation
Unhedged Portfolio	8.4935E6	63	1.44986E6
Hedged Portfolio	1.0136E7	63	6.42886E5

Source: Authors research output using data from www.nse.com

Table 9: T-Test : Mcap OLS unhedged return and hedged return

Differences		t	df	Sig (2-tailed)
Mean	Std. Deviation			
-1.64282E6	9.76155E5	-13.358	62	.000

Result: The table 8 & 9 shows that Market Cap un hedged portfolio value is Rs.84,93,523 while that of Market Cap hedged portfolio(OLS) value is Rs.1,01,00,000. The null hypothesis H_0 is rejected and alternate hypothesis H_1 is accepted as sigma value is 0. Inference: The objective of hedging the portfolio and effectiveness is achieved as the Market Cap hedged portfolio (OLS) return is around the expected value which is proved by the rejection of null hypothesis. There is 16% gain over the unhedged value which is contributed by the hedge.

III. Findings and Discussion

Indian equity investors can hedge their portfolio with nifty index futures as hedging reduces loss to a great extent based on this study. Even during the worst of times hedged portfolio value remains unscathed compared to the unhedged open portfolio. Use of complex heteroscedastic models are discouraged as simple OLS model is giving better results than complex heteroscedasticity GARCH models as observed. Even when there are differences in performance, they are very minimal which can be ignored. It can be noticed that when a portfolio is hedged it can withstand harsh bearish conditions like that of 2008 crash.

Though we have ignored the transaction cost it can affect the portfolio performance if more churning is done or if the transaction costs are prohibitive. However in the current low cost (brokerage) scenario the impact of transaction cost will be minimal in the Indian context. Fund managers can use either fundamental factors or technical tools to decide when to hedge the portfolio. This study is useful for Investors in selecting the right kind of stocks for the portfolio. In this study it is proved that high Mcap stocks can be hedged effectively using index hedging. Investors can invest in high Mcap stocks as they provide the best appreciation even during uncertain periods and hedging is very effective.

IV. Conclusion

The research proves that the equity risk of a portfolio can be offset by hedging the portfolio with nifty index futures. The hedged value determined based on OLS (Ordinary least squares) method is high for Market Cap stock portfolios than GARCH (Generalized autoregressive conditional heteroscedasticity) model. So, the traditional simple OLS model is preferable to complex GARCH model in calculating hedge ratio/beta. During periods of financial crisis like 2008-2009 maximum loss covered by hedging the portfolio is up to 68%. The protection of a portfolio through hedging should not encourage investors to use it indiscriminately for unwarranted situations. Only Unhedged portfolio can fulfill the objective of the portfolio by giving good returns.

Hedging should be used as an anchor in a sailing ship charting risky waters. Hence use of hedging should be restricted to special situations where there is an inherent risk of market crash and the portfolio should be unhedged under normal circumstances. This spring's another question; when to hedge or whether to hedge or not?. This situation is a tricky one as further research is needed to find out the suitability of stop loss or other models to initiate hedging. Both fundamental and technical analysis tools may be employed to arrive at the decision.

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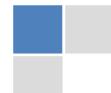
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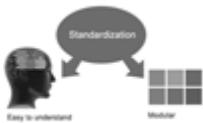
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 Papers: These are reports of significant research (typically less than 7000 words equivalent, including tables, figures, references), and comprise:

(a)Title should be relevant and commensurate with the theme of the paper.

(b) A brief Summary, "Abstract" (less than 150 words) containing the major results and conclusions.

(c) Up to ten keywords, that precisely identifies the paper's subject, purpose, and focus.

(d) An Introduction, giving necessary background excluding subheadings; objectives must be clearly declared.

(e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition; sources of information must be given and numerical methods must be specified by reference, unless non-standard.

(f) Results should be presented concisely, by well-designed tables and/or figures; the same data may not be used in both; suitable statistical data should be given. All data must be obtained with attention to numerical detail in the planning stage. As reproduced design has been recognized to be important to experiments for a considerable time, the Editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned un-refereed;

(g) Discussion should cover the implications and consequences, not just recapitulating the results; conclusions should be summarizing.

(h) Brief Acknowledgements.

(i) References in the proper form.

Authors should very cautiously consider the preparation of papers to ensure that they communicate efficiently. Papers are much more likely to be accepted, if they are cautiously designed and laid out, contain few or no errors, are summarizing, and be conventional to the approach and instructions. They will in addition, be published with much less delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and to make suggestions to improve briefness.

It is vital, that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

Format

Language: The language of publication is UK English. Authors, for whom English is a second language, must have their manuscript efficiently edited by an English-speaking person before submission to make sure that, the English is of high excellence. It is preferable, that manuscripts should be professionally edited.

