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RESEARCH BULLETIN

THE INSTITUTE OF COST ACCOUNTANTS OF INDIA

Statutory Body under an Act of Parliament

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The CMA professionals would ethically drive enterprises globally by creating value to stakeholders in the socio-economic context through competencies drawn from the integration of strategy, management and accounting.

Vision Statement

The Institute of Cost Accountants of India would be the preferred source of resources and professionals for the financial leadership of enterprises globally.

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President &
Chairman - IT & Research Committee
The Institute of Cost Accountants of India
12 Sudder Street, Kolkata - 700016

Foreword

In today's world, we are constantly adapting. We are constantly demanding new things and new ways to do things. Without research, our demands would go completely unrecognized. Research is what gets us as the human race farther. Research is the product of curiosity, which is something we all have. Without this curiosity and without this research, our society would fall flat. To gain knowledge is to thrive. Without research, our lives as we know it would be completely altered.

As society keeps moving forward at an increasing pace it's important to understand just how fast research and development has to be to have an impact on the global scale of things. The fact of the matter is that there are companies that have invested vast funding into research and development and that they are experiencing a tremendous amount of growth at an incredible pace.

While research and development usually boils-down to how much money and resources can be invested into them, the benefit does not have to be only possible to big organizations. Small organizations can also have a big boon in their business and economics as outsourcing their research can bring them new ways to maximize profits and lower costs.

It is my pleasure to present before you our esteemed Research Bulletin, Volume - 44, No. II. I believe this volume will undeniably enrich the thought process of the readers and potential researchers.

The bulletin comprises of in-depth researched topics on a variety of segments of the Indian Economy to address diverse issues and confrontations of our economy and throw some light towards its effective solutions.

I hope the readers would love to go through them.

CMA Amit Anand Apte
President
The Institute of Cost Accountants of India

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Chairman's Communiqué

It gives me distinct honour to announce the release of Research Bulletin Vol.44 No. II July 2018 edition. Our Research Bulletin emphasizes on pragmatic research articles and its aim is to highlight the dynamism in environmental, social, economical and market-related issues so that the researchers and the readers can analyze the surroundings, adapt the changes in a better manner and can take decisions strategically.

This publication consists of wide range of topics on blazing issues like Securities Market, Infrastructure, Corporate Governance, Goods & Services Tax (GST), Accounting Treatment of Securitization in India, etc. well-written by researchers, academicians and professionals.

I take this opportunity to express my gratitude for my fellow members of the Journal and Publications Committee, esteemed members of the Editorial Board, the eminent contributors and the entire team behind the scenes for their sincere effort to publish this volume in time.

The readers are invited to tender their valuable feedback towards enrichment of Research Bulletin.

Suggestions for improvement of this Bulletin shall be highly appreciated.

CMA Dr. I. Ashok
Chairman, Journal & Publications Committee
The Institute of Cost Accountants of India

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Editor's Note

Greetings!!!

India has a diversified financial sector undergoing rapid expansion, both in terms of strong growth of existing financial services firms and new entities entering the market. The sector comprises commercial banks, insurance companies, non-banking financial companies, co-operatives, pension funds, mutual funds and other smaller financial entities. The banking regulator has allowed new entities such as payments banks to be created recently thereby adding to the types of entities operating in the sector. However, the financial sector in India is predominantly a banking sector with commercial banks accounting for more than 64 per cent of the total assets held by the financial system.

The Government of India has introduced several reforms to liberalize, regulate and enhance this industry. The Government and Reserve Bank of India (RBI) have taken various measures to facilitate easy access to finance for Micro, Small and Medium Enterprises (MSMEs). These measures include launching Credit Guarantee Fund Scheme for Micro and Small Enterprises, issuing guideline to banks regarding collateral requirements and setting up a Micro Units Development and Refinance Agency (MUDRA). With a combined push by both government and private sector, India is undoubtedly one of the world's most vibrant capital markets. In 2017, a new portal named 'Udyami Mitra' has been launched by the Small Industries Development Bank of India (SIDBI) with the aim of improving credit availability to Micro, Small and Medium Enterprises' (MSMEs) in the country. India has scored a perfect 10 in protecting shareholders' rights on the back of reforms implemented by Securities and Exchange Board of India (SEBI).

Economic growth will slow somewhat but remain robust, at close to 7.5 per cent in 2019 and 2020. Higher oil prices and the rupee depreciation are putting pressure on demand, inflation and the current account and public finances. However, business investment and exports will be strong, as past structural reforms – including the new Insolvency and Bankruptcy Code, smoother implementation of the Goods and Services Tax (GST), better roads and electricity and bank recapitalization – are paying off.

Monetary policy will need to be tightened as inflation expectations are trending up and there are several upside risks to inflation. Containing the relatively high public debt-to-GDP ratio would require controlling contingent liabilities, such as those stemming from public enterprises and banks. Further subsidy reform would help make social spending more effective. Improving public banks' governance is also a key to avoid a new wave of non-performing loans and to support the investment recovery.

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Our present volume of Research Bulletin, Vol. 44, No. II, July 2018 issue comprises of various blazing topics related to finance and economy like Securities Market, Infrastructure, Corporate Governance, Goods & Service Tax (GST), Accounting Treatment of Securitization in India, etc. would surely improve the knowledge base of the readers.

I look forward to presenting the next issue of Research Bulletin, Vol.44, No. III, which will be a Non-theme one.

We look forward to constructive feedback from our readers on the articles and overall development of the Research Bulletin. Please send your mails at *research.bulletin@icmai.in*.

I am delighted that everyone pulled together to make this issue possible on time.

My earnest gratitude to all the contributors and reviewers of this important issue and wish our readers get plenty of academic inputs from the articles.

Warm regards,

CMA (Dr.) Debaprosanna Nandy
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Contents

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ACCOUNTING FOR SECURITISATION IN INDIA: THE PAST, PRESENT & FUTURE

Saumya Jain
C. P. Gupta

Abstract:

Securitization is one amongst many innovative financial practices that has emerged in the financial sector as an effective instrument for managing risk return portfolio of financial institutions and investors. Though Securitization has been prevalent in India since 1990s, holistic regulatory guidelines dealing with this issue have begun to develop only in the aftermath of global financial crisis. The present paper traces the history of regulatory aspects of Accounting Treatment of Securitization in India and the accounting treatment in the light of introduction of IFRS converged Accounting Standards i.e IND-AS. This area of accounting was plagued by conflicting provisions in the past and the same has been carried forward even after the introduction of IND-AS. It is expected that the regulatory agencies will work together to come out with a comprehensive set of accounting guidelines in the near future as IND-AS are applicable to limited financial entities w.e.f financial year 2018-19. Till then, the boundaries remain fuzzy. The authors hope that the present paper will be useful to accounting professionals, academicians, analysts, researchers and students as it brings together the plethora of accounting regulation(s) on this aspect under one umbrella and also discusses the challenges emerging out of it.

Key Words:

Banks, IFRS, IND-AS, NBFC, RBI, Securitization

1. INTRODUCTION

Securitisation is the process of pooling relatively homogeneous and illiquid financial assets and converting them into financial instruments-securities that can be bought and sold just like any other financial product. These securities are backed by financial assets which are contractual debts such as mortgages, auto loans, credit card receivables and hence these securities are often referred to as Asset Backed Securities or Mortgage Backed Securities. The cash flows generated from the underlying assets (principal/interest) are used to service the securities.

The process of conversion of financial assets into interest bearing securities is done through a Special Purpose Entity which purchases the loan receivables from the financial institution which generated it (referred to as the "originator") in return for immediate cash payment. These receivables are then repackaged into structured financial instruments each bearing a different risk-return profile depending on the appetite of the investors through a process known as "tranching".

Securitisation is one amongst many innovative financial products which provides a number of advantages to the involved parties. The originator is able to offload illiquid assets from its balance sheet in return for immediate cash flows. This frees up the capital tied in these assets and improves the liquidity position and originator's financial ratios. For the investors, securitisation offers an additional investment opportunity to diversify their portfolio and investors can manage their risk return exposure by choosing amongst a variety of tranches. Also, these securities are credit rated and carry provisions for protection against default such as credit enhancement, third party guarantee etc.

2. REGULATION OF SECURITISATION IN INDIA

Though securitization has been prevalent in India since 1990s, there is no single regulatory framework for securitization in India. The Reserve Bank of India issued guidelines for Securitization of Standard Assets applicable to banks, financial institutions and non-banking financial companies in February,2006 which covered several aspects of Securitisation such as definitions, true sale critierion, policy on provision ,prudential norms etc.In 2007, the Securities Contracts (Regulation) Act 1956 was amended to include "securitised instruments" in the definition of "securities". Further, on May 26, 2008, SEBI notified Public Offer And Listing Of Securitised Debt Instruments Regulationspaving the way for trading in these instruments.

In the aftermath of global financial crisis, which was orchestrated by primarily complex structured financial products and questionable interests of originators and credit rating agencies, RBI amended the Securitisation Guidelines in 2012 so that originators are restrained from "originate to distribute" model and have continued exposure in the loans they seek to distribute. RBI introduced provisions relating to Minimum Holding Period, Minimum Retention Requirement, Booking of Profit, Disclosure by Originating Banks etc.

Interestingly, earlier in 2002, the Government of India had passed the SARFAESI Act to speeden the process of recovery of bad loans without intervention

of courts and allowed banks and financial institutions to sell off their NPAs to Asset Reconstruction Companies (ARC) set up under this Act. This Act is misconstrued as a regulation relating to Securitisation when in fact it is an act for enforcement of security interests.

3. ACCOUNTING TREATMENT OF SECURITISATION IN INDIA - THE PAST

The regulations pertaining to Accounting Treatment for Securitisation in India presently can at best be described as ambiguous. Prior to 2003, this issue was not dealt with specifically in any standard nor were there any RBI guidelines pertaining to Securitisation. In 2003, The Institute of Chartered Accountants of India (ICAI) issued the much needed Guidance Note on Accounting for Securitization which recommended accounting treatment in the books of the Originator, SPE & the investors. There are three main accounting issues with respect to Securitisation:

1. De-recognition of Securitised Asset in the books of the Originator
2. Treatment of Gain/Loss on Transfer of Securitised Assets in the books of the Originator
3. Consolidation of Special Purpose Entity with the Originator

The following sections will govern the Accounting treatment relating to all three aspects in the past, present and future.

3.1 Accounting Treatment for Securitization as per the Guidance Note issued by ICAI

A summary of the provisions of the 2003 Guidance Note on Accounting for Securitization (ICAI) is given below:

3.1.1 Accounting in the books of the Originator

i) Derecognition of Securitised Asset: The Guidance relating to derecognition is based on whether the Originator loses or retains "Control" over the Securitised Asset. The term 'Control' has not been defined specifically; however, certain situations have been defined wherein Control will be deemed to have been relinquished. As per the guidelines, Securitised asset should be derecognised in the books of the Originator if the Originator loses control of the contractual rights that comprise the securitised asset. It has been specifically mentioned that servicing the asset would not count as retention of control.

ii) Gain/Loss on Securitisation: On derecognition, the difference between the book value of the securitised asset and consideration received should be treated as gain or loss arising on securitisation and disclosed separately in the Statement of Profit and Loss. On the other hand, if the derecognition criterion is not met, the asset should continue to be recognised in the books of the Originator and consideration received for the asset so transferred should be accounted for as a borrowing secured there against.

The consideration received in a form other than cash, e.g., securities issued by the SPE, should be measured at the lowest of the (a) the fair value of the consideration; (b) the net book value of the securitised assets; and (c) the net realisable value of the securitised assets.

In case the securitised assets qualify for derecognition, the entire expenses incurred on the transaction, such as legal fees, etc.,

should be expensed at the time of the transaction and should not be deferred.

Where the securitised assets do not qualify for derecognition and, therefore, the consideration received in respect thereof is treated as a secured borrowing, such expenses should either be amortised over the term of the secured borrowing or recognised immediately in the statement of profit and loss.

3.1.2 Accounting In the books Of Special Purpose Entity (SPV)

The SPE should recognise the asset received under a securitisation transaction, if the originator loses control over the securitised asset on the basis of the criterion prescribed above.

The asset so received should be recognised at the amount of consideration, if the consideration has been paid in cash. In case the consideration has been paid in a form other than cash, e.g., securities, the asset so received should be recorded at the lower of either its intrinsic value or fair value, whichever is more clearly evident.

If originator has not lost control over the asset, the SPE should not recognise the asset received. In such a case, the consideration paid should be recorded as a lending secured against the financial asset received under securitisation transaction. The amount received by the SPE on issue of Pass Through Certificates(PTC) or other securities should be shown on the liability side of the balance sheet, with appropriate description, keeping in view the nature of securities issued.

3.1.3. Accounting in the books of the Investor

The Investor should account for the PTCs and/or debt securities acquired by it as an investment in accordance with Accounting Standard (AS) 13, 'Accounting for Investments'

3.2 Accounting Treatment as per the RBI Guidelines on "Securitization of Standard Assets", 2006

ICAI guidelines are applicable to all entities applying Accounting Standards whereas RBI Guidelines for Securitization are specifically applicable to banks, NBFCs and financial institutions. Since securitization is a subject matter of financial institutions, it is safe to assume that the target audience of both the regulations is the same.

While the Guidance Note is recommendatory in nature, the RBI Guidelines are authoritative and since any specific regulation overrides Accounting Standards in the case of any conflict, it is safe to say that these Guidelines override the Guidance Note which is recommendatory in nature.

A summary of the provisions of the Guidelines w.r.t Accounting for Securitisationof Standard Assets is given below:

3.2.1 Accounting in the books of the originator

(i) Derecognition of Securitised Asset: RBI laid down the criteria for a "true sale" for enabling the transferred assets to be removed from the balance sheet of the originator in a securitization structure. The isolation of assets or 'true sale' from the

originator to the SPV is an essential prerequisite to recognized the assets from the balance sheet of the originator. In case the assets are transferred to the SPV by the originator in full compliance with all the conditions of true sale, the transfer would be treated as a 'true sale' and originator will not be required to maintain any capital against the value of assets so transferred from the date of such transfer.

(ii) Treatment of Gain/Loss on Transfer of Securitised Asset: In terms of RBI guidelines, banks could sell assets to Special Purpose Entities, only on cash basis and the sale consideration had to be received simultaneously with the transfer of the asset to the SPV. Hence, any loss arising on sale had be reflected in the statement of Profit and Loss for the period during which the sale is effected and any profit/premium arising on account of sale should be amortised over the life of the securities issued or to be issued by the SPV.

The RBI guidelines further provided that

a) In case the securitised assets qualify for derecognition from the books of the originator, the entire expenses incurred on the transaction, say, legal fees, etc., should be expensed at the time of the transaction and should not be deferred.

b) Where the securitised assets do not qualify for derecognition, the sale consideration received shall be treated as a borrowing.

3.2.2 Accounting Treatment in the books of the SPV and Investor(s)

The RBI guidelines further provide that the accounting treatment of the securitization transactions in the books of originators, SPV and investors in securities will be as per the Guidance note issued by the ICAI with reference to those aspects not specifically covered in these guidelines. As regards the SPV, it could only recognize the assets received when the criteria for "true sale" is met.

3.3 Consolidation Guidelines as per Indian GAAP

As regards the third accounting issue, which is consolidation of financial statements of Originator with the SPE, the Indian Accounting Standard (IGAAP) AS-21: Consolidated Financial Statements is based on the concept of Voting Rights. Since, the SPVs are in the form of trust and are so structured so that the Originator does not have voting rights, under Old Indian Accounting standards (IGAAP), SPVs were never consolidated with the Originator.

4. COMPARISION OF RBI GUIDELINES, 2006 AND GUIDANCE NOTE ON ACCOUNTING FOR SECURITISATION

The criteria for derecognition i.e "true sale" mentioned in the RBI guidelines resonates with the concept of 'control' as mentioned in the Guidance Note. However, RBI lays down strict &elaborate criteria for both Originator and SPV to live upto the condition of "true sale". Thus, for the Originators to derecognize financial assets from their books, the condition of "true" sale as mentioned in the guidelines has to be met over-riding the guidelines of the Accounting Note.

The Guidance Note provides for the immediate recognition of profit on sale of transferred assets in the statement of Profit

and Loss whereas RBI guidelines provide that profit received in cash has to be amortised over the term of the securitized assets. As per RBI guidelines, sale consideration can only be received in cash. This is a point of ambiguity as the Guidance note provides for the Accounting Treatment of consideration received in kind also. Further, in order to meet the criteria of true sale, sale consideration has to be in cash only. Since the RBI guidelines prevail over Guidance Note, any profit on transfer of assets has to be deferred over the term of the underlying assets whereas any loss has to be recognized immediately in the statement of Profit and Loss of the Originator. The Accounting treatment in the books of the SPV and Investors are as per the Guidance Note so there is no ambiguity. But till the time the Guidance Note was effective and the RBI Guidelines also, there was ambiguity in the treatment of profit received in kind in the books of the Originator.

5. WITHDRAWAL OF GUIDANCE NOTE ON ACCOUNTING FOR SECURITISATION

The Guidance Note on Accounting for Securitisation was withdrawn when ICAI promulgated AS 30 : Financial Instruments : Recognition & Measurement (based on IFRS 9/IAS 39) in the year 2007, which was to come into effect from 1st April,2009 on a recommendatory basis and mandatorily from 1st April, 2011. However, in March 2011, ICAI withdrew the recommendatory as well as mandatory status of AS 30 and withdrew the standard altogether in Nov 2016.

It is pertinent to mention here that AS 30 was based on the current IND-AS 109: Financial Instruments (described below) in line with the International Financial Reporting Standard (IFRS) 9. The ICAI while withdrawing AS-30 stated that where any regulatory body has issued any specific regulation, such as RBI in the present case, those regulations will continue to apply.

Moreover, in 2012 RBI revised its guidelines providing, inter-alia, fresh instructions on Accounting Treatment of Profit received in cash. It was recommended that the amount of profit received in cash may be held under an accounting head styledas “Cash Profit on Loan Transfer Transactions Pending Recognition”.

The amortisation of cash profit arising out of securitisation transaction will be done at the end of every financial year and calculated as under:

Profit to be amortised = Max{L, [(X*(Y/Z))], [(X/n)]}
X = amount of unamortised cash profit lying in the account ‘Cash Profit on Loan Transfer Transactions Pending Recognition’ at the beginning of the year
Y = amount of principal amortised during the year
Z = amount of unamortised principal at the beginning of the year
L = Loss
n = residual maturity of the securitisation transaction

Thus, it can be observed that the only authoritative source of Accounting Treatment for Securitisation in the past were the RBI Guidelines. Since, AS-30 was never notified, these guidelines only continue to be the final word for the Accounting Treatment. However, these Guidelines are not exhaustive and they contain reference to Guidance Note which itself was withdrawn in 2007.

6. SECURITIZATION AND IND-AS – THE PRESENT

The Indian version of IFRS i.e IND-AS were introduced in India w.e.f financial year 2016-17 and contain exhaustive standards dealing with Financial Instruments. IND-AS 32 (Financial Instruments: Presentation), IND-AS 109 (Financial Instruments). IND-AS 107 (Financial Intruments: Disclosures). IND-AS 109 has been hailed as one of the most holistic and complex standard that will drastically change the presentation and measurement of financial assets and liabilities in the annual reports. The implications of this standard will be particularly game changing for the financial sector (banks, NBFCs, financial institutions) as this standard contains new definitions of Financial Assets, Financial Liabilities, Hedge Accounting, Effective Interest rate, fair valuation and loan loss provisioning based on Expected Credit Losses model.

On 18thJanuary 2016, the Ministry of Corporate Affairs of India (MCA) had issued the roadmap for adoption of IND-AS by financial sector entities. While the rest of the corporate India has converged w.e.f financial year 2016-17, the first year of adoption for scheduled commercial banks, All India Term lending Refinancing Institutions & NBFCs 030 with net worth of Rs.500 crores or more was fiscal year 2018-19. However, in April 2018, the RBI deferred the implementation of IND-AS by scheduled commercial banks for one year i.e banks will be preparing their IND-AS compliant reports for the first time from the financial year 2019-20. However, this relaxation has not been extended to NBFCs and they will be applying IND-AS w.e.f FY 2018-19.

Thus, for the companies and banks not converging to IND-AS, there is no clear Accounting Treatment for Securitization.