Standard Usage, Abbreviations, and Units: Spelling and hyphenation should be conventional to The Concise Oxford English Dictionary. Statistics and measurements should at all times be given in figures, e.g. 16 min, except for when the number begins a sentence. When the number does not refer to a unit of measurement it should be spelt in full unless, it is 160 or greater.

Abbreviations supposed to be used carefully. The abbreviated name or expression is supposed to be cited in full at first usage, followed by the conventional abbreviation in parentheses.

Metric SI units are supposed to generally be used excluding where they conflict with current practice or are confusing. For illustration, 1.4 l rather than 1.4 × 10-3 m3, or 4 mm somewhat than 4 × 10-3 m. Chemical formula and solutions must identify the form used, e.g. anhydrous or hydrated, and the concentration must be in clearly defined units. Common species names should be followed by underlines at the first mention. For following use the generic name should be constricted to a single letter, if it is clear.

Structure

All manuscripts submitted to Global Journals Inc. (US), ought to include:

Title: The title page must carry an instructive title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) wherever the work was carried out. The full postal address in addition with the e-mail address of related author must be given. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining and indexing.

Abstract, used in Original Papers and Reviews:

Optimizing Abstract for Search Engines

Many researchers searching for information online will use search engines such as Google, Yahoo or similar. By optimizing your paper for search engines, you will amplify the chance of someone finding it. This in turn will make it more likely to be viewed and/or cited in a further work. Global Journals Inc. (US) have compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Key Words

A major linchpin in research work for the writing research paper is the keyword search, which one will employ to find both library and Internet resources.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy and planning a list of possible keywords and phrases to try.

Search engines for most searches, use Boolean searching, which is somewhat different from Internet searches. The Boolean search uses "operators," words (and, or, not, and near) that enable you to expand or narrow your affords. Tips for research paper while preparing research paper are very helpful guideline of research paper.

Choice of key words is first tool of tips to write research paper. Research paper writing is an art.A few tips for deciding as strategically as possible about keyword search:

- One should start brainstorming lists of possible keywords before even begin searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in research paper?" Then consider synonyms for the important words.
- It may take the discovery of only one relevant paper to let steer in the right keyword direction because in most databases, the keywords under which a research paper is abstracted are listed with the paper.
- One should avoid outdated words.

Keywords are the key that opens a door to research work sources. Keyword searching is an art in which researcher's skills are bound to improve with experience and time.

Numerical Methods: Numerical methods used should be clear and, where appropriate, supported by references.

Acknowledgements: Please make these as concise as possible.

References

References follow the Harvard scheme of referencing. References in the text should cite the authors' names followed by the time of their publication, unless there are three or more authors when simply the first author's name is quoted followed by et al. unpublished work has to only be cited where necessary, and only in the text. Copies of references in press in other journals have to be supplied with submitted typescripts. It is necessary that all citations and references be carefully checked before submission, as mistakes or omissions will cause delays.

References to information on the World Wide Web can be given, but only if the information is available without charge to readers on an official site. Wikipedia and Similar websites are not allowed where anyone can change the information. Authors will be asked to make available electronic copies of the cited information for inclusion on the Global Journals Inc. (US) homepage at the judgment of the Editorial Board.

The Editorial Board and Global Journals Inc. (US) recommend that, citation of online-published papers and other material should be done via a DOI (digital object identifier). If an author cites anything, which does not have a DOI, they run the risk of the cited material not being noticeable.

The Editorial Board and Global Journals Inc. (US) recommend the use of a tool such as Reference Manager for reference management and formatting.

Tables, Figures and Figure Legends

Tables: Tables should be few in number, cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g. Table 4, a self-explanatory caption and be on a separate sheet. Vertical lines should not be used.

Figures: Figures are supposed to be submitted as separate files. Always take in a citation in the text for each figure using Arabic numbers, e.g. Fig. 4. Artwork must be submitted online in electronic form by e-mailing them.

Preparation of Electronic Figures for Publication

Even though low quality images are sufficient for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit (or e-mail) EPS (line art) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings) in relation to the imitation size. Please give the data for figures in black and white or submit a Color Work Agreement Form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution (at final image size) ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs) : >350 dpi; figures containing both halftone and line images: >650 dpi.

Color Charges: It is the rule of the Global Journals Inc. (US) for authors to pay the full cost for the reproduction of their color artwork. Hence, please note that, if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a color work agreement form before your paper can be published.

Figure Legends: Self-explanatory legends of all figures should be incorporated separately under the heading 'Legends to Figures'. In the full-text online edition of the journal, figure legends may possibly be truncated in abbreviated links to the full screen version. Therefore, the first 100 characters of any legend should notify the reader, about the key aspects of the figure.

6. AFTER ACCEPTANCE

Upon approval of a paper for publication, the manuscript will be forwarded to the dean, who is responsible for the publication of the Global Journals Inc. (US).

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The corresponding author will receive an e-mail alert containing a link to a website or will be attached. A working e-mail address must therefore be provided for the related author.

Acrobat Reader will be required in order to read this file. This software can be downloaded

(Free of charge) from the following website:

www.adobe.com/products/acrobat/readstep2.html. This will facilitate the file to be opened, read on screen, and printed out in order for any corrections to be added. Further instructions will be sent with the proof.

Proofs must be returned to the dean at dean@globaljournals.org within three days of receipt.

As changes to proofs are costly, we inquire that you only correct typesetting errors. All illustrations are retained by the publisher. Please note that the authors are responsible for all statements made in their work, including changes made by the copy editor.

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Please note that if not specifically requested, publisher will dispose off hardcopy & electronic information submitted, after the two months of publication. If you require the return of any information submitted, please inform the Editorial Board or dean as soon as possible.

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You must strictly follow above Author Guidelines before submitting your paper or else we will not at all be responsible for any corrections in future in any of the way.

Before start writing a good quality Computer Science Research Paper, let us first understand what is Computer Science Research Paper? So, Computer Science Research Paper is the paper which is written by professionals or scientists who are associated to Computer Science and Information Technology, or doing research study in these areas. If you are novel to this field then you can consult about this field from your supervisor or guide.

TECHNIQUES FOR WRITING A GOOD QUALITY RESEARCH PAPER:

1. Choosing the topic: In most cases, the topic is searched by the interest of author but it can be also suggested by the guides. You can have several topics and then you can judge that in which topic or subject you are finding yourself most comfortable. This can be done by asking several questions to yourself, like Will I be able to carry our search in this area? Will I find all necessary recourses to accomplish the search? Will I be able to find all information in this field area? If the answer of these types of questions will be "Yes" then you can choose that topic. In most of the cases, you may have to conduct the surveys and have to visit several places because this field is related to Computer Science and Information Technology. Also, you may have to do a lot of work to find all rise and falls regarding the various data of that subject. Sometimes, detailed information plays a vital role, instead of short information.

2. Evaluators are human: First thing to remember that evaluators are also human being. They are not only meant for rejecting a paper. They are here to evaluate your paper. So, present your Best.

3. Think Like Evaluators: If you are in a confusion or getting demotivated that your paper will be accepted by evaluators or not, then think and try to evaluate your paper like an Evaluator. Try to understand that what an evaluator wants in your research paper and automatically you will have your answer.

4. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

5. Ask your Guides: If you are having any difficulty in your research, then do not hesitate to share your difficulty to your guide (if you have any). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work then ask the supervisor to help you with the alternative. He might also provide you the list of essential readings.

6. Use of computer is recommended: As you are doing research in the field of Computer Science, then this point is quite obvious.

7. Use right software: Always use good quality software packages. If you are not capable to judge good software then you can lose quality of your paper unknowingly. There are various software programs available to help you, which you can get through Internet.

8. Use the Internet for help: An excellent start for your paper can be by using the Google. It is an excellent search engine, where you can have your doubts resolved. You may also read some answers for the frequent question how to write my research paper or find model research paper. From the internet library you can download books. If you have all required books make important reading selecting and analyzing the specified information. Then put together research paper sketch out.

9. Use and get big pictures: Always use encyclopedias, Wikipedia to get pictures so that you can go into the depth.

10. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right! It is a good habit, which helps to not to lose your continuity. You should always use bookmarks while searching on Internet also, which will make your search easier.

11. Revise what you wrote: When you write anything, always read it, summarize it and then finalize it.

12. Make all efforts: Make all efforts to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in introduction, that what is the need of a particular research paper. Polish your work by good skill of writing and always give an evaluator, what he wants.

13. Have backups: When you are going to do any important thing like making research paper, you should always have backup copies of it either in your computer or in paper. This will help you to not to lose any of your important.

14. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several and unnecessary diagrams will degrade the quality of your paper by creating "hotchpotch." So always, try to make and include those diagrams, which are made by your own to improve readability and understandability of your paper.

15. Use of direct quotes: When you do research relevant to literature, history or current affairs then use of quotes become essential but if study is relevant to science then use of quotes is not preferable.

16. Use proper verb tense: Use proper verb tenses in your paper. Use past tense, to present those events that happened. Use present tense to indicate events that are going on. Use future tense to indicate future happening events. Use of improper and wrong tenses will confuse the evaluator. Avoid the sentences that are incomplete.

17. Never use online paper: If you are getting any paper on Internet, then never use it as your research paper because it might be possible that evaluator has already seen it or maybe it is outdated version.

18. Pick a good study spot: To do your research studies always try to pick a spot, which is quiet. Every spot is not for studies. Spot that suits you choose it and proceed further.