For the NBFCs having net worth of Rs.500 crore or more, which are to apply IND-AS w.e.f current financial year, the Accounting Treatment for Securitization is to be drawn with reference to IND-AS 109 which contains provisions for derecognition of Financial Assets as well as IND-AS 110 which deals with provisions relation to consolidation. Moreover, there are inconsistencies between the RBI guidelines and IND-AS as far as accounting treatment for securitization is concerned.

6.1 Accounting Treatment for Securitisation as per IND-AS 109

IND-AS 109 is a standard dealing with Financial instruments, in general, and as such there is no bifurcation of Accounting Treatment in the books of the different parties. All the parties have to draw conclusions form the Applicable standard with regard to the nature of liabilities and assets. Below, we have summarized the relevant accounting treatment as regards the three accounting issues discussed above as per IND-AS.

IND-AS 32 defines Financial Assets as any asset that is: (a) cash; (b) an equity instrument of another entity; (c) a contractual right to receive cash or another financial asset from another entity. Since, loans are in the nature of contractual rights to receive debts, the relevant accounting treatment is the one for Financial Assets.

(i) Derecognition of Financial Assets as per IND-AS 109

The derecognition of financial assets in the books of the Originator is based on the extent to which the risks and rewards of the ownership of the financial asset are transferred/retained.

(a) if the entity (Originator) transfers **substantially all the risks and rewards** of ownership of the financial asset, the entity shall **derecognise** the financial asset.

(b) if the entity(Originator) **retains** substantially all the **risks and rewards** of ownership of the financial asset, the entity shall continue to **recognise** the financial asset.

The transfer of risks and rewards is judged with reference to the entity's exposure to the net cash flows of the transferred asset before and after transfer.

(c) if the entity neither transfers nor retains substantially all the risks and rewards of ownership of the financial asset, the entity shall determine whether it has retained control of the financial asset:

- If the entity has not retained control, it shall derecognise the financial asset and recognise separately as assets or liabilities any rights and obligations created or retained in the transfer.

- if the entity has retained control, it shall continue to recognise the financial asset to the extent of its continuing involvement in the financial asset.

Whether the entity has retained control of the transferred asset, depends on the transferee's ability to sell the asset.

(ii) Treatment of Profit/Loss on Transfer of Financial Assets

IND-AS 109 provides that , on derecognition of financial asset in its entirety the difference between: (a) the carrying amount (measured at the date of derecognition) and (b) the consideration received (including any new asset obtained less any new liability assumed) shall be recognised in the profit or loss of the period in which such transfer takes place.

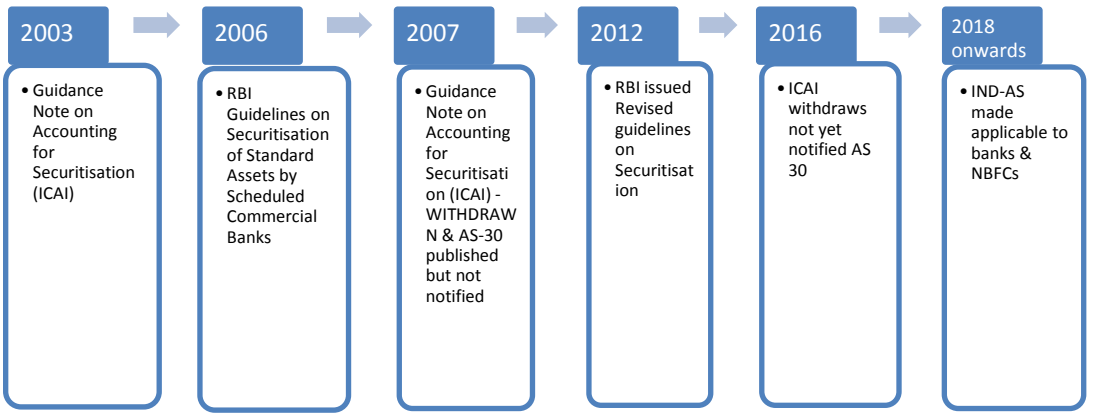
6.2 Consolidation of SPE with the Originator and Investor as per IND-AS 110

The consolidation guidelines of IND-AS-110 are vastly different from the erstwhile AS-21 particularly the definition of control. While the definition of control as per AS-21 was based on the legal form of arrangement i.e ownership of more than half of the voting power or control of composition of Board of Directors, the definition of control under IND-AS 110 is substance driven. As per Ind AS 110, an investor controls an investee when the investor (a) has power over the investee, (b) is exposed, or has rights, to variable returns from its involvement with the investee and (c) has the ability to affect those returns through its power over the investee. Power is defined as existing rights that give the current ability to direct relevant activities, ie the activities that significantly affect the investee's returns.

The SPEs are so structured that voting rights are not held by the Originator and the decisions are in the hands of a trust generally. The activities of SPV are laid out in the form of contractual arrangements and these have to be studied in detail so as to analyse as to who has the power to direct the relevant activities of the SPV. If the

Originator retains decision making powers in a Securitisation agreement, the entity may require consolidation back with the Originator.

Chart 1: Timeline of Accounting Regulations pertaining to Securitsation



Source: Authors own creation

7. IMPLICATIONS OF IND-AS FOR SECURITIZATION -THE FUTURE

The introduction of Indian Accounting Standards is a historical development in the accounting history of India and has changed the face of accounting and reporting as we know it. As we step into the future, there remain certain issues with respect to the subject at hand that need to be addressed so that all the ambiguity prevailing till date can be cleared up. Some of these have been discussed below:

a) Conflicting provisions of IND-AS and RBI Guidelines (2006 and 2012)

1) Derecognition Criteria: While the RBI guidelines provide for an elaborate true sale criteria and specifically lay down the conditions to be met by the Originator and SPV for derecognition of financial assets, the provisions given in IND-AS are principle based and subject to judgement and interpretation. Moreover, the guidelines provide for sale consideration to be received in cash only. Thus, the RBI requirements are more stringent and direct. It is possible that certain transactions which qualify for derecognition under IND0-AS may fail to satisfy the true sale criteria of RBI guidelines.

2) Treatment of Profit/Loss on Securitisation: The RBI guidelines provide that loss on securitization be recognized immediately and cash profit be recognized on a deferred basis as per the formula given in RBI guidelines, 2012. IND-AS 109 provides

for immediate recognition of profit/loss on derecognition of financial assets.

3) Consolidation: All banks coming under the purview of RBI are required to prepare Consolidated Financial Statements. However, it is the Accounting Standards that dictate the rules of Consolidation. So, all banks and financial institutions need to apply IND-AS 110 in preparing consolidated financial statements.

The RBI had constituted a Working group to deal with implementation issues for banks arising as a consequence of IND-AS. The above aspects were also considered in the report and it was recommended that RBI needs to amend its guidelines on the lines of IND-AS; however, no such guidelines have been issued so far. Moreover, the NBFCs which are required to prepare their IND-AS compliant financial statements for the FY 2018-19 are also in need for clarity over certain issues but no formal notification has been issued by the RBI. Thus ,till the time a clear set of guidelines emerge, confusion prevails.

B) Issues relating to IND-AS: The entities have to simultaneously consider the implications of IND-AS 109 & IND-AS 110. IND-AS 109 specifically provides that where an entity is preparing consolidated financial statements, it first consolidates and then applies the Derecognition principle. Thus, in the standalone statements, the entities have to consider the risk and reward criteria. Whether risk and rewards have been substantially transferred revolves exercise of judgement as there may be cases where the Originator has a share in the excess spread and also provides credit enhancement facilities (first loss, recourse etc). The contractual arrangements have to be carefully considered to check whether risk and rewards have been transferred or not. Moreover, if the SPV has been consolidated with the originator, on account of originator having control over its activities then the question of derecognition does not arise. In those cases, derecognition criteria has to be applied to assets transferred to outside the group entities.

C) Disclosure of Interest in Other Entities (IND-AS 112): In order to facilitate enhanced transparency and understanding of the financial statement users with regard to the risks that the entity exposes itself to by virtue of its interest in other entities, a whole new standard pertaining to such disclosure has been introduced. This standard holistically covers an entity's interest in joint arrangements, associates, subsidiaries and most importantly, unconsolidated structured entities. These have been defined as "an entity that has been designed so that voting or similar rights are not the dominant factor in deciding who controls the entity, such as when any voting rights relate to administrative tasks only and the relevant activities are directed by means of contractual arrangements". This definition squarely brings the SPVs set up under the Securitisation arrangement within its ambit.

This standard has lasting disclosure implications as entities need to provide information not only with regard to consolidated entities but also unconsolidated entities. Even if the Originator provides any support facility such as credit enhancement, disclosures would have to be provided. As per IND-AS 112, an entity shall disclose qualitative and quantitative information about its interests in unconsolidated structured entities,

including, but not limited to, the nature, purpose, size and activities of the structured entity and how the structured entity is financed including any income received from the SPE.

8. CONCLUDING OBSERVATIONS

There is no clear-cut accounting treatment for Securitization in India at present, even after the introduction of IND-AS. While it is expected that RBI will issue a set of guidelines to facilitate transition by scheduled commercial banks, there is still confusion for entities that are not adopting IND-AS at present and even those which are set to prepare their first financial statements w.e.f 2018-19.

While under the erstwhile IGAAP and RBI guidelines, there was a clear straightforward criteria of true sale for derecognition and voting power for control, the treatment under IND-AS is more substance driven involving detailed analysis of the terms of the contractual arrangement as well as implications of each term of engagement of the originator on the risk and reward paradigm. The requirements of IND-AS 109 & IND-AS 110 have to be considered in tandem unlike the previous paradigm where they were independent. Only in case of structured entities that are on auto pilot such as an independent trustee having legal as well as direct control over the activities of the SPE, consolidation would be unnecessary. In all other cases, careful anaylsis is required to understand who has ultimate control over the relevant activities of the SPE and this has implications for both the originators and well as those who set up the SPE.

In the case of Asset Reconstruction companies, where majority of Security Receipts are subscribed by the banks which originally sold the NPAs backing these SRs, there may not be any derecognition at all as per IND-AS, and banks will have continue maintaining provisions for these NPAs, which will undermine the very premise of selling them off.

Thus, it is recommended that unlike the prior regime i.e before IND-AS where confusion prevailed over certain aspects and there was absence of guidance on certain aspects, the same dilemma is not carried forward as India moves to the new global standards. An Accounting Note for Securitization by ICAI as well as IND-AS compliant RBI guidelines will go a long way in clearing up the ambiguity and divergence of practices that has plagued this particular aspect of Accounting for so long.

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A STUDY OF AWARENESS OF COMMON INVESTORS ABOUT SENSEX & NAV INDICES OF UNIT LINKED INSURANCE PLANS

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Abstract:

Be it whatever profession one is engaged into, investments into stock market for the purpose of making money is as common as the basic necessities of life today subject to education & awareness of people. The present research paper aims to highlight the level of awareness/ignorance of the people & the myths that govern their thinking in this regard. It is very important for the investors to have at least a minimum knowledge of the dynamic market. Ironically, they lack even this minimum knowledge but believe superficially on certain assumption held by them. Through this paper, we attempt to raise the level of awareness among the common mass. The primary data was collected for the purpose of study, using opinion questionnaire, only from those respondents having ULIP policy from either of 24 life insurance companies operating in India with help of Google forms, and 178 responses were recorded, data so collected was converted into percentage, tables and charts for drawing successful conclusion for population.40% respondent keep themselves updated about market fluctuations and 36 % respondent were aware about the switching option which confirms that large population of common investors is not having adequate knowledge of market fluctuations. It can be helpful for insurance companies to identify the factors which could enhance the satisfaction level of their customers.

Key Words:

Investments, Stock Market

Introduction

Widespread inflation in the economy from such a long time has led to multiple arrangements in the minds of the mass to earn money. It seems nearly impossible to survive with a single source of income today as the expenses have shot up very high in the market. Such a pattern of the market has led the investors to look forward towards a side income source.

OBJECTIVES

1. To make sure whether common investors were well-having knowledge and awareness about premium allocation charges
2. To test whether common investors keep themselves updated about market fluctuations
3. Does Common investors uses switching option between funds or they do rely upon the goodwill of the insurer or fund managers skills
4. Do education have any impact on using switching between Ulip funds

Review of Literature

(Nagarajan, Ali, & Sathyanarayana, 2013)[i] Indian Insurance Industry recorded several milestones in the past hundred years. Currently, it has grown tremendously, with stringent regulatory framework protecting the interests of the Investors. Life Insurance Corporation of India is the Public Sector undertaking which is the market Leader, in Life Insurance Sector. A descriptive study was conducted on Unit-Linked Insurance Plans (ULIP) by selecting top five Private Insurance Companies in India. The performances of all the products were tested for their dependency on the performance of stock market using the Hypothesis. ROR and Annualized ROR were used as tools for Data Analysis and Correlation with t-Test was used for testing the Hypothesis. From the study, it can be concluded that Reliance Life has good returns for the Investors, and can be further improved. At the same time, the company has to understand the product of its competitor (PNB Met Smart), which is performing better. From the study, it was made clear that Reliance Health + Wealth Plan is performing better than SBI, ICICI, and Bajaj Allianz, but below the performance of PNB Met Smart One. It is notable that, the products offered by PNB MetLife and Reliance Life Insurance are not affected by the Market Conditions, and are performing consistently. This shows the Research efforts put on by both the organizations in developing new products for its customers, hence good investment option for the Investors looking for better returns.

(Samajpati, 2013)[ii] in his research paper "Performance appraisal of unit-linked insurance plans (ULIPS) in India: a case study" has analysed the performance evaluation of ULIPs through Risk-Return Analysis, Treynor's Ratio, Sharpe's Ratio and Jensen's Measures. The schemes selected for study were ICICI Life Stage RP-Maxi miser (Growth) Fund, Bajaj Allianz. New Family Gain-Equity Index Fund II and ING High Life Plus-Growth Fund. The results of performance measures suggested that all the three ULIPs schemes have outperformed the market. Among the three schemes, ING Vysya ULIP was thebest performer.

(Arora, 2012)[iii] studied, for evaluating the performance of mutual funds include many parameters such as measuring fund

performance, measuring return, measuring risk,risk-adjusted return, comparing fund performance with a reference and various another standardized performance system. Comparison of some top equity diversified open-ended mutual funds with BSE Sensex. It showed that there was theinsignificant difference between mutual funds return and Sensex. Though these equity diversified mutual funds are said to actively manage portfolios, but they failed to outperform the market instead of their active management by experienced fund managers.

(Lakhani, 2012)[iv] had conducted a research study to identify the relation between returns and Sensex, investors' preference for ULIP and Equity, growth and penetration of ICICI Prudential and the performance of some of its ULIP schemes. The major finding of this study was that the NAV for equity-based fund options moves in tandem with Sensex while for debt based fund options it is not much affected by the movement of Sensex.

(Prajapati & Patel, 2012)[v] worked out that some selected mutual fund companies have positive return during 2007 to 2011. HDFC and Reliance mutual fund has performed well as compared to the Sensex return. ICICI Prudential and UTI Mutual fund have alower level of risk compared to HDFC and Reliance mutual fund. Beta is less than one of all selected mutual fund companies which means the funds are less volatile than the Index. Funds with abeta close to onemeans the fund's performance closely match the benchmark index. Sharpe's Index of HDFC Mutual fund is higher than the other, so it shows good performance compared to other funds. Treynor's Index result revealed that the HDFC and Reliance mutual fund offers abetter return in comparison to ICICI Prudential, UTI, and Birla Sun Life Mutual funds for the same level of risk exposure.

(Karuna, 2009)[vi] observed that traditional life insurance plans offered by LIC took care of only the insurance needs of people. However, with the ever-changing demands of customers, a new product called ULIP was launched which combines the benefits of insurance, investment, and tax benefits. The key findings of this article were: The ULIP expenses are categorized as annual expenses and fund management charges out of which a major share goes towards agents' commission. On account of this, the agents push ahead the sale of ULIPs. To curb such malpractices, IRDA has made it mandatory for a policyholder to sign a document stating that they have fully understood the terms of the policy and the costs associated with it. ULIPs are better suited to investors who have 15-20 years as their time horizon. This helps to spread the expense over the longer period and reap the benefits. When the stock markets tumbled below ₹10000 mark many people who had directly invested in the stock market and also the ULIPs faced a fall in the value of their holding. This led to falling in demand for ULIPs. However, she pointed out that this was the right time to purchase the ULIP as low NAV will help to acquire a high number of units. Hence ULIP is a good investment vehicle for those people who try to understand its features and are ready to wait patiently to take advantage of themarket situation by opting for switch option.

(Jeevananthan & Sivakumar, 2006)[vii] Mutual funds are money managing institutions set up to professionally invest the money pooled in from the public. These schemes are managed by AssetManagement

Companies (AMC), which are sponsored by different financial institutions or Companies. Looking into the Indian economy the GDP is growing at therate of 7–9 percent in last few years. These indications show that there is a growth in Indian Stock Market. Taking into thepicture from 2001–2010, the Indianstock market has risen by almost by 6 times. The Indian Mutual fund industry is dominated by the Unit Trust of India, which has a total corpus of Rs. 700bncollected from more than 20 million investors. This growth has attracted investors to invest in the Indian stock market through FIIs and DIIs. The Stock Market is influenced by many factors like production, monsoon, climate, Forex, political situation, demand, supply, GDP, etc.. It is very much important for the traders andthe investors to identify the trend of the market before taking any investment decisions, even though Fundamental and Technical Analysis are the major tools for any investors and the traders to make decision before investing money in the stock market. The researcher has tried to identify the major market trend by analyzing the net buying and net selling activities of the mutual funds in India. The researcher used the historical data of mutual funds activities of Indian stock market which was collected from January 2006 to March 2011. With this data, the researcher tries to analyze whether one can find any prior indication of trend for short, middle and long-term or whether one can get any trend reversal indication

(Muthappan & Damodharan, 2006)[viii] in his research paper "Risk-Adjusted Performance of Indian Mutual Funds Schemes" evaluated 40 schemes for the period April 1995 to March 2000. The study identified that majority of the schemes earned returns higher than the market but lower than 91 days Treasury bill rate.

(Chander, 2002)[ix] in his research paper "An evaluation of portfolio performance components across fund characteristics" examined 34 mutual fund schemes with reference to the three fund characteristics with 91-days treasury bills rated as risk-free investment from January 1994 to December 1997.Returns based on NAV of many sample schemes were superior and highly volatile compared to BSE SENSEX.

Hypothesis

In order to attain the above-mentioned objectives, the following hypothesis was formulated

$H_{01:}$ Common investors have knowledge about the relationship of Sensex and NAV indices of Unit linked insurance plans

Research Methodology

The data collected for the purpose of study falls under the category of primary data. Researcher attempted to derive result using structured opinion questionnaire for the above mentioned hypothesis titled as “Common investors have knowledge about the relationship of Sensex and NAV indices of Unit linked insurance plans” filled from only those having ULIP policy from either of 24 life insurance companies operating in India with help of Google forms, and 178 responses were recorded, from primary data collected.

Data Analysis and Results

Following result was depicted, From primary data collected and it was converted into

percentage, tables and charts for precise study of sample of the 178 respondents and for drawing effective conclusion for population.

Table1.1
Gender of Respondents

Row Labels	Gender
Female	32
Male	146
Grand Total	**178**

Source: Calculated data

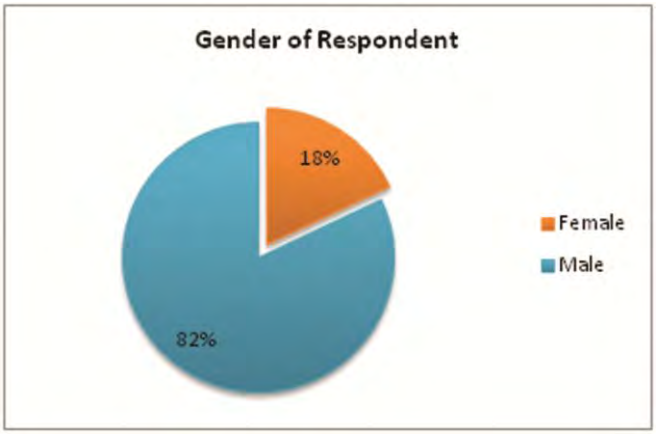

Figure 1.1 Gender of Respondent

Interpretation: From the Table 1.1 and Figure 1.1 with the aim of knowing whether common investors have knowledge about the relationship of BSE Sensex and ULIP net asset value, primary data was collected through questionnaire via Google forms. A total of 178 questionnaires were filled from only those respondents how have taken ULIP policy from either of insurance company operating in India.

Primary data was confined to this hypothesis only. For the purpose of primary data collection, structured questionnaire was used through Google Forms. Due to less response insurance branches Max New York Life and ICICI Prudential Life Insurance were visited and questionnaires were filled from customers of ULIP policies only.

Out of total respondent,32 were females and 146 were males, it shows that ULIP insurance plans are more popular investment option among males which may be due to either of feature of ULIP plans, for example, higher of sum value or fund value as death benefit, transparency in plans as compared to traditional insurance products, Tax saving, Liquidity.

Table 1.2
Education Qualification of Respondent

Row Labels	Educational Qualification
Post Graduate	57
Professional / Technical Qualification	21
SSC to Graduation	75
Up to SSC	25
Grand Total	**178**

Source: Calculated data

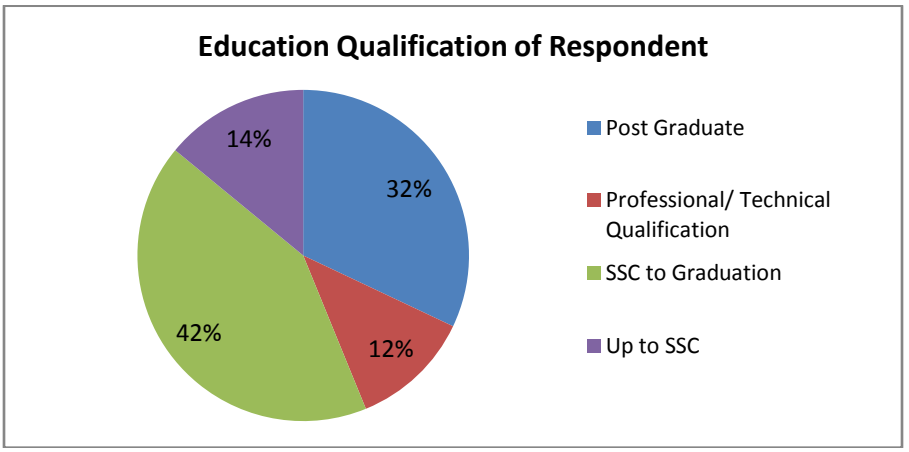

Figure 1.2 Education Qualification of Respondent

Interpretation: From the Table 1.2 and Figure 1.2, Male and Female respondents were classified on the basis of their educational qualifications out of 178 respondents, 75 respondents (42% of the sample size) acquired education qualification from SSC to Graduation, followed by 57 respondents (32% of sample size). Thus this can be concluded that 74 % customers investing in ULIP plans are educated and possess education qualification of more than SSC.

Table 1.3
Respondents Education and Knowledge of Premium Allocation Charges

	Knowledge of Premium Allocation Charge		
Row Labels	**No**	**Yes**	**Grand Total**
Post Graduate	12	45	57
Professional/ Technical Qualification	7	14	21
SSC to Graduation	34	41	75
Up to SSC	12	13	25
Grand Total	**65**	**113**	**178**

Source: Calculated data

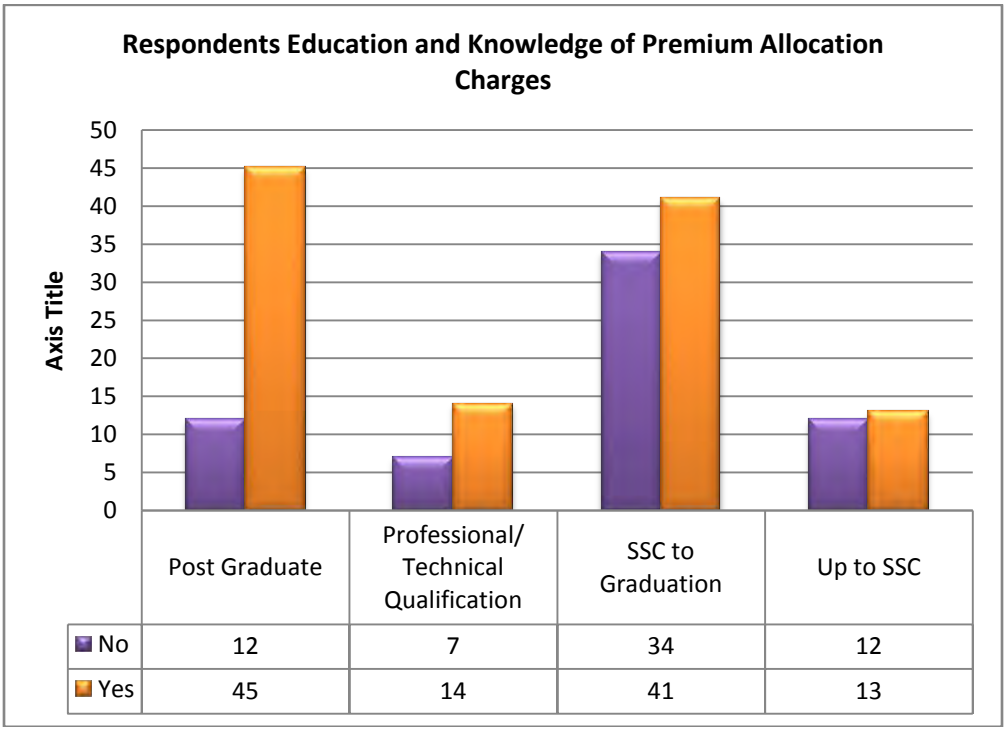

Figure 1.3 Respondents Education and Knowledge of Premium Allocation Charges

Interpretation: From the Table 1.3 and Figure 1.3 displays the education qualification and premium allocation charges of respondents. It can be rightly examined that most of the postgraduates were having awareness about premium allocation charges irony of the situation, is that respondents associating themselves with professional/Technical qualifications have less interest and knowledge about premium allocation charges, maybe because of their tendency to choose safer investment avenue and priorities of keeping it aside.

Table 1.4
Do Respondent keep themselves updated about Market fluctuations

Row Labels	No	Yes	Grand Total
Female	11	21	32
Male	81	65	146
Grand Total	**92**	**86**	**178**

Source: Calculated data

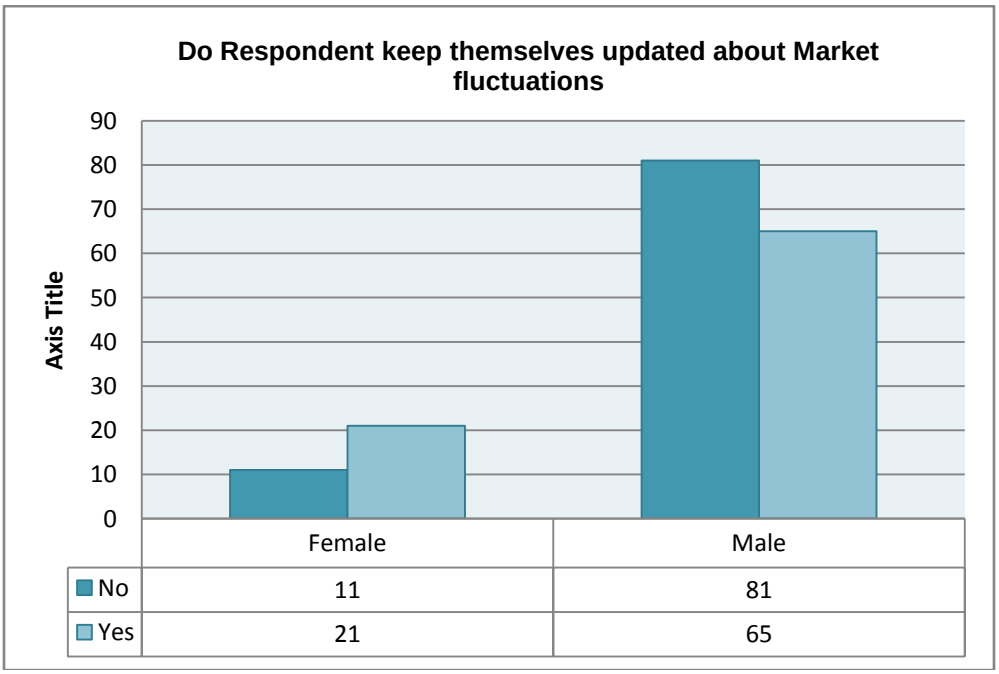

Figure 1.4 Do Respondent keeps themselves updated about Market fluctuations

Interpretation: From the Table No 1.4 and Figure 1.4, an unusual result came out of this questioning, female keep themselves more updated than male about market fluctuations. They have comparatively less interest in stocks than males but when it comes to bothering their money, they respond more gently and responsibly. Hence it can be concluded from the above investigation, females keep themselves more updated about market fluctuations.

Table 1.5
Respondent awareness about switching between ULIP funds

	No	Yes	Grand Total
Post Graduate	**22**	**35**	**57**
Female	4	8	12
Male	18	27	45
Professional/ Technical Qualification	**7**	**14**	**21**
Female	2	2	4
Male	5	12	17
SSC to Graduation	**58**	**17**	**75**
Female	7	4	11
Male	51	13	64
Up to SSC	**24**	**1**	**25**
Female	5		5
Male	19	1	20
Grand Total	**111**	**67**	**178**

Source: Calculated data

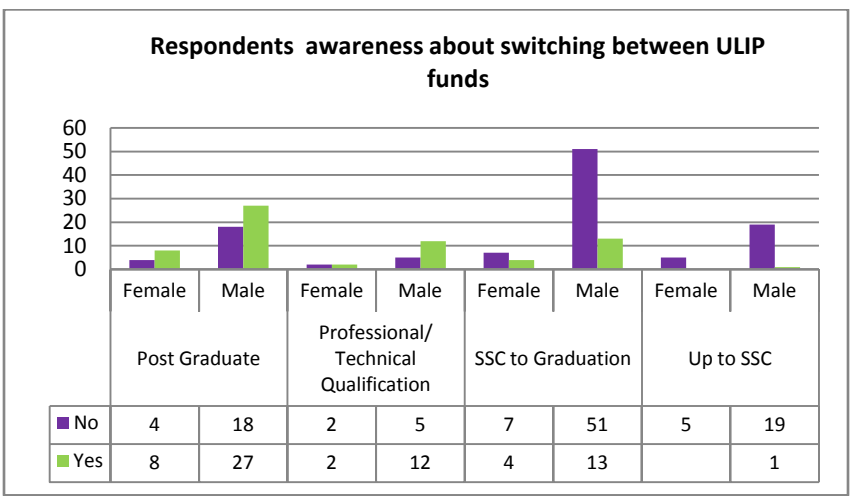

Figure 1.5 Respondents awareness about switching between ULIP funds

Interpretation: From the Table1.5 and Figure 1.5, 36% respondent was aware of the switching option which confirms that large population of common investors is not having adequate knowledge of market fluctuations and they completely trust on life insurer's goodwill and fund manager's skills. Education brings awareness, through primary data investigations it is concluded that, whether it is males or females those who were educated up to post-graduation, or professionals knew about switching option, others lacked it.

As it is depicted clearly from the table and charts that 40% respondent keep themselves updated about market fluctuations and only 36 % respondent were aware about the switching option which confirms that large population of common investors is not having adequate knowledge of market fluctuations and they completely trust on life insurer's goodwill and fund managers skills, researcher fail to accept the null hypothesis, and conclude that common investor does not have knowledge about the relationship of Sensex and NAV indices of Unit linked insurance plans.

Findings

On the basis of the primary data collected through structured opinion questionnaire, and analysed on the basis of tables and charts outcome with following findings

82 percent of the respondents were male, which represents very less engagement of female respondents in investing in ULIP products. The spread of respondents could not be identified with regard to educational qualification as 42percentwere having education qualification between SSC to Graduation and only 12 percent were professionally or technical qualified respondents.40percentof the respondents were not having knowledge of premium allocation charges, which implied that majority of respondents were made aware about premium allocation charges by either advisor, sales representative of life insurance companies.48percentrespondent keep themselves updated about market fluctuations, which depicts that a large population of ULIP investors relies on goodwill of insurer and fund managers skills instead of opting a switching option by themselves. 36percentrespondent was aware of the switching option which confirms that large population of common investors is not having adequate knowledge of market fluctuations and they completely trust on life insurer's goodwill and fund managers skills.

Education brings awareness, through primary data investigations it is concluded that, whether it is males or females those who were educated up to post-graduation, or professionals knew about switching option, others lacked it.As it was depicted clearly from the table and charts that 40% respondent keep themselves updated about market fluctuations and only 36 percent respondent were aware about the switching option which confirms that large population of common investors is not having adequate knowledge of market fluctuations and they completely trust on life insurer's goodwill and fund managers skills, researcher fail to accept the null hypothesis, and conclude that common investors do not have knowledge about the relationship of Sensex and NAV indices of Unit linked insurance plans.

Relevance of the Study

The present study is relevant to the current scenario of the stock market and investor behavior as much of the grievances of the investors are not because of the faulty or dynamic working of the stock market rather are because of their own negligent behavior. Common investors if are well versed with the working of the market they would definitely understand the critical issues so associated with it & this would, of course, take the Indian Stock Market to new heights of profitability. Through this research, we have attempted to mention the exact status of investor's awareness which must be dealt in carefully and awareness sessions must be planned by the life insurance companies to acquaint them with at least basic knowledge related to the fact.

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AWARENESS, PERCEPTIONS AND PROBLEMS OF SMALL SCALE TRADERS IN THE IMPLEMENTATION OF GOODS & SERVICE TAX IN THE STATE OF KERALA

E. Sulaiman

Abstract:

The implementation of Goods and Service Tax (GST) is an important step in the field of indirect tax reforms in India. The state of Kerala being as a consumer state, before and after the implementation GST in the state, lot of discussions were conducted by the different stakeholders to highlight its emerging merits and demerits. But, during the transition period of implementation of GST, various commotions rose from the business community especially among the small scale traders in the state. Further, several issues and challenges were faced by the traders in the implementation of GST in the State. In this context, the present paper discusses the awareness level and perception about GST among the traders; and investigating the factors underlying it. Further, the study identifying the major problems and challenges faced by the traders in the implementation of GST in Kerala; and examines the intensity of these problems/issues. The study found that there is a significant difference in the awareness/ perception about GST; and problems in the implementation of new tax regime among the traders.

Key Words:

Goods and Service Tax, Awareness Level, Perceptions, Small Scale Traders

1. Introduction

The implementation of Goods and Services Tax (GST) is an important step in the field of indirect tax reforms in India. Government introduces GST to lightening the complex tax system and that would pave the way for ease of doing business. But after launching of GST, debates were made by media frenzy regarding whether it helpful or not to common people especially small scale trader's which make major contribution towards exports and employment finally to National Income (GDP). After the implementation of GST, the Government address traders by appeal their support for the success of GST implementation. Because they are the intermediaries for collecting tax from common people and become integral part of tax collection chain. But, as a new initiative GST has its own difficulties in the implementation stage. Majority of the small scale traders are not well equipped to adopt and replace with the new system of GST regime due to the laxity of financial and human resources possessed by them. In this context, researcher has made an attempt to investigate about the awareness, perception, and problems of small scale traders in the implementation of GST.

2. Review of Literature

The present paper critically examines the existing literatures related with the awareness, perceptions and problems of traders in the implementation of GST in India and abroad. Jalil et.al (2015) stated that GST in Malaysia takes transition period of 26 years from the recognition of the concept (1988) to its realization (2015). Throughout the time, the government had conducted several studies to evaluate the appropriateness of this model to the Malaysia's socio-economic climate; and disseminate the information for the purpose of improving the awareness and knowledge of the people.

Awaludin et.al (2015) found that there is a relationship between the GST awareness levels of students and higher learning education in Malaysia. Nazir et.al (2015) reveals that tax morale is the most influential factor to tax awareness. Average of the public is aware about GST, but not willing to support and accept its implementation. Sanusi et.al (2015) reveals that Malaysian government arranges various advertisement campaigns and other programms with the help of Royal Malaysian Custom Department (RMCD) and the Government agencies. This measure has increased the confidence of taxpayer and tax compliance rate. Jatin (2016) found that people have a positive perception towards GST, but they are not well aware about it. Ahamed et.al (2016) stated that, after the implementation of GST in Malaysia, a lot of commotion aroused from the public due to the lack of awareness. Fadzillah and Zuhariah Husin (2016) reveal that citizens of Malaysia were not entirely convinced with this new scheme. They had a negative perception that GST would reduce the lower income group's ability to purchase goods and services. Bidin et.al (2016) indicate that awareness, understanding and preparedness significantly influenced attitude towards proposed GST. The study also suggest that, in order to create better awareness, understanding and preparedness among business community, the government should continually provide information, and education about GST. Barhate, G. H (2017) studied the awareness and perception towards GST among traders in rural areas.

Majority of the respondents are aware about that GST, but not in a detailed manner. Asmuni et.al (2017) revealed that awareness and attitude has significantly influenced the level of acceptance towards GST among business communities. Ling et.al (2017) found that there is a significant moderate negative linear relationship between price stabilities with acceptance, and compliance on GST. It also stated there is a positive relationship between government subsidies with acceptance and compliance on GST.

Devi (2017) suggests that the public are not well informed on the implementation of GST. The authorities work closely with other department like information and public relation department, revenue and other enforcement authority in order to ensure effective implementation of GST regime. Gupta (2017) examine benefits and opportunities of Goods and Service tax. GST will widen the tax base, improve tax compliance, remove unhealthy competition among states, uniformity of tax system across the states, integrate the tax base, mitigate cascading effect and bring transparency in tax system. As per this study researcher make suggestions such as provide tax payer education or public awareness, conduct public workshops, training and various seminars on GST. Government should construct a proper monitoring system for monitoring the dummy registrations and refunds problems.

Bidin et.al (2014) identified a number of probable area of difficulties in the implementation of GST such as increased burden of documentation for record keeping, the need to upgrade the computerized system, getting refund from tax authority, enhancing the accounting system, clarity of goods and services that are taxable, maintaining records for clients, understanding the GST legislation, dealing with tax authority, and cooperation from clients. Kumari (2017) highlights the main problems faced by the small scale enterprises are related with registration and fund maintenance. All of these enterprises did not have technical expertise to deal with online taxation systems. They are also required to keep their fund in the form of electronic credit ledger with the tax department; it may result in liquidity crunch. Hetal (2017) found that small scale business units are facing severe problems in the area of tax administration. They are mainly struggling in creating different invoices for goods with different GST rates.

The critical reviews of the studies found that majority of the available literature in this area are based on the GST implementation in countries other than India. The awareness, perception, and problems of small scale traders in the implementation of GST regime may change in accordance with the nature of the business unit and demographics factors of the traders. Therefore, in order to fill this lacuna, the present paper is going to discusses influence of these factors in the implementation new tax regime in the state of Kerala.

3. Data Base and Methodology

The present study is both descriptive and empirical in nature. Both primary and secondary sources of data were used for the intensive study. Primary data collected by using a structured questionnaire developed by the researcher after conducting a pilot study. Reliability and validity of the questionnaire was checked by using *Cronbach's Alpha* and *Bentler-Bonett-Fit*

Index. The qualitative variables such as awareness, perceptions, and problems were measured in five point *likert-type* scales. The universes of the study comprises of small scale traders having GST registrations in the State of Kerala. Under GST regime, any business with a annual turnover of more than Rs 20 lakh will have to take GST Registration. Every person who is registered under an earlier law shall take registration under GST. During the pre-GST period, there were 2, 65,412 registered dealers in Kerala. According to latest statistics, 2, 08,063 dealers have migrated to GST (July 2017). Minimum required Sample size of 399 small scale traders for the study was determined by using sample size calculator (www.surveymonkey.com) developed by *Nexonia*. In order to select the required number of sample units, *Thrissur* district in the State of Kerala was selected as sample frame. As per the official data provided by the Public Information Officer from State Sales Tax Department there were 2874 GST registered small scale traders in *Thrissur* district (as on 31-03-2018). Thus, 340 small scale traders were taken as sample for the intensive study by using simple random method.

The primary data collected were analysed by using Statistical Package for Social Sciences (SPSS) software. One sample t-test and ANOVA were used to test the validity of hypothesis put forwarded by the researcher. One sample t-test is a hypothesis test in statistics used to compare a sample mean to a hypothesized value. T-values are called test statistics, and it is standardized value calculated from sample data. The italicized lowercase p value indicates significance level, and it refers to the likelihood or probability that the random sample choose is not representative of the population. The lower the significance level, gives more confident in the replicating the results. Significance levels most commonly used in educational research are 0.05 and 0.01. If the probability or 'p' value is low, it can be concluded that the effect observed in sample is inconsistent with null hypothesis. T- Values calculations incorporate both the sample size and the variability or standard deviation (SD) in the data. A't'- value of 'zero' indicates that the sample results exactly equal the null hypothesis. Analysis of Variance (ANOVA) uses F-tests to statistically test the equality of means. The F-statistic is simply a ratio of two variances. The one-way ANOVA is used to determine whether there are any statistically significant differences between the means of three or more independent groups.