19. Know what you know: Always try to know, what you know by making objectives. Else, you will be confused and cannot achieve your target.

20. Use good quality grammar: Always use a good quality grammar and use words that will throw positive impact on evaluator. Use of good quality grammar does not mean to use tough words, that for each word the evaluator has to go through dictionary. Do not start sentence with a conjunction. Do not fragment sentences. Eliminate one-word sentences. Ignore passive voice. Do not ever use a big word when a diminutive one would suffice. Verbs have to be in agreement with their subjects. Prepositions are not expressions to finish sentences with. It is incorrect to ever divide an infinitive. Avoid clichés like the disease. Also, always shun irritating alliteration. Use language that is simple and straight forward. put together a neat summary.

21. Arrangement of information: Each section of the main body should start with an opening sentence and there should be a changeover at the end of the section. Give only valid and powerful arguments to your topic. You may also maintain your arguments with records.

22. Never start in last minute: Always start at right time and give enough time to research work. Leaving everything to the last minute will degrade your paper and spoil your work.

23. Multitasking in research is not good: Doing several things at the same time proves bad habit in case of research activity. Research is an area, where everything has a particular time slot. Divide your research work in parts and do particular part in particular time slot.

24. Never copy others' work: Never copy others' work and give it your name because if evaluator has seen it anywhere you will be in trouble.

25. Take proper rest and food: No matter how many hours you spend for your research activity, if you are not taking care of your health then all your efforts will be in vain. For a quality research, study is must, and this can be done by taking proper rest and food.

26. Go for seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

27. Refresh your mind after intervals: Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

28. Make colleagues: Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

29. Think technically: Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

30. Think and then print: When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

31. Adding unnecessary information: Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

32. Never oversimplify everything: To add material in your research paper, never go for oversimplification. This will definitely irritate the evaluator. Be more or less specific. Also too, by no means, ever use rhythmic redundancies. Contractions aren't essential and shouldn't be there used. Comparisons are as terrible as clichés. Give up ampersands and abbreviations, and so on. Remove commas, that are, not necessary. Parenthetical words however should be together with this in commas. Understatement is all the time the complete best way to put onward earth-shaking thoughts. Give a detailed literary review.

33. Report concluded results: Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

34. After conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print to the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects in your research.

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form, which is presented in the guidelines using the template.
- Please note the criterion for grading the final paper by peer-reviewers.

Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of prior workings.

Writing a research paper is not an easy job no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record keeping are the only means to make straightforward the progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear

· Adhere to recommended page limits

Mistakes to evade

- Insertion a title at the foot of a page with the subsequent text on the next page
- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

· Use standard writing style including articles ("a", "the," etc.)

· Keep on paying attention on the research topic of the paper

· Use paragraphs to split each significant point (excluding for the abstract)

· Align the primary line of each section

· Present your points in sound order

· Use present tense to report well accepted

· Use past tense to describe specific results

· Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives

· Shun use of extra pictures - include only those figures essential to presenting results

Title Page:

Choose a revealing title. It should be short. It should not have non-standard acronyms or abbreviations. It should not exceed two printed lines. It should include the name(s) and address (es) of all authors.

Abstract:

The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript-- must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Yet, use comprehensive sentences and do not let go readability for briefness. You can maintain it succinct by phrasing sentences so that they provide more than lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study, with the subsequent elements in any summary. Try to maintain the initial two items to no more than one ruling each.

- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including <u>definite statistics</u> - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As a outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

Introduction:

The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

- Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done.
- Sort out your thoughts; manufacture one key point with every section. If you make the four points listed above, you will need a least of four paragraphs.
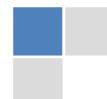
- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
- Shape the theory/purpose specifically - do not take a broad view.
- As always, give awareness to spelling, simplicity and correctness of sentences and phrases.

Procedures (Methods and Materials):

This part is supposed to be the easiest to carve if you have good skills. A sound written Procedures segment allows a capable scientist to replacement your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt for the least amount of information that would permit another capable scientist to spare your outcome but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section. When a technique is used that has been well described in another object, mention the specific item describing a way but draw the basic principle while stating the situation. The purpose is to text all particular resources and broad procedures, so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step by step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

Methods:

- Report the method (not particulars of each process that engaged the same methodology)
- Describe the method entirely
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures
- Simplify - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in every other part of the paper - avoid familiar lists, and use full sentences.

What to keep away from

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently.You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.

Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or in manuscript form.

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.

- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
- Despite of position, each figure must be numbered one after the other and complete with subtitle
- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

Discussion:

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a argument should be. Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of result should be visibly described. Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved with prospect, and let it drop at that.

- Make a decision if each premise is supported, discarded, or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
- Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work
- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

- When you refer to information, differentiate data generated by your own studies from available information
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