4. Results and Discussions

The present study was conducted to investigate the awareness and perception among the small scale traders about the GST; and significant difference in the awareness/perception level due to the select demographic factors of the traders. It also tests the significant difference in the awareness level between select profiles of the business unit and identifies the major problems faced by the traders in the implementation of GST in Kerala.

4.1 Awareness level of GST

The awareness about GST among the traders were measured on the basis of the mean score obtained in respect 11 statement of items indicating the awareness level of GST by using five point *likert*-type scale ranging from extremely aware to not aware (Table 1). In order to check the awareness level of GST, the following hypothesis is formulated.

H0 = There is no significant difference in the awareness level of GST among the traders.

Table 1: Awareness level of GST among the sample units

Statements	Mean score	SD	*'t'* value	*'P'* value
Applicability of GST on both goods & services (AW5)	4.37	0.782	32.318	<0.001**
GST is a destination based tax (AW2)	4.06	0.923	21.278	<0.001**
General information about GST AW1)	4.03	0.910	20.921	<0.001**
Terms & conditions of GST (AW6)	3.20	0.889	4.088	<0.001**
Information regarding input- tax credit (AW10)	2.86	1.122	-1.886	0.060
Taxes included in GST (AW8)	2.86	1.056	-2.363	0.019*
Uses & operation of e-way bill (AW9)	2.66	1.162	-5.320	<0.001**
Tax rates for various goods & services(AW7)	2.64	1.051	-6.297	<0.001**
Goods& Services exempted-supply from GST (AW4)	2.30	1.044	-12.365	<0.001**
Goods& Services exempted-zero rated supply from GST (AW3)	2.29	1.044	-12.567	<0.001**
Applicability of HSN code (AW11)	1.48	0.754	-37.098	<0.001**

Source: Survey data
***Significant at 1% level*
** Significant at 5% level*

It has been found that the mean scores of awareness level statements AW1, AW2 AW5 and AW6 are above average and awareness level statements AW3, AW4, AW7, AW8, AW9, AW10 and AW11 are below average. So it is concluded that out of 11 statements of items, 07 statements are having score below average. It indicates that traders are not fully aware about the GST matters. Test of significance (t-test) shows that there is significant difference in the awareness level of GST among the traders (except the statement AW10). Thus, the null hypothesis in this regard rejected ($p<0.05$ & $p<0.01$).

4.2 Influence of Demographic factors on the Awareness level

The study aims to examine the influence of select demographic factors of the traders such as age and educational qualifications on the awareness level of GST (Table 2). In order to check the significant difference/ association between the select demographic factors and awareness level about GST among the traders, the following hypothesis has been formulated.

H0 = There is no significant difference/ association between select demographic factors and awareness level of GST among the traders.

Table 2: Test of significant difference/association between select demographic factors and awareness level of GST among the sample units

Demographic factors	Categories	Mean	SD	*'F'* value	*'P'* value
Age (in years)	20-30	34.06	6.506	3.543	0.008**
	30-40	35.10	4.210		
	40-50	33.92	7.166		
	50-60	31.89	7.415		
	60-70	30.84	7.540		
Education qualifications	Matriculation	29.94	7.277	9.149	<0.001**
	+2//Higher secondary	32.89	6.785		
	Graduate	34.60	6.584		
	Post Graduate	36.71	6.043		

Source: Survey data
***Significant at 1% level*

The study depicts that mean score of the awareness among respondents is declining due to the increase in the age of the traders; and it is increasing among the higher levels of educational qualifications. So, it can be concluded that awareness level of GST among the traders having middle age group is comparatively better than old age group. Similarly, in the case of traders having higher educational qualifications have comparatively more aware about GST than lower level of qualifications. The test of significance (*F* value) shows that there is significant difference/association between awareness level of the traders and their select demographic variables such as age group and education qualifications ($P<0.01$). Therefore, the null hypothesis formulated in this respect has been rejected.

4.3 Influence of nature of the business units on the Awareness level

In this section, an attempt has been made to analyze the differences in the awareness level of the traders based on the nature of the business units run by them. Here, the test of significant difference in the awareness of GST among the traders has been done by segmenting the sample units on the basis of ownership, type of trade, and annual turnover (Table 3). In this respect, the following hypothesis has been formulated to test the significant difference among them.

H0 = There is no significant difference/ association between nature of the business units and awareness level of GST among the traders.

Table 3: Test of significant difference/association between nature of the business unit and awareness level of GST among the sample units

Nature of the business unit	Categories	Mean	SD	*'F'* Value	*'P'*alue
Ownership status	Sole proprietorship	33.09	7.532	0.863	0.423
	Partnership	33.04	5.729		
	Family business	31.88	7.337		
Type of trade	Retail	31.81	6.966	7.133	0.001**
	Wholesale	34.83	7.360		
	Both	34.94	6.762		
Annual turnover (Rs in lakhs)	Below 10	25.67	5.508	9.795	<0.001**
	10-20	30.50	6.220		
	20-30	34.03	7.930		
	30-40	34.30	5.695		
	Above 40	37.06	6.457		

Source: Survey data
***Significant at 1% level*

It has been reported that higher level awareness level was existing among the wholesale traders, and business units having highest annual turnover. However, there is no significant difference/association between awareness level, and ownership status of the sample units. Therefore, it can be concluded that there is a significant difference/association between awareness level of the traders, and nature of the business units such as type of trading & annual turnover. Hence, the null hypothesis in this respect is rejected at 01% level of significance (except in the case of ownership status of the units).

4.4 Perception of Small scale traders

It is also very essential to examine the positive and perception about GST existing among the traders so as to make necessary changes in the implementation level of GST. The perception about GST existing among the traders were analyzed with the help of 10 statements of items measured by five point *likert*-type scale ranging from strongly agree to strongly disagree (Table 4). In order to understand the perception about GST existing among the traders, the following hypothesis has been formulated.

H_0= There is no significant difference in the perception about GST existing among the traders.

Table 4: Perception about GST among the sample units

Statements	Mean score	SD	't' value	P value
GST is a very good tax reform for India (PE 2= +ve)	4.57	.636	45.505	<0.001**
Govt. has imposed GST on goods without any preparation (PE6= -ve)	4.25	.859	26.890	<0.001**
GST will beneficial in long run (PE10=+ve)	4.03	1.079	17.540	<0.001**
GST has increased the legal compliances (PE1=+ve)	3.91	.888	18.931	<0.001**
GST has increased the tax burden on consumers (PE4= -ve)	3.53	1.432	6.781	<0.001**
GST has increased the tax burden on businessman (PE3= -ve)	3.52	1.232	7.789	<0.001**
GST is very difficult to understand (PE7= -ve)	3.48	1.000	8.896	<0.001**
India is not ready for GST (PE5= -ve)	3.46	1.387	6.060	<0.001**
GST would result lower prices for goods& services (PE8= +ve)	3.00	1.171	-0.046	0.963
GST would increase the quantity of purchases among consumers(PE9=+ve)	1.89	0.866	-23.721	<0.001**

Source: Survey data
***Significant at 1% level*

It has been observed that majority of the respondents strongly agree that GST is a very good tax reform for India; but it has imposed without any preparation. The mean score of the statements PE2, PE10, and PE1, indicating positive perception about GST is above average level. Similarly, the mean score of the statements PE6, PE4, PE3, PE7, and PE5 indicating negative perception about GST is above average level. But, positive perception of traders that GST would increase the quantity of purchases among consumers (PE9) is below average level. Therefore, it can be concluded that there is significant difference in the perception about GST existing among the traders. Thus, the null hypothesis in this respect is rejected at 01% level of significance (except PE8).

4.5 Influence of Demographic factors on the perception about GST

The perception about GST among the traders may change in accordance with the age and educational levels. So, the study has made an attempt to analyze any significant changes or differences in the perception among the traders due to these factors (Table 5); and the following hypothesis was formulated.

H0 = There is no significant difference/association between select demographic factors and perception about GST among the traders

Table 5: Test of significant difference/association between demographic factors and perception about GST among the sample units

Demographic factors	Categories	Mean	SD	*'F' value*	*'P' value*
Age(in years)	20-30	36.44	4.618	0.179	0.949
	30-40	35.82	5.433		
	40-50	35.56	4.279		
	50-60	35.59	4.315		
	60-70	35.50	3.767		
Educational qualifications	Matriculation	35.53	4.005	0.350	0.789
	+2//Higher secondary	35.67	4.033		
	Graduate	35.87	4.868		
	Post Graduate	34.81	5.715		

Source: Survey data

It has been found that age and educational qualifications of the traders does not affect the perception level of the traders about GST implementation. Therefore, the null hypothesis in this regard is accepted at 05 per cent level of significance (P>0.05).

4.6 Influence of nature of the business units on the perception level

It is worthwhile to examine the differences in the perception about GST among the traders based on the nature of the business units run by them. Hence, the test of significant difference/association between perception about GST and nature of business units such as ownership, type of trade, and annual turnover has been undertaken (Table 6). For this purpose, the following hypothesis has been developed to examine the significant difference among the variables.

H0 = There is no significant difference/ association between nature of the business units and perception about GST among the traders.

Table 6: Test of significant difference/association between nature of the business unit and perception about GST among the sample units

Nature of the business unit	Categories	Mean	SD	*'F'* value	*'P'* value
Ownership status	Sole proprietorship	35.56	4.170	3.301	0.038*
	Partnership	36.64	4.461		
	Family business	34.86	4.519		
Type of trade	Retail	35.58	4.426	0.931	0.395
	Wholesale	35.23	3.689		
	Both	36.35	4.697		
Annual turnover (Rs in lakhs)	Below 10	40.33	7.234	5.231	<0.001**
	10-20	35.28	4.197		
	20-30	34.87	4.527		
	30-40	36.57	3.487		
	Above 40	37.97	4.130		

Source: Survey data
***Significant at 1% level*
** Significant at 5% level*

It is observed that there is a difference /association between perception about GST among the traders and ownership status/annual turnover of the business units. High rate of perception about GST are existing among the partnership and sole proprietorship type of organizations. Similarly, in the case of annual turnover of the business units, high rate of perception about GST are found among units having annual turnover below Rs. 10 lakhs and above 40 lakhs categories. Therefore, the null hypothesis in respect has been rejected ($p<0.01$, & 0.05), and concluded that there is significant association/difference between perception about GST among the traders and nature of the business units (except type of trade).

4.7 Problems and challenges faced by the traders

The problems and challenges faced by the traders in the implementation of GST in Kerala has been identified with the help of 12 statement of items measured by the five point *likert*-type scale ranging from strongly agree to strongly disagree. On the basis of the mean score obtained for each statement of problems, rank has been given to each item to indicate the severity of the problems faced by the traders. In order to test the significant difference among the problems,'t' test has been applied among the mean score obtained for each problems (Table 7). The hypothesis formulated in this context is as follows:

H0= There is no significant difference in the problems and challenges faced by the traders in the implementation of GST in Kerala.

Table7: Problems and challenges faced by the traders in the implementing of GST in Kerala

Statement of problems	Mean score	Rank	SD	*'t' value*	*'p' value*
Penalty imposed for wrong entry submission is very tragic (PR 8)	4.59	1	0.670	43.791	<0.001**
Short-time duration for filing returns is not acceptable (PR10)	4.44	2	0.820	32.416	<0.001**
Lack of proper knowledge about GST (PR3)	4.43	3	0.952	27.683	<0.001**
Transformation period for new tax reform/GST is very short (PR1)	4.37	4	0.878	28.738	<0.001**
GST accounting software not working properly (PR 2)	3.75	5	1.021	13.601	<0.001**
Difficult to submit report to authority due to network problems (PR 4)	3.54	6	1.225	8.056	<0.001**
Different taxes on different products adding confusion (PR 9)	3.43	7	1.109	8.904	<0.001**
Firms's cash flow gets affected due to GST (PR 7)	3.13	8	1.668	1.398	0.163
Problem in integration of GST with every process (PR 5)	2.84	9	1.490	-2.038	0.042*
Lack of computer literacy (PR 12)	2.55	10	1.532	-5.379	<0.001**
Problem in changing bookkeeping to computerized system (PR 6)	2.46	11	1.435	-6.952	<0.001**
When a client/customer refuses to pay return, it is very difficult to convince them(PR 11)	1.62	12	0.954	-26.729	<0.001**

Source: Survey data
***Significant at 1% level*
** Significant at 5% level*

The major problems and challenges faced by the traders in the implementation of GST in Kerala are penalty imposed by the authority for wrong entry submission (mean score 4.59), lack of sufficient time for filing of returns (mean score 4.44), and lack of proper knowledge about GST (mean score 4.43) constituting first, second and third rank respectively. Lack of availability of sufficient time period for transformation into the new system (mean score 4.37), problems in accounting software (mean score 3.75), difficult to submit report to authority due to network Problems (mean score 3.54) etc. are the other problems/challenges in the order of rank faced by the traders in the implementation of GST in Kerala. While analyzing the significant difference in the severity of problems/challenges faced by the traders, it has been found that statement of problems such as PR1, PR2, PR3, PR4, PR8, PR9,& PR10 are above average mean score; and PR5, PR6, PR11 & PR12 are below average mean score. The values of 't'-test shows that out of 12 statements of problems analyzed, statistically significant differences between the problems has been found except the problem PR7(p<0.01 & 0.05). Therefore, the null hypothesis put forwarded by the researcher in respect of problems and challenges faced by the traders in the implementation of GST in Kerala has been rejected.

5. Conclusions and Implications

The study found that there is significant difference in the awareness level of GST among the traders. The awareness level of GST among the traders having middle age group is comparatively better than old age group. Similarly, in the case of traders having higher educational qualifications have comparatively more aware about GST than lower level of qualifications. Further, higher level of awareness level was found among the wholesale traders, and business units having highest annual turnover. It has been observed that majority of the traders strongly agree that GST is a very good tax reform for India; but it has imposed without any preparation. While studying the perception about GST among the traders, it was observed that there is significant association/difference between perception about GST among the traders and nature of the business units. When analyzing the major problems and challenges faced by the traders in the implementation of GST in Kerala, it has been found that there is significant difference in the severity of problems/challenges faced by the traders. Penalty imposed by the authority for wrong entry submission, lack of sufficient time for filing of returns, lack of proper knowledge about GST, lack of availability of sufficient time period for transformation into the new system, problems in accounting software, and difficult to submit report to authority due to network issues etc are the major problems/challenges faced by the traders represented by the order of its severity.

The study examines the awareness and perception about GST among the traders; and identifies the major problems / challenges faced by them in the implementation of GST in Kerala. The findings of the study may be useful to tax administrators to develop appropriate awareness programs among the stakeholders. It also observed that most of traders have wrong/negative perception about GST implementation, which was against the true spirit of full-fledged implementation of new tax regime. So the study helps the authorities to initiate steps

for removing the wrong perceptions about GST among the traders through effective communication between the relevant parties. By identifying the major problems/challenges faced by the traders in the area of GST administration may help the authorities to redress these issues / challenges faced by the traders; and thus enable the authorities to transform the new tax system into more transparent and efficient. As a whole the present study highlights some of the serious issues and challenges prevailing in the implementation of GST in Kerala especially among the micro-small and medium enterprises (MSME); and the measures to be taken by the authorities to cope up with the issues and challenges arisen in the implementation new tax regime.

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CORPORATE GOVERNANCE AND FIRM VALUE: REVIEW OF RESEARCH IN VIEW OF MAJOR REFORMS IN INDIA

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Abstract:

This paper attempts to provide a brief description about the theoretical framework of governance as well as reviews the empirical studies dealing with relationship between corporate governance (CG) and firm value (FV). It also provides an overview of the major governance reforms in India while developing the expected hypotheses for future research in Indian context. To this end, the paper uses systematic electronic literature search method which takes into account 70 empirical studies published over the period of 1992-2018. A summary of empirical findings shows lack of consensus about the nature of relationship between governance and firm value which can be attributed to several factors such as, lack of uniform measure to capture the abstract concept of CG, variations in the choice of variables used for FV, institutional differences in different studies, etc. In addition, a closer insight into the studies from developing countries like India depicts that optimal governance is likely to vary under different market settings as there exist some key differences between developed and developing markets, for example, ownership structure, which limits generalizability of findings. Against this backdrop, the paper emphasizes on the need for more empirical studies from emerging markets such as India and suggests a desirable technique to capture CG so as to gain better insights of its exact relationship with FV.

Key Words:

Corporate Governance, Firm Value, Review, India

1. Introduction

The need for good governance was strongly felt over the last two decades in the light of many corporate collapses such as Enron, WorldCom, Tyco etc, the Asian financial crisis of 1997, the Global financial crisis of 2007 that have been apparently linked to the inability of corporates to maintain transparency, fairness and accountability (Cadbury Committee, 1992; Asian Development Bank, 2000; OECD, 2009). As a consequence, investors have demanded for improvements in governance practices in order to ensure that corporates are governed in a fair and transparent manner to the best interests of all the stakeholders have led to emergence of governance codes. The term "Governance" has its origin from a Greek word, "*kyberman*" meaning to steer, guide or govern. From *Greek* word, it moved over to Latin, where it was known as "*gubernare*" and "*governer"* in French (Abdullah and Valentine, 2009). It indicates the processes of decision-making as well as their implementation.

The concept of governance in corporate sector emerged from the idea of separation between ownership and control and the need to protect the interest of owners. Cadbury Committee (1992) defines it as "*the system by which the companies are directed and controlled. The board of directors is responsible for the governance of their companies. The shareholders' role in governance is to appoint the directors and the auditors and to satisfy themselves that appropriate governance is in place*". In the words of Shleifer and Vishny (1997), *"Corporate governance (CG) deals with the ways in which the suppliers of finance to corporations assure themselves of getting return on their investments"*. Thus, CG system reflects the mechanism to monitor and control corporate affairs with an objective of maximizing shareholders' wealth. CG and its impact on Firm Value (FV) are being widely debated. Most of the empirical research on CG is based on the *agency theory* as advanced by Jensen and Meckling (1976), which suggests that a better-governed firm should have better performance and higher valuation due to lowering of agency costs. Yet, there is no unequivocal evidence to suggest that better governed firm enhances its value and consequently investors are still doubtful about the existence of link between CG and FV. Further in recent years, the aspect of causality determination in governance research has become increasingly important as firms may endogenously determine their internal governance structure in response to changes in their performance.

In addition, most of the empirical research on the relationship between CG and FV have been conducted in developed countries (Bhagat and Bolton, 2002; Gompers *et al.*, 2003; Judge *et al.*, 2003; Bauer *et al.*, 2004) whereas, a little is empirically known about the firms in developing countries that have different institutional settings. Against this backdrop, the current paper attempts to give an overview of the major CG reforms in India as is required in developing the expected hypotheses for future research in Indian context. A summary of the empirical findings depicts a mixed view owing to the differences in institutional settings, variations in the choice of variables used to measure CG etc. as studies mainly employ either single variable or comprehensive measure to capture the complex construct of CG which suffers from some limitations that are discussed in the later section, thus

signaling the need to develop robust measure of CG.

The rest of the paper is arranged as following. The next section presents the approach used to collect the relevant materials. This is followed by theoretical framework and hypotheses development on the background of CG scenario in India. The final section concludes the paper highlighting some areas for future research.

2. Literature Search Method

This paper uses secondary information drawn from different research/academic papers in various journals, books and reports published both from developed and developing countries. To identify relevant research papers for the purpose, a systematic process of electronic search, like Google Scholar has been applied using different combinations of key search words such as "relationship between CG and FV", "CG in India", "factors influencing FV" etc. Following this, 70 empirical studies published in some of the prominent journals like Corporate Governance: An International Review (Blackwell publication), Journal of Financial Economics (Elsevier) over the period of 1992-2018 have been considered for this study.

3. Theory and Hypotheses

3.1. Theoretical Framework:

There is a lack of commonly accepted theoretical framework in the area of CG. Consequently, researchers have applied a number of theoretical approaches, emerging from a broad range of disciplines including finance, economics, management etc in analyzing the relationship between CG and FV. A brief summary of different theoretical approaches is presented in Table-1.

Table-1: A summary of theoretical perspectives of CG and FV relationship

Theories	Perspective of Corporate Governance	Key Findings
Agency Theory (Jensen and Meckling,1976; Fama and Jensen, 1983)	The dominant theoretical perspective linking CG and FV is the agency theory. It is based on modern corporations characterized by separation of ownership and management, where on behalf of owners, managers are entrusted with decision-making authority and so they are expected to maximize owners' utility. On the contrary, managers may not always act in	The theory attempts to limit managers' self-serving behaviour by making them accountable for the consequences of their act and contends for alignment of their interest with owners' interest through various contracts, rules and performance based rewards in order to maximize FV.

	the best interests of owners as highlighted by Adam Smith (1776) in his book Wealth of Nations, which augments agency conflicts (Davis et al, 1997).	
Stewardship Theory (Donaldson and Davis, 1991)	Although, agency theory forms the base of CG, researcher from psychology and sociology had pointed out one of its limitation i.e. its assumption of individualistic behavior of manager which may not hold true in all circumstances. The stewardship theory views managers as stewards who act collectively in maximizing utility of shareholders rather than behaving in an individualistic, self serving manner as depicted in the agency theory.	The theory suggests that managers are satisfied when the organizational goals are achieved (Abdullah and Valentine, 2009). It focuses on the importance of organizational structure that offers certain position to the managers, empowering them to act more autonomously in maximizing shareholders wealth. Indeed, it reduces the monitoring cost of shareholders involved in controlling managers' behavior. Furthermore, the top management who act as an expert in decision making process in order to protect their reputation as an expert are inclined to act in a manner that maximizes shareholders return (Daily et al, 2003).
Stakeholder Theory (Freeman,1984)	While the both agency and stewardship theories divide corporates into two groups i.e, managers and owners, stakeholders theory posits company's network of relationship with diverse group that govern its decision making processes through the nature of these relationships based on the outcome for the company and its stakeholders	Stakeholder approach has resulted in realization of the fact that management's accountability are not only confined towards shareholders but other stakeholder groups as well, as interests of all stakeholders are legitimate, and no sets of interests can be assumed to dominate others (Donaldson and Preston, 1995; Bossco and Kumar, 2007).

Resource Dependency Theory (Hillman and Dalziel, 2003)	While the stakeholder theory is based on the relationship of corporates with interested groups for its benefit, resource dependency theory focuses on the role of board in providing access to the key resources needed by firm through their linkages in the external environment	The board of directors assist in securing various key resources for firms such as information, skills; access to key constituents like suppliers, buyers, public policy makers which in turn enhances firm performance (Hillman et al, 2000; Daily et al, 2003)
Transaction Cost Theory (Cyert and March 1963)	The theory considers an organization as a composition of people (economic agent) with diverse interest (transaction) where economic agents try to align transaction with governance structure of the organization to get anticipated economic outcome. It is based on the assumption of opportunistic behavior of economic agents that can be analyzed through different transactions as a unit of analysis	The theory suggests that organizations can exist because of their superior ability to satisfy this opportunistic behavior by implementing hierarchical control through different incentives and benefits (Ghoshal and Moral, 1996)
Political theory (Pound,1993)	Under this approach, shareholders attempt to create political influence on the governance structure which may direct decision making within the organization	Active and informed shareholders (institutional investors) by pooling their resources and voting power uses different mechanisms like shareholder committee, director nominating committee; issue campaigns to exert informal pressure on the management in order to attain their objective.

Table-1 suggests that through different theoretical perspectives, researchers have tried to explain the association between CG and FV. Although none of the theory is free from criticism, agency theory remains the most extensively used theoretical approach in governance research.

3.2 Corporate Governance in India:

The concept of CG in India can be traced from three historical models. *Firstly,* the managing agency model during the colonial period (1885-1950) has contributed towards the emergence of dispersed equity

ownership. However, it also gave rise to management's practice of enjoying control rights that are disproportionately greater than cash flow rights (Goswami, 2002). By virtue of their position, managing agents started perusing certain activities to serve their own interest, which negatively influenced FV and therefore the system eventually got completely abolished. *Secondly,* the business house model (1950-1990) has emerged after independence as the then newly formed government adopted an interventionist approach in order to accelerate industrial growth in the country. Initially, Companies Act, 1956 was enacted with an aim of protecting shareholders' interest which gave a new shape to the governance model of business (Chakraborti et al, 2007). In absence of efficient stock market, government started using Public Financial Institutions (PFIs) like, IDBI, IFCI, ICICI, UTI, and GIC in order to provide long term capital to companies. Since these institutions extensively contribute to corporate funding, they used to nominate their representatives on the concerned boards, but such members usually played inactive role in the boardroom. While many big companies flourished under the Business House Model, a "crisis" was brewing in the Indian economy throughout the 1980s. The different factors contributed to this crisis include low foreign exchange reserves, high fiscal deficits, the huge losses suffered by public sector enterprises etc (Singh and Gaur, 2009). This crisis induced the government to bring reforms in 1991 leading to liberalization, privatization and globalization (LPG). This new economic policy brought revolutionary changes in the corporate sector such as change in the profile of corporate ownership, capital market reforms, disinvestment by government. Consequently, these reforms have led Indian corporate to adopt Anglo-American model (1990 onward) of CG. However, present CG framework is though based on Anglo-American model, has certain limitations in its application in Indian environment as the key issue in US or UK is making the management accountable to shareholders whereas, in Indian context the central issue is disciplining the dominant shareholders as well as protecting the interest of minority shareholders (Mukherjee, 2002). After the announcement of New Economic Policy in 1991, the most significant event in the field of CG was the establishment of Securities Exchange Board of India (SEBI) in 1992 with the aim of protecting investors' interest in addition of regulating stock market.

In India, concerns about CG in its present form was more rigorously felt since Harshad Mehta's security scam of 1992 followed by many companies simply disappearing with investors' money during the decade of 1990s. In view of these scandals coupled with opening up of economy under LPG, different CG codes were formulated so as to retain investors' confidence in Indian capital market. The first major initiative that was undertaken by Confederation of Indian Industry (CII) which came up with the 'voluntary code of CG' in 1998; it was adopted by few progressive companies and it was realized that under Indian business environment mandatory rather than voluntary code would be more effective in streamlining corporate affairs. Consequently, SEBI constituted Kumar Mangalam Birla Committee in 1999, which recommended some mandatory and voluntary codes in 2000, with special emphasis on board independence and composition of audit committee. This was followed by setting up of Narayana Murthy

Committee to review CG performance with regard to audit committee, independent directors, related party transactions, risk management, code of conduct, financial disclosures etc. which gave its recommendations in 2003. The recommendations put forth by these two committees were instrumental in bringing major overhaul of CG regulation through the incorporation of 'SEBI's Clause 49' in the listing agreement. Parallel with these measures, the Department of Company Affairs has also formed Naresh Chandra Committee in 2002 and J.J Irani Committee in 2004 with the objective of reviewing Companies Act, 1956. Based on the recommendations given by Irani Committee, government introduced the new company bill in the year, 2009. Despite these measures, yet again, Indian corporate community was shaken by the massive scandal of information technology giant Satyam Computer Services Ltd in 2009, which received coveted Golden Peacock Global Award for Excellence in CG for 2008 from The World Council for Corporate Governance (WCFCG). The fraud was initiated by its chairman who had misled the market by presenting erroneous books of accounts to its board, regulators and investors. This raised a question about directors' and auditors' independence as it is impossible to misrepresent such facts without their connivance. Subsequently, government brought several changes in the company bill, 2009 on the basis of the report submitted by Parliamentary Standing Committee on finance. The bill received presidential assent on 29th August, 2013 which is now known as the Companies Act, 2013 (Pwc, 2013). This Act has brought far-reaching changes in CG scenario for Indian corporates and also necessitated SEBI to revise its listing agreement (Clause 49) in October, 2014 in order to align with the provisions of the new Act. In addition, SEBI has recently introduced Listing Obligations and Disclosure Requirements Regulations, (LODR) 2015 in line with the OECD principles with an objective of promoting fairness, transparency and accountability among Indian corporates.

3.3 Corporate Governance and Firm Value:

From the agency theory perspective, CG aims to ensure that managers should resort to value maximizing strategies (Shleifer and Vishny, 1997). Empirical studies focusing on the interplay between CG and FV employs one or more CG attributes like *board size, board independence, role duality, gender diversity, ownership structure, audit committee independence* etc while some studies have developed more comprehensive measure of CG i.e, Corporate Governance Index (CGI) due to its multidimensional nature. With regard to FV commonly used basis are Tobin's Q, Market to Book Ratio (MBR). Better understanding as to complex interplay of CG attributes and FV can be tacit from the following:

3.3.1 Governance Attributes and Firm Value: The extensive literature examining the relationship of various CG attributes with FV is presented as follows:

3.3.1.1 Board Size:

Board size is generally considered as an important factor to determine board's effectiveness. Lipton and Lorsch (1993) states that while board's monitoring capacity increases with the number of members on it, such benefits may be outweighing by the cost associated with delay in decision making due to its

largeness. Thus, there is a widely held notion that large boards destroy FV as it becomes difficult to arrive at consensus well in time which is parallel with the findings of some empirical studies (Yermack, 1996; Eisenberg et al., 1998; Fuerst and Kang, 2000; Loderer and Peyer, 2002; Mak and Kusnadi, 2005; Chan and Li, 2008; Ghosh, 2010; Kao et al, 2018). The argument here is lack of co-ordination amongst members, low risk taking and directors' free-riding of large board makes it less effective in utilizing firm's resources which inversely impact FV. On the contrary, resource dependency theory suggests that board of directors with high level of links to the external environment improve firm's access to various key resources which in turn leads to better FV. Consistent with the theoretical view, many empirical studies from developing economies like India, Malaysia, and Pakistan exhibit positive impact of board size on FV (Dwivedi and Jain, 2005; Jackling and Johl, 2009; Sheikh and Khan, 2011; Saravanan, 2012; Mishra and Mohanty, 2014; Mishra and Kapil, 2018). These studies point out some unique characteristics of developing economies such as scarcity of qualified independent directors; coupled with large proportion of family owned firms whereby they generally tend to restrict executive positions to their family members that limits qualified pool of human resources. Considering these unique characteristics in Indian context, the argument of resource dependency theory applies to enhance FV and thus, it can be hypothesized that *board size is positively associated with FV*.

3.3.1.2 Board Independence:

The board's independence is determined by its structure i.e, the ratio between its inside (executive) and outside (independent non executive) members (Fama and Jensen 1983). As such, to have an effective control over the functioning of management, most of the CG codes worldwide require boards to have a certain proportion of independent non-executive directors (INDs). The question of whether INDs have an impact on FV is, however, one of the most debated areas of CG. As per the agency theory, INDs act as a reliable mechanism to diffuse agency conflicts between managers and owners as they have incentives to develop their reputations as expert monitors by controlling opportunistic behavior of managers. On the contrary, stewardship theory suggests that inside directors with better access to inside information, improves the quality of decision which in turn contributes towards FV (Nicholson and Kiel, 2007). Quite a number of studies show positive association between proportion of INDs on board and FV (Jarmias, 2007; Jackling and Johl, 2009; Ghosh, 2010; Saravanan, 2012; Liu et al, 2015; Kao et al, 2018; Mishra and Kapil, 2018). Conversely, some studies show negative association between the two (Muth and Donaldson, 1998; Singh and Gaur, 2009; Kumar and Singh, 2012). They contend that in developing economies the oversight role of INDs is of less concern as conflict of interest between owners and managers (vertical agency problem) are less due to ownership concentration (owner-manager unification) and they appoint INDs in order to fulfil the minimum statutory requirement who consider their role as ceremonial as they are less aware of the internal strengths, weaknesses associated with the functioning of the firm. Nevertheless, they also suggest that even if the presence of INDs does not improve FV, still their presence on board is essential in order to ensure that firms do

not indulge in unethical practices. However, some studies find board independence is not associated with FV (Judge et al, 2003; Chang and Leng, 2004; Ahmed et al, 2006; Azeez, 2015; Mardnly et al, 2018). In Indian context agency theory perspective can be adopted since various reforms in the field of CG till date, underline an implied need of INDs. Further, Indian corporates though having formal separation of ownership and control, in real sense are dominated by family ownership that limits their efficiency and access to legal remedy. In view of the above, monitoring role of INDs is likely to be more significant in order to control any self-interested actions by managers and thus, it can be hypothesized that *board independence is positively associated with FV*.

3.3.1.3 Role Duality:

Another important element of CG widely acknowledged in literature is the leadership structure of the board that can have an influence on FV. *Stewardship theory* suggests for combining the role of CEO and board's chairman so as to offer greater autonomy to managers who act as stewards' in maximizing shareholders wealth (Donaldson and Davis, 1991). On the contrary, advocates of agency theory argue for CEO-Chair separation as it leads to greater scrutiny of managerial behaviour, which in turn can contributes towards FV (Millstein, 1992). Role duality is also blamed for failures of corporate giants such as Enron, WorldCom etc. and hence, most of the CG codes worldwide have stressed on splitting the roles of chairman and CEO (Cadbury Committee Report, 1992; Hampel Committee Report, 1998; Higgs Report, 2003). Given the differences in theoretical perspectives, empirical findings of the impact of role duality on FV are mixed. Some studies find that role duality is positively related to FV supporting the stewardship theory (Sheikh and Khan, 2011; Azeez, 2015; Mishra and Kapil, 2018) whereas others extend support to the agency theory stating negative relationship between the two (Rhoades et al, 2001; Jarmias, 2007; Bhagat and Bolton, 2008; Kao et al, 2018). Evidence also indicates that when the two positions are separated, firms are valued high in the market, because market believes that monitoring of CEO by boards' chairman strengthens internal control of the firm (Petra 2007; Yarmack, 1996). Yet, few studies find their association to be insignificant (Chang and Leng, 2004; Tachiwou, 2016). Although literature is inconclusive, in Indian context the regulatory changes in recent times indicate the desire to limit the powerfulness of board leaders especially in view of family dominance in them. For example, Clause 49 of the Listing Agreement requires that in case of executive chairman, half of the board should comprise of INDs. Moreover, SEBI's LODR, 2015 has also recommended for separating the role of CEO and chairman. These regulatory measures are consistent with the non-duality approach of agency theory. Therefore, agency perspective can be adopted and it can be anticipated that *role duality is negatively associated with FV*.

3.3.1.4 Gender Diversity:

The organizational outcome to a large extent depends on the strategic decisions of the board which is greatly influenced by the characteristics of management team as explained by upper echolons theory (Hambrick, 2007). Participation of women on board brings heterogeneity in managerial

characteristics due to differences in their cognitive frames, enhanced sensitivity towards others, and reduces the level of board conflict which is reflected in business strategy and performance (Filbeck et al, 2017). Consistent with the theoretical perspective, majority of the empirical evidences documents positive association between board gender diversity and FV (Singh et al, 2001; Carter et al, 2003; Erhardt et al, 2003; Ntim, 2015; Ararat et al, 2015; Topalova and Turk, 2016) indicating that increased women participation on board calls for rigorous monitoring leading to improved FV. However, Rose (2007), Ye et al (2010); and Lam et al (2013) observe no association between boards' gender diversity and FV indicating certain possible reason for such insignificant contribution such as double burden syndrome, male dominated board. Consistent with theoretical perspective, CG reforms worldwide recognizes the fact that gender diverse board is essential in ensuring that board understands the consequences of companies activities on different stakeholders and accordingly in Indian context, Companies Act, 2013 has mandated appointment of minimum one female director on board. Therefore, in view of theoretical perspective as well as prevailing regulation in India, it can be expected that *board's gender diversity has a positive impact on FV*.

3.3.1.5 Ownership Structure:

Ownership structure is one of the key elements in CG studies as it divides the ultimate decision-making power of the firm (Zattoni, 2011). Theoretically, ownership structure creates two types of agency problems i.e, *firstly*, vertical agency problem owing to separation of ownership and management, and *secondly*, horizontal agency problem when the firm is owned by the block holders above a certain level, which may lead to owner-mangers ties that expropriate the wealth of minority shareholders (Fama and Jensen, 1983). There are certain benefits associated with ownership concentration such as efficient monitoring of the management action as they have substantial investments at stake (Shleifer and Vishny, 1997); eliminates vertical agency problem as blockholders often also work as managers (Singh and Gaur, 2009). Although, blockholders provide several benefits, it also leads to some setbacks as they may exploit the minority shareholders, by pursuing some actions for their personal gain which may be detrimental to the interest of minority shareholders (horizontal agency problem). This type of agency problem is more evident in countries with weak external governance environment (Dharwadkar et al., 2000). Majority of empirical evidence supports positive association between ownership concentration (top five shareholders) and FV (Chang and Leng, 2004; Dwivedi and Jain, 2005; Mak and Kusnadi, 2005; Hu and Izumida, 2008; Singh and Gaur, 2009; Vintila and Gherghina, 2012; Ducassy and Guyot, 2017; Kao et al, 2018) whereas, Jaggi et al (2009) report negative association between the two. In emerging country like India characterized by highly concentrated family ownership structure, several CG codes in the past decades were implemented which focuses on protecting the rights of minority shareholders and thus eventually, negative effects of ownership concentration are likely to get reduced and a positive relation between *ownership concentration and FV can be anticipated*.

3.3.1.6 Audit Committee Independence:

The audit committee is a sub-committee of the board that is entrusted with oversight responsibility of firms' reporting process. Different CG codes around the globe require listed companies to set an audit committee and ensure its independence as INDs are expected to alleviate agency problem through facilitating timely release of unbiased information by managers (Forker, 1992; Bhagat and Black, 2002). The relationship between audit committee independence and FV is particularly important because auditors are responsible to verify actual financial position and value of companies as depicted by their financial statements. There has been a number of accounting scandals on national front such as Satyam, Saradha etc. as well as on global front such as Enron, WorldCom, Tyco etc. whereby weak independence of audit committees was considered to be one of the major factors for manipulation of financial statements (Bhasin, 2013). Thus presence of an audit committee with majority of INDs is necessary in order to keep in check such deceitful activities. As, independent audit committee reveals true financial position and performance of firm to the board and the CEO, they are in a better position to draw effective strategies towards increasing FV (Bhardwaj and Rao, 2015). Recognizing the need for independent audit committee Indian CG regulations such as Companies Act, 2013 and Clause 49 of the listing agreement also mandated listed entities for constitution of an audit committee with minimum of two third independent members. Empirically, some studies report that independence of audit committee is positively related to FV (Klein, 2002; Chan and Li, 2008; Amer et al., 2014; Sean et al., 2016) whereas few studies reveal insignificant association between the two (Chang and Leng, 2004; Bansal and Sharma, 2016; Berkman and Zuta, 2017) indicating that "some independent directors may be independent in form but not necessarily in substance" due to convergence interest between managers and owners. Although, evidences on this issue are mixed, considering the regulatory changes in Indian context, it can be expected that *audit committee independence is positively associated with FV.*

3.3.2 Comprehensive Measure of Corporate Governance and Firm Value:

CG of a firm covers a large number of aspects which calls for information about many attributes to draw any meaningful conclusion. This necessitates development of more comprehensive way of measuring CG which adequately summarizes information about the different aspects of governance rather than employing individual attributes. Literature provides two ways of measuring CG in a holistic manner viz, CG Index (CGI) (Gompers et al, 2003; Beiner et al, 2006) and CG Ratings (CGR) (Bauer, 2004; Drobetz et al, 2004; Renders et al, 2010) given by various national and international rating agencies. In one of the early studies developing index with different governance aspects, Gompers et al. (2003) note that CGI is positively associated with different performance indicators like FV and operating performance. Likewise, many studies from both developed and developing countries constructed CGI with different attributes to capture the overall impact of CG on FV and finds positive association between the two (Bai et al, 2004; Brown and Caylor, 2006; Zheka, 2006; Cheung et al, 2007; Bauer et al, 2008; Ammann et al, 2009;

Balasubramanian et al, 2010; Goel and Ramesh, 2016; Ali et al, 2017; Arora and Bodhanwala, 2018) indicating that strong governance mechanism controls individualistic behaviour of managers which, in turn, reduces agency cost and thereby contributes towards FV. However, few studies report no association CGI and FV (Klein et al, 2005; Arcot and Bruno, 2005; Price et al, 2009; Bozec et al, 2010; Akbar et al, 2016). These mixed findings indicate that optimal governance is likely to differ between developed and emerging markets and potentially also among different emerging markets. In addition, within a given country, best CG practices may depend on firm characteristics. Although, number of initiative have been undertaken worldwide in order to adopt CG practices which will contribute positively towards FV (Sarbanes-Oxley Act in the U.S; OECD principles, 1999). Since good governance often varies in different context, it limits universal applicability of best practices. Nevertheless, in the context of an emerging economy like India, investors are likely to attribute higher values to firms with strong CG and thus a *positive relation between comprehensive measure of CG and FV can be expected.*

3.3.3 Methodological Approaches:

The empirical work on this issue is mostly descriptive and causal in nature. The sample used in the studies reviewed consists of listed firms in different stock exchanges which are selected following different sampling techniques like convenient sampling, purposive sampling stratified random sampling. Some studies have excluded financial firms due to different regulation (Dwivedi and Jain, 2005; Ammann et al, 2009; Akbar et al, 2016) whereas some studies included both financial and non-financial firms (Chan and Li, 2008; Singh and Gaur, 2009). Furthermore, majority of the studies are based on panel data (Dwivedi and Jain, 2005; Jackling and Johl, 2009; Sheikh and Khan, 2011) that have been collected from different secondary sources, except few based on cross section data (Balasubramanian et al, 2010; Kumar and Singh, 2012).

In order to study the relationship between different parameters of CG and FV, correlation has been used (Brown and Caylor, 2004; Yuosoff and Alahaji, 2012; Amer et al, 2014 ; Otieno et al, 2015; Roy, 2016) and to examine the impact of CG on FV, multiple regression analysis using *Ordinary Least Square* (OLS) method of estimation is most commonly used (Jarmias, 2007; Mashayekhi and Bazaz, 2008; Balasubramanian et al, 2010; Sheikh and Khan, 2011; Kumar and Singh, 2012; Saravanan, 2012; Tachiwou, 2016; Mardnly, 2018). However, few have used *Stepwise regression* and *Hierarchical moderated regression* (Brown and Caylor, 2006; Singh and Gaur, 2009) in order to study the effect of individual variable at a time by adding or removing them in different steps based on their significance.

Further, it can be observed that internal governance mechanisms, such as board size, board independence etc. are endogenously determined in response to changes in firm value and thus, regression results obtained are found to be highly sensitive towards the use of estimation techniques (Bhagat and Bolton, 2002). To address this issue, researchers are using several alternative estimation techniques. For instance, some researchers have employed *simultaneous equation model* (Dwivedi and Jain, 2005;

Bhagat and Bolton, 2008; Chan and Li, 2008; Jackling and Johl, 2009 Liu et al, 2015; Kao et al, 2018), *cross-lagged regression* (Garg, 2007), whereas few have used *Generalised Method of Moment approach* (GMM) (Armmann et al, 2009; Akbar et al, 2016; Arora and Sharma, 2016) which overcomes the problem of endogeneity.

As regards CG, studies have mainly employed either single or few variables in combination or comprehensive measure to capture the complex construct. Since "CG consists of a complex set of interrelationships between variables, and so using a single variable to measure CG is problematic" (Roy, 2016). Further, the comprehensive CG measure developed in the literature suffers from some measurement errors as identified by Schnyder (2012). Two important types of such errors are firstly, *the kitchen-sink problem*, whereby any item related to CG is included in the index without proper justification as to what to include and what not. Secondly, *the check and sum problem*, indicating the lack of a convincing method or theory determining the weightage (or absence thereof) of different variables included in the index. There are few references as to explicit weightage of different CG mechanisms based on diverse conceptual argument or statistical method such as factor analysis (Qiao, 2003; Brown and Caylor, 2006; Bhagat *et al*. 2008; Bebchuk *et al*. 2009; Roy, 2016). Yet, there is no consensus which mechanism matters more than others. Moreover, in absence of any explicit weightage, implicit weightage may still exist as unequal number of variables are generally used to measure different dimensions of CG. Some studies like Brown and Caylor (2006); Bebchuk et al (2009) attempt to solve the kitchen-sink problem by constructing indicators of CG that only contain relevant variables whereas the check and sum problem is yet to be addressed and it calls for employing a more sophisticated technique to capture CG.

As CG is considered as a latent concept, it can be measured by some observable variables which are assumed to have some relationships with it. Observable variables are further divided into formative and reflective groups. The difference between formative and reflective variables is in the direction of causality between the latent variable and the observable variables which can be determined by using econometric analysis such as Granger causality test to statistically detect the direction of causality (Gujarati, 2010). Considering the existing literature, it can be said that use of techniques like *Partial Least Square-Structural Equation Mode l*(PLS-SEM) to measure the extent of incorrectly specified CG construct, is rare. Thus, it is desirable to study the same using the measurement model of PLS-SEM which takes into account the relation of CG with its indicators and the ultimate dependent variable (FV) in the structural model so as to obtain better insights of exact relationship. However, this needs to be empirically verified.

4. Conclusion and Scope for Further Research

The relationship between CG and FV has been extensively discussed in literature mostly in the context of developed countries whereas little is empirically known about the firms in developing countries that have different institutional settings. Theoretically, there exists positive relationship between the two but, the findings of empirical work reveal that there

is lack of consensus about the nature of relationship between them. These inconclusive results can be mainly attributed to some factors such as, lack of uniform measure to capture the abstract concept of CG, variations in the choice of variables used to measure FV, institutional differences of different studies, etc. To understand the impact of CG on FV, some studies have constructed CG index (CGI) while others have used either one or few CG attributes in different combinations that are having their own limitations as discussed above. Moreover, methodological review of the existing studies indicates that use of techniques like PLS-SEM to measure the latent construct of CG is rare. Thus, it is desirable to study the same using the measurement model of PLS-SEM which takes into account the relation of CG with its indicators in order to capture CG in a better manner. However, this needs to be empirically verified in future studies.

In an emerging country like India, several reforms were undertaken in line with the international standards so as to raise the level of Indian CG. As there exist some key differences in Indian environment as compared to developed countries, what is more important here is to know whether practical implementation of these measures contributes towards FV. For instance, governance reforms in India highlight the importance of independent directors. However some empirical findings from India show negative association between board's independence and FV suggesting that in a developing economy the oversight role of IND is of less concern as the agency problem between owners and managers is less likely due to ownership concentration (owner-manager unification).In view of the above, companies appoint INDs just to fulfil the minimum statutory requirements. This makes them (INDs) feel that their role is ceremonial only. Moreover, they are hardly aware of internal strength, weakness and the complexities associated with the functioning of a particular firm which limits the generalizability of findings (Singh and Gaur, 2009; Sheikh and Khan, 2011; Kumar and Singh, 2012). Hence, the paper emphasizes on the need for more empirical studies from emerging markets like India by developing robust measure of capturing CG in order to gain better insights about its exact relationship with FV.

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GST IMPLEMENTATION AND ITS EFFECT ON INDIAN CAPITAL MARKET: A COMPARATIVE STUDY

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Abstract:

Any new information about the economy is transmitted fast and it may influence the financial markets, positively or negatively. In the middle of 2017, the Indian Government implemented the Goods and Services Tax, which provided several benefits to various sectors while some sectors were adversely affected. The present study used Descriptive statistics, Augmented Dickey-Fuller (ADF) test, GARCH (1, 1) Model and EGARCH, to investigate the impact of GST implementation on Indian stock market and particularly, the study compared FMCG and Services Sector indices with sectoral indices of NSE India. The results of GARCH (1, 1) Model and EGARCH confirmed that implementation of GST influenced the Indian stock market and the negative information about GST mostly affected the Nifty FMCG and Nifty Services Sector, along with other sample sectoral indices of Indian stock market, during the Pre and Post GST implementation period. Finally, the study concluded that bad news travels fast and it increased volatility more than good news of the same. Thus the Government may organise more awareness programme to the people before the implementation of any economic policy.

Key Words:

Goods and Services Tax (GST), Fast Moving Consumer Goods (FMCG) Sector, Service Sector, GARCH (1, 1) Model and EGARCH

Introduction

Over the years, stock market is closely studied because it serves as the indicator of our economy (Jyoti, 2014). The Goods and Services Tax (GST) was a much awaited tax reform in India. It was necessary to eliminate the ill effects of the earlier tax regimes. With the commencement of GST era, one can expect a tax system, free from multiple tax rates (Roy, 2017). GST implications on the economy were first observed by the reactions of stock market return.

The new Goods and Services Tax (GST) provides several benefits to the economy and mainly sustains the Fast Moving Consumer Goods (FMCG) industry and services sector. But the GST rate structure does not benefit all units of FMCG sector and service sector. Strangely, some of the commonly consumed products were placed under the highest tax slab of 28%, slightly higher than the rate levied earlier. However, analysts do not expect much impact on the volume of sales. Many items in the premium category have been put under the highest tax slab of 28%. These include health supplements, skin care, aerated drinks, liquid soap, among other goods. But this is not going to have a particularly negative impact on manufacturers, as they had been paying similar taxes earlier (The Economic Times, May 29, 2017). This information may influence the performance of FMCG Sector and Service Sector Indices. Hence the study focused on price volatility behaviour of Indian stock market, during pre and post GST Implementation periods. The study particularly analyses price volatility of FMCG and Services Sector indices with other Indian sectoral indices.

Review of Literature

Lavanya. V, et al., (2017) examined how the implementation of GST influenced the automobile sector of India. The paper showed that collision of tax cascading will also go away that would reduce overall cost of vehicle manufacturing as all taxes on input paid will be offset with the output liability of GST. **Yogesh Kailashchandra Agrawal (2017)** investigated the impact of Goods and Services Tax (GST) on Indian economy and explained the working mechanism of GST in India. The study observed that GST is at the initial stage in our country, and it will take some time for studying its impact on our economy. **Akanksha Khurana and Aastha Sharma (2016)** highlighted the background, objectives, benefits and opportunity of Goods and Services Tax and how it had replaced the past indirect tax system. The article concluded that GST would help the producers and customers of various sectors, by relieving them from various indirect taxes. On the basis of theoretical way, **Lourdunathan F and Xavier P (2017)** analysed the prospects and challenges of goods and services tax implementation in India. The paper stated that GST provided the opportunity to be relieved from various indirect taxes. From the conceptual work of GST, **Mohan Kumar and Yogesh Kumar (2017)** answered the questions of whether GST could become boon or bane for Indian economy and whether it influenced the FMCG Sector. The results of the study revealed that the GST provided the opportunity to review the supply chain, pricing, working capital of all the sectors, especially in FMCG Companies. Using descriptive statistical tools, **Rashi Gupta (2017)** explored the benefits and opportunity of goods and services tax and its

impact on Indian economy. It found that it would mitigate the cascading effect of double taxation and thus would enable better compliance. It would also reduce tax evasion. **Priyanshu Sharma (2017)** investigated the impact of before and after GST implementations on various sectors of Indian stock market. It was concluded that GST had a positive impact on various sectors and industries. Efficient formulation enhanced revenue gain for States as well as for the Central Government. Using the least square method, **Alice Mani, et al., (2017)** explored the impact of enforcement of goods and services tax on sectoral indices of Bombay Stock Exchange, namely, automobile, banking, FMCG, healthcare and manufacturing sector. It was found that automobile and banking sector alone were affected by the GST implementation and the rest of the indices were not affected by GST. **Lakshmi. B and Rebecca J Alex (2018)** used OLS, GARCH and TGARCH and investigated the effects of GST rate announcement on sectoral indices of national stock exchange of India. Only three indices, namely, Pharmaceutical, PSU Bank and Realty Sectors were influenced by the GST announcement and high volatility was recorded in these three indices. **Ramya. N and D.Sivasakthi (2017)** highlighted the features of GST and answered the question whether the implementation of GST would influence various sectors and industries of India. It was found that all sectors of our country, including Government departments and services sector, were influenced by GST implementation.

Various studies have been undertaken, on stock market reactions to news effect such as monetary policies, union budget, stock split, mergers and acquisitions and have tested the short term efficiency of the Indian stock market. The present study aims to investigate the price behaviour of Nifty FMCG and Nifty Services Sectors Indices with other sample indices of Indian stock market, during pre and post GST implementation periods. The directions of the movements of the stock prices would help us understand if the investors perceived the GST rates and eventually, the implementation of GST, as "good" or "bad".

Objectives of the study

The present study aims to investigate the price volatility behaviour of Indian FMCG index and services sector index, during pre and post Goods and Services Tax implementation periods. For testing the main objective, the study formulated the following objectives.

- To test the normality and stationarity of daily prices of sample Indian stock market indices, during the Pre and Post GST Implementation Periods.
- To analyse and compare the volatility of daily prices of FMCG and Services Sectors indices with sample indices of Indian stock market, during the Pre and Post GST Implementation Periods.
- To examine and compare the asymmetric effects (GST Implementation) in daily prices of FMCG, Services Sectors indices and other sample indices of Indian stock market during the Pre and Post GST Implementation Periods.

Hypotheses of the study

For the purpose of testing the objectives, the following null hypotheses were formulated.

NH_{01}: The daily price returns of sample indices of Indian stock market are not normally distributed and they are not stationary during the Pre and Post GST Implementation Periods.

NH_{02}: There is no difference in volatility and asymmetry effects in Nifty FMCG Index, Services sector Index and other sample sectoral indices during pre and post GST Implementation period.

Methodology

a) Sample Selection

As per 'The Economic Times', May 29, 2017, many of the FMCG sector and service sector companies stand to benefit from the implementation of Goods and Services Tax in India, but after the implementation of GST the FMCG and Services sector faced some constrains while compared to the other sectors. Hence the study selected all the eleven sectoral indices of national stock exchange of India, as sample indices, for comparing the Nifty FMCG and Nifty Services sector index. The list of sample indices of Indian stock market is illustrated in the Table – 1.

Table – 1: List of Sample Indices of Indian Stock Market

Sr. No	Sample Indices
1	Nifty Auto Index
2	Nifty Bank Index
3	Nifty Financial Services Index
4	Nifty IT Index
5	Nifty Media Index
6	Nifty Metal Index
7	Nifty Pharma Index
8	Nifty Private Bank Index
9	Nifty PSU Bank Index
10	Nifty Realty Index
11	Nifty Energy Index

Source: www.nseindia.com

b) Sources of Data

The study used daily closing prices of sample indices of Indian stock market, collected from official website of national stock exchanges of India. The other required dada were collected from various books, journals and research data bases. Finally, the daily closing prices were transformed, by taking natural logarithm of the raw return data. The returns, used in each of the time series, were computed as follows:

$$r_t = log \frac{p_t}{p_{pt}}$$

Where

rt: the day return
Pt: the value of the index
Ppt: the value of the index the previous working day

c) Period of the Study

The study covered a period of twelve months from 1st January 2017 to 31st December 2017. For the purpose of analysing the pre and post GST Implementation, the study period was split into two parts, on the basis of date of GST implementation (1st July 2017). The period from 1st January 2017 to 30th June 2017 was considered as the pre GST implementation period and from 1st July 2017 to 31st December 2017 was treated as the Post GST implementation period.

d) Tools used for the study

The study used statistical tools such as descriptive statistics, Augmented Dickey-Fuller (ADF) test, GARCH (1, 1) Model, EGARCH, for testing the price behaviour of Indian stock market, during the period of pre and post GST implementation.

Limitations of the Study

The study suffered from the following limitations. It was confined to only Fast Moving Consumer Goods (FMCG) and Services Sector stock behaviour of NSE India. The study was undertaken only for the pre GST implementation period of six months and post GST period of six months. As the study was based on secondary data, it was beset with certain limitations, which are bound to arise while dealing exclusively with secondary data. All the limitations, associated with statistical tools used, are applicable to this study also.

Results and Discussion

The results and discussion section covers the analysis of Descriptive statistics, Augmented Dickey-Fuller (ADF) test, GARCH (1, 1) Model, EGARCH for daily prices of Nifty FMCG and Nifty Services Sectors indices and sample indices of Indian Stock market during the Pre and Post GST implementation periods.

a) Results of Normality Test and Stationarity Test

The results of descriptive statistics, for daily returns of Nifty FMCG Index and Nifty Services Sector Index and other sample sectoral indices of NSE India for pre and post GST implementation periods; are presented in the Table - 1. Mean values of Nifty FMCG Index, Nifty Services Sector index and other sample sectoral indices of NSE India for pre GST period, indicated that all the sample indices recorded positive mean return, except Nifty IT Index and Nifty Pharma Index, with the mean values of -0.000187 and -0.000622. respectively. All the sample indices recorded high return, except Nifty Pharma and Nifty IT Index. While comparing the mean values of other indices, the Nifty FMCG index recorded, the highest mean return, followed by Nifty Reality Index, Nifty Private bank Index, Nifty Financial Services index, Nifty Bank Index, Nifty Services Sector Index and other indices. High standard deviation values were found in Nifty reality index, Nifty PSU Bank Index, Nifty Metal Index and Nifty Forma Index. It indicated that these indices were associated with high risk during pre GST Period. Nifty FMCG Index recorded moderate risk and Nifty Services sector index recorded the lowest risk compared to the other indices. It is interesting to observe that during the Post GST Implementation period, the Nifty FMCG Index recorded negative return with moderate risk and Services sector index gained a low mean return. The highest mean return was recorded by Nifty Metal Index and Nifty Reality Index during the post period. Skewness values for FMCG and Services sector indices were positive in the pre implementation of GST and negative in the period of post implementation of GST. For rest of the sample indices, the skewness values varied between positive and negative values both the periods. The kurtosis values, for both pre and post implementation GST, were greater than three for all the sample indices and it indicated that daily return of S&P FMCG and S&P Services Sector and other sample sectoral indices were

leptokurtic and the Jarque-Bera values also confirmed that daily return of both sample indices were normally distributed during the period of pre and post GST implementation. Table - 2 presents the results of Augmented Dickey Fuller (ADF) test for sample indices, which clearly shows that both the indices had attained stationarity at level difference during the period of pre and post GST implementation because the ADF test values of all the sample indices were lesser than the test critical values, at 1%, 5% and 10% levels. Hence the data can be used for further analysis.

The results of Descriptive statistics and Augmented Dickey Fuller Test, confirmed that daily price returns of sample indices of Indian stock market were normally distributed and attained sationarity at level difference during the study period. Hence reject the null hypothesis NH01, The daily prices of sample indices of Indian stock market are not normally distributed and not stationary during the Pre and Post GST Implementation Periods, was rejected.

Table – 1 Results of Descriptive statistics for daily return of FMCG, Service Sector Index and other Sample Sectoral Indices, During Pre and Post GST Implementation Period.

Pre GST Implementation Period													
	NIFTY FMCG INDEX	NIFTY SERVICES SECTOR INDEX	NIFTY AUTO INDEX	NIFTY BANK INDEX	NIFTY ENERGY INDEX	NIFTY FINANCIAL SERVICES	NIFTY IT INDEX	NIFTY MEDIA INDEX	NIFTY METAL INDEX	NIFTY PHARMA INDEX	NIFTY PRIVATE BANK INDEX	NIFTY PSU BANK INDEX	NIFTY REALTY INDEX
Mean	0.002337	0.001489	0.001063	0.002071	0.000951	0.002125	-0.000187	0.001044	0.000881	-0.000622	0.002152	0.000937	0.002205
Std. Dev.	0.010008	0.005815	0.008845	0.007643	0.008789	0.007439	0.009764	0.010477	0.012998	0.010566	0.00782	0.014171	0.016661
Skewness	0.766737	0.537915	-0.023573	0.645804	0.539315	0.863425	-0.333929	0.08955	0.321146	-0.270329	0.665571	-0.186469	0.121146
Kurtosis	4.37411	3.922509	5.081675	4.32673	3.786249	4.466717	3.854346	3.514517	3.398956	4.033637	4.244741	3.646005	6.127458
Jarque-Bera	21.72858	10.29322	22.21991	17.57087	9.130858	26.30802	6.026696	1.521127	2.929982	6.973663	17.02175	2.851576	50.42845
Post GST Implementation Period													
	NIFTY FMCG INDEX	NIFTY SERVICES SECTOR INDEX	NIFTY AUTO INDEX	NIFTY BANK INDEX	NIFTY ENERGY INDEX	NIFTY FINANCIAL SERVICES	NIFTY IT INDEX	NIFTY MEDIA INDEX	NIFTY METAL INDEX	NIFTY PHARMA INDEX	NIFTY PRIVATE BANK INDEX	NIFTY PSU BANK INDEX	NIFTY REALTY INDEX
Mean	-0.000325	0.0008	0.00091	0.00072	0.001586	0.000745	0.001062	0.001118	0.001989	-0.00008	0.000643	0.0005	0.001981
Std. Dev.	0.009989	0.005968	0.008412	0.007665	0.009182	0.007031	0.00748	0.00991	0.012995	0.013513	0.006967	0.026044	0.015854
Skewness	-2.756508	-0.362535	0.130727	0.220729	-0.205517	-0.099659	0.267132	-0.031703	-0.361418	-0.202929	-0.472078	5.378827	-0.373098
Kurtosis	23.13695	3.047159	5.015202	4.685795	3.880737	3.233824	4.212889	5.169588	3.597613	3.862255	3.327533	48.74282	4.958678
Jarque-Bera	2252.099	2.727746	21.33521	15.69009	0.946389	0.487742	9.075456	24.34085	4.544779	4.692387	5.159987	11408.68	22.69834

Source: Data collected from official website of NSE, computed using E- views

Table – 2 Results of Stationarity Test for daily return of FMCG, Service Sector Index and other Sample Sectoral Indices, During Pre and Post GST Implementation Period.

Pre GST Implementation Period					
Indices	Augmented Dickey-Fuller test statistic	Test critical values:			Prob.*
		1% level	5% level	10% level	
NIFTY FMCG INDEX	-9.306532	-2.58406	-1.94347	-1.61498	0.000
NIFTY SERVICES SECTOR INDEX	-9.766359	-2.58406	-1.94347	-1.61498	0.000
NIFTY AUTO INDEX	-10.68503	-2.58406	-1.94347	-1.61498	0.000
NIFTY BANK INDEX	-9.721777	-2.58406	-1.94347	-1.61498	0.000
NIFTY ENERGY INDEX	-9.890786	-2.58406	-1.94347	-1.61498	0.000
NIFTY FINANCIAL SERVICES	-9.451623	-2.58406	-1.94347	-1.61498	0.000
NIFTY IT INDEX	-11.56715	-2.58406	-1.94347	-1.61498	0.000
NIFTY MEDIA INDEX	-10.84189	-2.58406	-1.94347	-1.61498	0.000
NIFTY METAL INDEX	-10.73482	-2.58406	-1.94347	-1.61498	0.000
NIFTY PHARMA INDEX	-9.221664	-2.58406	-1.94347	-1.61498	0.000
NIFTY PRIVATE BANK INDEX	-9.900531	-2.58406	-1.94347	-1.61498	0.000
NIFTY PSU BANK INDEX	-11.0482	-2.58406	-1.94347	-1.61498	0.000
NIFTY REALTY INDEX	-11.58466	-2.58406	-1.94347	-1.61498	0.000
Post GST Implementation Period					
Indices	Augmented Dickey-Fuller test statistic	Test critical values:			Prob.*
		1% level	5% level	10% level	
NIFTY FMCG INDEX	-11.94947	-2.58421	-1.94349	-1.61497	0.000
NIFTY SERVICES SECTOR INDEX	-10.6693	-2.58454	-1.94354	-1.61494	0.000
NIFTY AUTO INDEX	-8.770262	-2.5839	-1.94345	-1.615	0.000
NIFTY BANK INDEX	-9.697974	-2.5839	-1.94345	-1.615	0.000
NIFTY ENERGY INDEX	-10.31992	-2.5839	-1.94345	-1.615	0.000
NIFTY FINANCIAL SERVICES	-9.237827	-2.5839	-1.94345	-1.615	0.000
NIFTY IT INDEX	-10.24048	-2.58454	-1.94354	-1.61494	0.000
NIFTY MEDIA INDEX	-9.050028	-2.58454	-1.94354	-1.61494	0.000
NIFTY METAL INDEX	-10.43374	-2.58471	-1.94356	-1.61493	0.000
NIFTY PHARMA INDEX	-10.93934	-2.58454	-1.94354	-1.61494	0.000
NIFTY PRIVATE BANK INDEX	-9.977004	-2.58454	-1.94354	-1.61494	0.000
NIFTY PSU BANK INDEX	-11.29361	-2.58454	-1.94354	-1.61494	0.000
NIFTY REALTY INDEX	-9.474185	-2.58471	-1.94356	-1.61493	0.000

Source: Data collected from official website of NSE, computed using E- views

b) Results of GARCH Models

The volatility was found during both the sample periods of pre and post implementation of GST, for Nifty FMCG Index, Nifty Services Sector index and other sample sectoral indices of Indian stock market, as indicated by the results of GARCH (1, 1) model. The values of sum of ARCH (1) and GARCH (1), for both the periods, for all the sample indices, were close to one and indicated high volatility.

Nifty FMCG and Nifty services sector index revealed high volatility in the post GST implementation period compared to the pre period. Nifty services sector, experienced huge difference between the pre and post GST implementation. Hence it is concluded from the Table - 3 that both FMCG and services sectors were influenced by the GST implementation in India. Among the sample sectoral indices, Nifty Private Bank Index and Nifty Reality index recorded high volatility While Nifty Bank Index recoded low volatility during pre GST Implementation period. In the post GST implementation period, the highest volatility was found in Nifty PSU Bank Index and low volatility in Nifty IT Index. It is to interesting to note that FMCG and services sectors of Indian stock market was comparatively moderate risk during both the sample periods, while compared to other sectoral indices.

In order to capture the asymmetric behavior and existence of leverage effect in the daily return of S&P FMCG, S&P Services sector index and other sample Indian sectoral indices, the study applied EGARCH Model to know whether the implementation of GST affected in the positive or negative way (Leverage effect). The co-efficient C (2) indicated the last period (t-1) volatility. C(5) is for the GARCH term. C(3) and C(4) refer to the ARCH term, but the absolute value in C(3) is for the effect of the size, while C(4) is for the effects of sign (bad news vs. good news). If asymmetry term is negative. this implies negative shock exercised greater impact on volatility rather than the positive shocks of the same magnitude. The Table – 4 displays the results of EGARCH model for S&P FMCG, S&P Services sector index and other sample sectoral indices of Indian stock market. C (4) values for services sector indices were negative, under both periods but the FMCG sector value was positive in pre GST implementation period and negative in post implementation period. It is to be noted that the information about GST Implementation positively influenced FMCG Sector during the pre implementation period and negatively influenced the post period and the services sector was negatively influenced by GST implementation during both sample periods. For other sample sectoral indices, negative values were found for all the sectoral indices during post period and in the pre Implementation periods. Nifty Private Bank, Nifty PSU Bank, Nifty IT, Nifty Energy and Nifty Bank indices values were positive and rest of the indices values were negative. This showed that GST implementation negatively influenced the Indian stock market and it also revealed the significance of negative shocks persistence or the volatility asymmetry, indicating that investors were more prone to the negative news compared to the positive news.

The overall analysis of GARCH Models found that there was difference in volatility and asymmetric effects in Nifty FMCG Index, Services sector Index and other sample sectoral indices of Indian stock market during pre and post GST implementation periods. Hence the Null Hypothesis, NH02, There is no difference in volatility and asymmetry effects in Nifty FMCG Index, Services sector Index and Other sample sectoral indices, during pre and post GST Implementation period, was rejected.

Table – 3 Results of GARCH (1, 1) Model for daily return of FMCG, Service Sector Index and other Sample Sectoral Indices, During Pre and Post GST Implementation Period.

Pre GST Implementation Period													
	NIFTY FMCG INDEX	NIFTY SERVICES SECTOR INDEX	NIFTY AUTO INDEX	NIFTY BANK INDEX	NIFTY ENERGY INDEX	NIFTY FINANCIAL SERVICES	NIFTY IT INDEX	NIFTY MEDIA INDEX	NIFTY METAL INDEX	NIFTY PHARMA INDEX	NIFTY PRIVATE BANK INDEX	NIFTY PSU BANK INDEX	NIFTY REALTY INDEX
ARCH(1) (α)	0.257773	0.032291	0.237882	-0.04437	0.024125	0.035855	-0.06994	0.176284	-0.11328	0.353663	-0.04844	0.026021	-0.07694
GARCH(1)(β)	0.483394	0.47169	-0.20248	0.391614	0.654821	0.707499	1.047321	0.581624	0.525405	0.165562	1.054659	0.787908	1.075696
α+ β	0.741167	0.503981	0.035406	0.347241	0.678946	0.743354	0.977384	0.757908	0.412121	0.519225	1.006222	0.813929	0.998753
Post GST Implementation Period													
	NIFTY FMCG INDEX	NIFTY SERVICES SECTOR INDEX	NIFTY AUTO INDEX	NIFTY BANK INDEX	NIFTY ENERGY INDEX	NIFTY FINANCIAL SERVICES	NIFTY IT INDEX	NIFTY MEDIA INDEX	NIFTY METAL INDEX	NIFTY PHARMA INDEX	NIFTY PRIVATE BANK INDEX	NIFTY PSU BANK INDEX	NIFTY REALTY INDEX
ARCH(1)(α)	0.759475	-0.05884	0.354463	-0.08004	0.021786	-0.11317	0.47296	-0.10042	-0.01555	0.007466	-0.09307	1.322314	0.437019
GARCH(1)(β)	0.050151	0.978103	0.110894	1.060599	0.907681	1.037549	-0.16501	1.064916	0.928964	0.887594	1.046079	0.037681	0.317908
α+ β	0.809626	0.919263	0.465357	0.980558	0.929467	0.924383	0.307949	0.964496	0.913413	0.89506	0.953006	1.359995	0.754927

Source: Data collected from official website of NSE, computed using E- views

Table – 4 Results of EGARCH Model for daily return of FMCG, Service Sector Index and other Sample Sectoral Indices, During Pre and Post GST Implementation Period.

Pre GST Implementation Period													
	NIFTY FMCG INDEX	NIFTY SERVICES SECTOR INDEX	NIFTY AUTO INDEX	NIFTY BANK INDEX	NIFTY ENERGY INDEX	NIFTY FINANCIAL SERVICES	NIFTY IT INDEX	NIFTY MEDIA INDEX	NIFTY METAL INDEX	NIFTY PHARMA INDEX	NIFTY PRIVATE BANK INDEX	NIFTY PSU BANK INDEX	NIFTY REALTY INDEX
C(2)	-12.0981	-2.43625	-17.27881	-9.517847	-7.580019	-18.11295	-19.13219	-1.704038	-4.554303	-5.24901	-8.646771	-1.306993	-16.39476
C(3)	0.377552	0.068149	0.30882	-0.467298	-0.090392	0.225536	0.156458	0.248786	-0.152307	0.476189	-0.554778	0.066142	0.488502
C(4)	0.353142	-0.10602	-0.180549	0.213038	0.275498	-0.07474	0.027774	-0.193225	-0.090896	-0.19506	0.251183	0.03073	-0.076274
C(5)	-0.26186	0.764226	-0.799949	-0.010766	0.197396	-0.836912	-1.008474	0.833513	0.462709	0.474618	0.07045	0.852254	-0.867828
Post GST Implementation Period													
	NIFTY FMCG INDEX	NIFTY SERVICES SECTOR INDEX	NIFTY AUTO INDEX	NIFTY BANK INDEX	NIFTY ENERGY INDEX	NIFTY FINANCIAL SERVICES	NIFTY IT INDEX	NIFTY MEDIA INDEX	NIFTY METAL INDEX	NIFTY PHARMA INDEX	NIFTY PRIVATE BANK INDEX	NIFTY PSU BANK INDEX	NIFTY REALTY INDEX
C(2)	-7.97667	-2.66914	-2.669144	-3.507238	-8.671506	-2.534319	-12.82404	-0.741579	-3.452061	-3.508323	-3.621299	-3.678256	-3.631133
C(3)	0.857869	-0.16085	-0.160854	-0.145846	-0.235008	-0.305864	0.880322	-0.109942	-0.095304	-0.236712	-0.191531	0.890932	0.697653
C(4)	-0.25756	-0.2185	-0.218503	-0.35514	-0.217387	-0.210797	-0.201077	-0.147419	-0.471679	-0.199147	-0.202996	-0.431825	-0.22088
C(5)	0.232577	0.72504	0.72504	0.626266	0.052513	0.718944	-0.228801	0.910157	0.590702	0.573307	0.618823	0.612696	0.628336

Source: Data collected from official website of NSE, computed using E- views

Conclusion

Generally, any new information or policy announcement, in any country, may positively or negatively influence that country's financial market and it has been proved from various studies. The present study also confirmed these existing studies. Descriptive statistics, ADF Test, GARCH (1, 1) Model, and EGARCH were used to investigate the influence of GST implementation on Indian stock market, especially FMCG and Service sector indices compared with other sectoral indices of NSE. The results of GARCH (1, 1) Model found that there was volatility during both pre and post GST implementation periods. Comparing both pre and post GST implementation periods, high volatility was observed in the post period, in Nifty FMCG, Nifty Services sector index and other sample sectoral indices of Indian stock market. EGARCH model indicated that negative information about GST implementation affected the Indian stock markets. This result confirmed that bad news about any economy policy will increase volatility in the stock market more than good news of the same. Hence the investor should consider all the information about the domestic economy as well as the global economy for better investment or diversification. Before the implementation of any economic policy, the Government may conduct awareness programme for people, for avoiding any negative impression about the economic policies.

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MACRO APPROACH FOR ESTIMATING REVENUE NEUTRAL RATES FOR GST IN INDIA

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Abstract:

Goods and Services Tax is the new comprehensive tax implemented in India in the month of July 2017. Instead of several competing and complementary indirect taxes, GST appears to be a unified comprehensive tax with both Centre and State sharing the tax revenue. Estimating of Revenue Neural Rates for the GST along with its base is important. This is done with the help of three approaches, that is, Macro Approach, Indirect Tax Approach and Direct Tax Turnover Approach. In this study, an attempt is made to estimate absolute values on the basis of Revenue Neutral Rates with the help of Macro Approach for last 10 years. The Base of the GST is also estimated on the basis of GDP figures for the last 10 years. This is to highlight what would have been the scenario had GST been implemented a decade before.

Key Words:

Goods and Services Tax (GST), Revenue Neutral Rate, Macro Approach

Section 1: Introduction

Indirect Taxes in India have remained a prime source of revenue for the country, particularly for States. In recent years several changes has been made in the Indirect Taxes regime where cascading types of sales taxes has been on the decline, though gradually. The recent reform agenda in Taxation includes the progressive Goods and Services Tax. The Goods and Services Tax is a comprehensive tax which is a unified comprehensive tax replacing all other indirect taxes. According to Rao (2008) Indirect taxes on goods and services constitute about 85 % of tax revenue for the state governments. This has made state governments skeptical over the sharing of the tax revenue and it has emerged as a contentious issue over the time. However, it has been argued by the tax authorities that no such problem will arise as there is clear provision for sharing of the Goods and Services Tax between State and Centre. The attempt of the paper is to highlight the Macro Approach for estimating Revenue Neutral Rate for GST. The paper is divided into 6 sections. Section 1 is the opening followed by Section 2 which captures the Conceptual Framework related to Goods and Services Tax. Section 3 deals with the Review of Literature. Section 4 captures GST design issues. Section 5 deals with the Macro Approach and Section 6 with the analytical aspects related to it. Section 7 concludes the study.

Section 2: Conceptual Framework

Indirect Taxes

Indirect Taxes are the taxes which are levied on the consumers and collected from the producers/ sellers. It is known as indirect because indirectly the consumers have to pay it contrary to the direct taxes whose incidence and payments are same while that is not the case with Indirect Taxes. The prominent Indirect Taxes are Value Added Tax (VAT), Sales Tax, Service Tax etc to name a few.

Goods and Services Tax

Goods and Services Tax is the new indirect tax which is a uniform tax replacing all other indirect taxes. It will be an input tax credit system wherein at every stage of production tax will be charged. In other words Goods and Services tax may be considered a uniform Value Added Tax. It was implemented in India on the first of July 2017.

Revenue Neutral Rate

One of the important features of GST is the concept of Revenue Neutral Rate. It was the belief of the government that introduction of GST will diminish the revenue earnings of the government as a uniform rate will not be as beneficial as different tax rates. This is because GST is based on tax credit mechanism, removal of cascading effect etc. This was solved with some mathematical adjustment. Therefore, an adjusted tax rate due to which there will be no decline in the tax revenues of the governments will be applied under GST in the long run. This adjusted rate is termed as Revenue Neutral Rates. It is the rate at which tax revenue will remain same despite allowing input tax credit and other factors.

Section 3: Review of Literature

Comparatively less research work has been conducted on the issue of GST in India. Rao

(2008) evaluated and considered various facets of GST in India. She considered implementation of GST in India to be contingent on several key decisions. There is a need to resolve the issue of inter-state transactions in goods and services under the present GST. Rao demonstrated in her study that the impact of the tax on different states would be different. According to Rao and Chakraborty (2010) having a GST excluding important services being subsumed will result in cascading effect. It is expected that the introduction of GST will bring efficiency and transparency in the indirect tax mechanism in India (Kumar, 2014).

As per the working paper of Chadha (2009), India's GDP will increase between 0.9% and 1.7% after the implementation of GST. The gains in exports are expected between 3.2% and 6.3% and imports are expected to gain between 2.4% and 4.7%. They have also added that GST would lead to efficient allocation of factors of production as the overall price level will go down. On the issue of RevenueNeutral Rates, under GST it is expected to be between 6.2% and 9.4% across goods and services (Chadha, 2009). Pope (2001) has identified and concluded that due to GST, small businesses will face relatively large tax burden. He identified four key points that may help in alleviating GST paperwork burden upon small businesses. These include monetary compensation, raising the GST registration threshold level, improved tax payment arrangements and tax payer education. Taking sample data from Australia, Valadkhani (2005) on the basis of Box and Tiao intervention analysis found that prices do not significantly increase before and after the introduction of GST.

According to Iqbal (2016) GST regime should be implemented in all the sectors of the economy. With respect to Revenue Neutral Rates, Bhowmik (2016) concluded that if the RNR is kept too high the objective of GST will not be achieved. He was of the view that 27% will be too high. Though the upper limit of GST implemented in India is 28%. He also suggested that RNR should remain between 18 to 20 % otherwise GST will be a counterproductive tax. GST has a potential to accelerate India's GDP by 1-2% and it is expected that it will provide stimulus to the Make in India initiative (Venkat, 2016).

Section 4: GST Design issues

The design of the GST in India is of paramount importance ue to the fact that negotiations may altogether compromise the very objective of unified and universal tax rate and system. The design of the GST will be much clearer once it is fully implemented but the key point is to consider that which may be challenging for the GST operating system. More recently the Central GST Bill, 2017 has highlighted the lacunas leading to a bit of suspicion on the success of GST. It is clear in black and white that there is a cap of 20% but within it the government has the authority to vary without any prior parliamentary action. Uptill now the tax rate was specified in the act and needed amendment in the act itself. However, this meant that approval of the parliament was mandatory. This now discontinues and makes the rates to be flexible below the cap of 20%. This also indicates that there is a scope for multiple tax rates in the Central GST. If this is case it is to be argued that the objective of GST is itself compromised. Vigilance on this part is required. The experience of the rest of the world is quite different in the sense that

90% of the countries hold a central tax rate that is fixed and for any changes requires approval (Ministry of Finance, 2015). There appears to be serious departures from the 12% rate recommended by 13th Finance Commission report on GST. The multiple tax rates under GST may also lead to disputes and new economies in inter-state trading.

Another design issue is the level of control on prices of goods and services. The provision of anti-profiteering authority in the Central GST is to control the prices of goods and services in the phase of GST implementation. If this been taken seriously it will have substantial considerations on the market determined prices. The concept of prices fixed with demand and supply with the help of an invisible hand may altogether be challenged. GST compensation fund is also at the centre of the design and needs clarifications on the pragmatic issues. The unutilized amount to be distributed between Centre and State needs to be clarified on the ground. The formula for such needs to be acceptable by both state authorities and the centre.

Multiple tax rates and Revenue Neutral rates

While calculating revenue neutral rates it is subsumed that the tax rate will be stable and universal. This is not appropriate in terms of the GST of India. As several government officials have reiterated that GST of India will be witnessing multiple tax rates citing the examples of few European countries. This will surely make the GST of India a complicated one and thus skepticism prevails. Under such a scenario it is difficult to calculate revenue neutral rates. Revenue Secretary of India in September, 2016 has said about it while conferring that RNR is not possible in the initial phase of GST implementation (Press Trust of India, 2016). Thus, it is impractical to assume RNR in the presence of multiple tax rates.

Committee on Revenue Neutral Rate for GST

There has been several committees that were constituted to solve the matters pertaining to GST. However, there was only one major committee constituted for recommending Revenue Neutral Rate in order to replace any arbitrary rates. The committee was headed by the Chief Economic Advisor, Arvind Subramanian appointed on June 18, 2015. The committee made thorough deliberations on different aspect of the RNR and reached to the conclusion that there is a need for multiple GST rates in India. The recommendations of the committee are presented in table 1.

Table 1 GST Panel recommendations on RNR (%)

	RNR	Low rate (Goods) Rate on precious metals	Low rate (Goods) Other goods	Standard rate (Goods & Services)	High rate/ Non-GST excise (Goods)
Preferred	15	6	12	16.9	40
		4	12	17.3	
		2	12	17.7	
Alternative	15.5	6	12	18	40
		4	12	18.4	
		2	12	18.9	

Source: Report on the Revenue Neutral Rate and Structure of Rates for the Goods and Services Tax, 2015

Section 5: Macro Approach to Revenue Neutral Rates

This section attempts to present the Macro Approach to Revenue Neutral Rates adopted from the International Monetary Fund. First it is deemed fit to highlight the definitional equation for the Macro Approach.

$$r_{nr} \equiv R/B \text{ .... (5.1)}$$

Where,

r_{nr} is Revenue Neutral Rates.
R is Revenue of both Centre and State generated from existing sales and excise taxes.
B is Base of the GST Tax.

As the sign ≡ denotes "identically equal to", under definitional equation it can be replaced by the following conditional equation:

$$r_{nr} = R/B \text{.... (5.2)}$$

All the RNR exercises attempt to do is to calculate B, the total tax base for generating the required GST revenues. The conditional equation for estimating base is given as:

$$B = \sum(Y + M - X) - [(1 - e)\sum(N + I)] \text{ .... (5.3)}$$

Where,

B is Potential GST Base
Y is Domestic Output
M – X is Net Imports

(N + I) is Consumption of Intermediate and Capital Inputs

E is Exempt Output Ratio (the tax base associated with inputs used in the production of exempt final consumption)

Assumptions of the Model

1. Full Compliance
2. Full pass-through of the GST into prices
3. No behavioral response
4. GST has a single positive rate and a zero rate on exports

Section 6: Estimation based on Revenue Neutral Rates

As per the government agencies (Ministry of Finance, 2015), GST potential base is 59% of GDP. When basic food items are exempted, the potential base of GST falls to 55% according to Macro Approach. However, the case is different when petroleum and electricity items are included and the potential base reaches to 67% of GDP. Several committees have assumed 6.1% of GDP to be rate of maximum revenue that should be replaced by GST. First a case is considered where there are no losses in revenue.

$$\text{Therefore, } \boldsymbol{r_{nr} = \frac{R}{B} = \frac{0.061}{0.67} = 0.091 = 9.1\%}$$

This is the calculation for the upper limit as the upper limit has the base of 67%. The calculation for lower limit is as follows:

$$\boldsymbol{r_{nr} = \frac{R}{B} = \frac{0.061}{0.55} = 0.110 = 11\%}$$

Thus, Revenue Neutral Rates with upper and lower limit stands between 9.1% and 11%. Remember that no losses in revenue are assumed under such case. On the basis of these rates an attempt is made to estimate the revenue base for the last decade to show a picture of what has missed by delaying the GST. An attempt will be made to estimate the portion of Base for RNR and the expected revenue (under GST) in the last years. For this purpose GDP data at Factor Cost from Reserve Bank of India Database is used. Table 2 presents the sectoral data of Gross Domestic Product at Factor Cost for the purpose of calculating base of GST and subsequently for calculating the revenue on the basis of derived Revenue Neutral Rates. The is expressed in Rupees Billion and the fiscal year 2014-15 considers only two quarters. The data was originally in quarters but for the purpose of simplicity it was combined to present annual data.

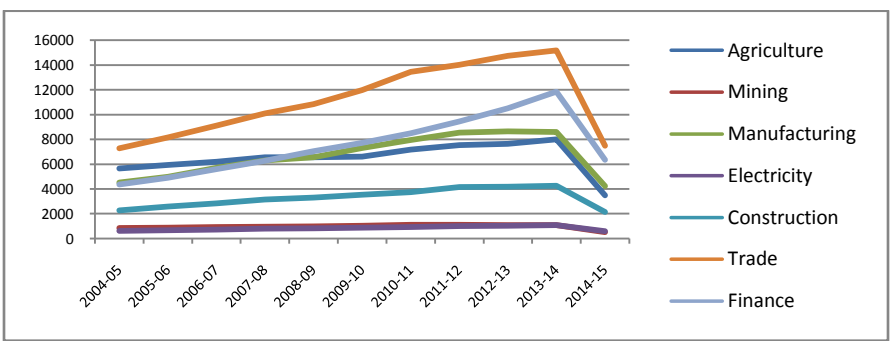
Table 2 Gross Domestic Product (Ras. Billion) at Factor Cost

Year	Agri.	Mining	Manuf.	Electricity	Construction	Trade	Finance	Community Services
2004-05	5654	850	4532	627	2289	7277	4372	4114
2005-06	5945	861	4990	671	2581	8154	4923	4404
2006-07	6192	926	5705	734	2848	9101	5611	4528
2007-08	6551	960	6291	794	3155	10095	6281	4839
2008-09	6557	981	6563	831	3323	10851	7036	5445
2009-10	6610	1038	7304	882	3544	11979	7719	6084
2010-11	7178	1106	7952	929	3747	13440	8492	6342
2011-12	7538	1107	8541	1006	4152	14023	9455	6652
2012-13	7645	1083	8639	1029	4198	14734	10487	7006
2013-14	8005	1068	8577	1090	4267	15178	11837	7395
2014-15	3478	510	4239	595	2149	7490	6360	3956

Source: Reserve Bank of India Database; http://dbie.rbi.org.in/DBIE/dbie.rbi?site=home

In Table 2 Agriculture sectors includes allied activities while Mining includes Quarrying. The GDP contribution of Electricity includes Gas and Water Supply. The column labeled as Trade includes Hotel, Transport and Communication Services. On the other hand, Finance consists of Insurance, Real Estate and Business Services. Community Services includes Social and Personal Services. Figure 1 shows the sectoral trends in the GDP data for last 10 years.

Figure 1.Trends in Sectoral GDP (Rs. Billion) at Factor Cost



Source: Prepared by the research for Table 2

On the basis of Table 1, the Goods and Services Tax Base is generated with both lower limit (55%) and upper limit (67%) as suggested by Ministry of Finance (2015). Table 3 presents the estimates for Lower Limit and Table 4 for Upper Limit.

Table 3 Base for GST (Rs. Billion) with Lower Limit (55%)

Year	Agri.	Mining	Manuf	Electricity	Construction	Trade	Finance	Community Services
2004-05	3109.84	467.65	2492.73	344.70	1258.70	4002.46	2404.45	2262.48
2005-06	3269.67	473.77	2744.61	369.17	1419.70	4484.73	2707.87	2422.34
2006-07	3405.53	509.17	3137.51	403.49	1566.43	5005.46	3085.84	2490.53
2007-08	3602.94	527.98	3459.89	436.86	1735.22	5552.36	3454.67	2661.54
2008-09	3606.28	539.30	3609.66	456.77	1827.80	5968.18	3869.95	2994.73
2009-10	3635.42	571.06	4017.39	485.19	1949.39	6588.40	4245.47	3346.02
2010-11	3947.97	608.39	4373.33	510.73	2060.89	7392.13	4670.53	3487.91
2011-12	4146.07	608.98	4697.53	553.55	2283.52	7712.43	5200.43	3658.85
2012-13	4204.79	595.79	4751.31	566.07	2308.87	8103.44	5768.11	3853.18
2013-14	4403.01	587.61	4717.37	599.59	2346.65	8348.04	6510.42	4067.12
2014-15	1913.04	280.28	2331.60	327.36	1181.95	4119.56	3498.05	2175.59

Source: Prepared by the researcher from Table 2

Table 4 Base for GST (Rs. Billion) with Upper Limit (67%)

Year	Agri.	Mining	Manuf	Electricity	Construction	Trade	Finance	Community Services
2004-05	3788.35	569.68	3036.60	419.91	1533.32	4875.73	2929.06	2756.11
2005-06	3983.05	577.14	3343.43	449.71	1729.46	5463.22	3298.68	2950.85
2006-07	4148.56	620.27	3822.06	491.52	1908.20	6097.56	3759.12	3033.92
2007-08	4389.03	643.17	4214.78	532.18	2113.81	6763.78	4208.42	3242.24
2008-09	4393.10	656.96	4397.22	556.43	2226.60	7270.33	4714.31	3648.12
2009-10	4428.61	695.66	4893.91	591.06	2374.72	8025.86	5171.76	4076.07
2010-11	4809.35	741.13	5327.51	622.16	2510.54	9004.96	5689.56	4248.91
2011-12	5050.66	741.85	5722.45	674.32	2781.75	9395.14	6335.07	4457.15
2012-13	5122.21	725.79	5787.96	689.58	2812.62	9871.46	7026.61	4693.87
2013-14	5363.67	715.82	5746.62	730.42	2858.64	10169.43	7930.87	4954.49
2014-15	2330.44	341.43	2840.32	398.79	1439.83	5018.38	4261.26	2650.26

Source: Prepared by the researcher from Table 2

Once the base absolute values has been presented on the basis of GDP sectoral data, the same data has been used to calculate the revenue earnings on the basis of Revenue Neutral Rates as calculated under Macro Approach. Again, the estimates are calculated for both lower limit (9.1%) and upper limit (11%). Table 5 and Table 6 present the data.

Table 5 Revenue (Rs. Billion) on RNR with Lower Limit (9.1%)

Year	Agri.	Mining	Manuf	Electricity	Construction	Trade	Finance	Community Services
2004-05	514.53	77.375	412.43	57.033	208.25	662.22	397.82	374.33
2005-06	540.98	78.388	454.10	61.081	234.89	742.01	448.03	400.78
2006-07	563.46	84.245	519.11	66.759	259.17	828.17	510.56	412.06
2007-08	596.12	87.357	572.45	72.281	287.10	918.66	571.59	440.36
2008-09	596.67	89.230	597.23	75.575	302.41	987.46	640.30	495.49
2009-10	601.49	94.485	664.69	80.278	322.53	1090.08	702.43	553.61
2010-11	653.21	100.66	723.58	84.502	340.98	1223.06	772.76	577.09
2011-12	685.98	100.75	777.22	91.587	377.82	1276.05	860.43	605.37
2012-13	695.70	98.577	786.12	93.659	382.01	1340.75	954.36	637.52
2013-14	728.49	97.223	780.51	99.206	388.26	1381.22	1077.17	672.92
2014-15	316.52	46.373	385.77	54.164	195.55	681.60	578.76	359.96

Source: Prepared by the researcher from Table 2

Table 6 Revenue (Rs. Billion) on RNR with Upper Limit (11%)

Year	Agri.	Mining	Manuf	Electricity	Construction	Trade	Finance	Community Services
2004-05	621.96	93.53	498.54	68.94	251.74	800.49	480.89	452.49
2005-06	653.93	94.75	548.92	73.83	283.94	896.94	541.57	484.46
2006-07	681.10	101.83	627.50	80.69	313.28	1001.09	617.16	498.10
2007-08	720.58	105.59	691.97	87.37	347.04	1110.47	690.93	532.30
2008-09	721.25	107.86	721.93	91.35	365.56	1193.63	773.99	598.94
2009-10	727.08	114.21	803.47	97.03	389.87	1317.68	849.09	669.20
2010-11	789.59	121.67	874.66	102.14	412.17	1478.42	934.10	697.583
2011-12	829.21	121.79	939.50	110.71	456.70	1542.48	1040.08	731.77
2012-13	840.95	119.15	950.26	113.21	461.77	1620.68	1153.62	770.63

2013-14	880.60	117.52	943.47	119.91	469.33	1669.60	1302.08	813.42
2014-15	382.60	56.05	466.32	65.47	236.39	823.91	699.61	435.11

Source: Prepared by the researcher from Table 2

From Table 5 and Table 6 the sectoral share of revenue collection estimated based on RNR shows the absolute values of GST. This would have been collected had GST been implemented a decade ago. Not only this, this analysis shows the expected position in the future once GST is implemented.

Case of Losses Assumed in Revenue

As per the government reports (Ministry of Finance, 2015), government has identified and accepted that 10 to 20 % of the revenue is the loss for OECD countries. However, no specific data is available for non-OECD countries. Therefore, the upper limit of loss is considered to finally reach to a RNR considering losses.

$$r_{nr}\,(after\ considering\ loss) = r_{nr} * 1.2$$

Therefore, RNR (Lower Limit) = 9.1% * 1.2 = 10.92%

RNR (Upper Limit) = 11% * 1.2 = 13.2%

These new rates of Revenue Neutral are after considering the possible losses in collection. The loss has been assumed to be 20% though it can be any rate between 10-20%. On the basis of new adjusted rates, the revenue position with respect to GDP is again calculated for both lower limit (10.92%) and upper limit (13.2%). The absolute values are presented in Table 7 and Table 8.

Table 7 Revenue (Rs. Billion) on RNR (After considering Loss) with Lower Limit (10.92%)

Year	Agri.	Mining	Manuf	Electricity	Construction	Trade	Finance	Community Services
2004-05	617.44	92.850	494.92	68.440	249.90	794.67	477.39	449.20
2005-06	649.17	94.065	544.92	73.297	281.87	890.42	537.63	480.94
2006-07	676.15	101.09	622.94	80.111	311.00	993.81	612.68	494.48
2007-08	715.34	104.82	686.94	86.737	344.52	1102.39	685.91	528.43
2008-09	716.01	107.07	716.68	90.690	362.90	1184.95	768.36	594.59
2009-10	721.79	113.38	797.63	96.334	387.04	1308.09	842.92	664.33
2010-11	783.85	120.79	868.30	101.40	409.18	1467.67	927.31	692.51

2011-12	823.18	120.91	932.67	109.90	453.38	1531.26	1032.52	726.44
2012-13	834.84	118.29	943.35	112.39	458.41	1608.90	1145.23	765.03
2013-14	874.19	116.66	936.61	119.04	465.91	1657.46	1292.61	807.50
2014-15	379.82	55.648	462.93	64.99	234.67	817.92	694.52	431.95

Source: Prepared by the researcher from Table 2

Table 8 Revenue (Rs. Billion) on RNR (After considering Loss) with Upper Limit (13.2%)

Year	Agri.	Mining	Manuf	Electricity	Construction	Trade	Finance	Community Services
2004-05	746.36	112.23	598.25	82.729	302.08	960.59	577.06	542.99
2005-06	784.72	113.70	658.70	88.601	340.73	1076.33	649.89	581.36
2006-07	817.32	122.20	753.00	96.837	375.94	1201.31	740.60	597.72
2007-08	864.70	126.71	830.37	104.84	416.45	1332.56	829.12	638.77
2008-09	865.50	129.43	866.31	109.62	438.67	1432.36	928.79	718.73
2009-10	872.50	137.05	964.17	116.44	467.85	1581.21	1018.91	803.04
2010-11	947.51	146.01	1049.60	122.57	494.61	1774.11	1120.92	837.10
2011-12	995.05	146.15	1127.40	132.85	548.04	1850.98	1248.10	878.12
2012-13	1009.15	142.99	1140.31	135.85	554.12	1944.82	1384.34	924.76
2013-14	1056.72	141.02	1132.17	143.90	563.19	2003.53	1562.50	976.10
2014-15	459.13	67.267	559.58	78.567	283.66	988.69	839.53	522.14

Source: Prepared by the researcher from Table 2

Section 7: Conclusion

Goods and Services Tax is an important step towards reforming the present Indirect Tax Regime in India. The much-awaited GST will be a comprehensive one but the confusion generated after implementation is causing much harm. The estimation of Revenue Neutral Rates based on Macro Approach opens up doors for analytical picture of the potential base. Based on sectoral GDP data, the study has highlighted the tax base for both upper and lower limit. It has been estimated for Revenue collection had GST been implemented a decade ago for both upper limit and lower limit. The study has identified that rate of loss for calculating adjusted Revenue Neutral Rates is critical for policy consideration and should be given due consideration.

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STRUCTURAL CHANGE AND EFFICIENCY IN THE INDIAN STOCK MARKET: AN ECONOMETRIC ANALYSIS

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Abstract:

Stock Market Efficiency is an important underlying condition for investment strategies and other financial decisions. This study aims at examining the Weak Form of Efficiency in the Indian Stock Market.

For the purpose of the study weekly data of two major indices of two stock exchanges namely, Sensex of BSE and S & P CNX Nifty of NSE are taken into account for the study period January 2000 to January 2018. Due to a relatively long period database the existence of break is analyzed and tested segregating the data in two parts, viz., before break and after break, identified both graphically and mathematically. In order to test the weak form of efficiency four measures based on four features of time series namely, Randomness, Stationarity, Autocorrelation and Volatility are applied.

The findings of the study are found contradictory in nature in relation to Randomness, Stationarity and Autocorrelation but there exists significant volatility in both BSE and NSE before and after break. So the Indian stock market is found to be inefficient in Weak Form before break and after break when the literature on Efficiency gives due importance to volatility measures.

Key Words:

Bombay Stock Exchange (BSE), National Stock Exchange (NSE), Run Test, Q Statistic, Autocorrelation Function (ACF), Unit Root, Autoregressive Conditional Heteroskedasticity (ARCH), Generalized Autoregressive Conditional Heteroskedasticity (GARCH)

Introduction

A number of reform measures have been initiated in the Indian Stock Market since the early 1990s to make it on par with the developed stock markets. These reforms, in a body can be assessed by examining the stability, efficiency and integration of the Indian Stock Market vis-à-vis other markets. This paper is devoted to examining efficiency aspect of its reforms. Market efficiency is also subject of strong debate among academicians as no conclusive evidence is observed in it. There remains a scope of examining it a fresh.

Economically, market efficiency implies allocation efficiency where resources are allocated more and more in favor of efficient sector, and less and less in inefficient sectors. Transactional or operational efficiency and pricing efficiency are the two prerequisites for achieving allocation efficiency. As transactional (i.e. internal) efficiency is restored with suitable reforms which have already been undertaken in India, pricing efficiency is the only requirement now to get an efficient stock market.

Considering the definition put forward by (Damodaran, 1995) if the market is pricing efficient, 'Market Prices provide the best estimate of values'. This of course, does not postulate that market price be equal to true value. Rather it implies that errors in prices should be unbiased, i.e., deviation in prices should be random. Randomness implies that there is an equal chance of over as well as under valuation at any point of time, and such deviations are uncorrelated with respect to any other observed variable and 'sudden jump' (not slow moving) in nature in response to any relevant information. If such stated condition persists then no investors are able to generate excess return using any investment strategy consistently over time. This pricing efficiency is empirically classified in three forms (namely weak form, semi-strong form and strong form) depending on the set of information (past stock pricing information, publicly available information and all sorts of relevant information respectively) remaining useless.

The study aimed to examine only weak form of efficiency in terms of two major stock indices of two exchanges of India namely SENSEX of BSE and S & P CNX Nifty of NSE with respect to different aspect of time series data. A study on stock market efficiency also draws relevance always for an emerging market like India because it promotes growth and development of the stock market in particular and the economy as a whole in general.

Literature Review

A good number of scholars have devoted their attention to empirically verify the nature of efficiency in the Indian stock market. Here we have taken into consideration only those studies which are related to measuring weak form of efficiency. In the Indian context, pioneer work on random walk hypothesis was done by ***Rao and Mukherjee (1971)*** where they observed the weak form of efficiency in Indian Stock market using spectral analysis on weekly average of daily closing share price of Indian Aluminum Company for the period 1955-1970. ***Sharma and Kennedy (1977)*** used run test and spectral analysis to compare the behavior of stock Indies of the Bombay, London and NYSE for the period 1963-1973. Both the tests confirmed random

movement in all the three stock indices. ***Barua (1981)*** applied autocorrelation test to examine the serial independence of short run change in the prices of securities and stock market index of Indian Capital Market from 1977 to 1979. The study concluded persistence of weak form of efficiency. ***Gupta (1985)*** analyzed the behavior of stock price and stock indices by using daily and weekly data from 1971 to 1976. The author concluded weak form of efficiency by using both parametric and non-parametric tests. ***Yalawar (1988)*** conducted an intensive study to test efficiency of BSE by using 122 stocks, listed in BSE during the period 1963-1982. Non-parametric test and spearman's rank correlation test supported stock price behavior to be random. ***Belguami (1995)***examined weak form of efficiency of Indian Stock market on weekly share prices of 70 'A Category Company' listed in BSE from 1st April 1991 to 31st March 1992. The study failed to display any relationship in share prices of companies during the study period. ***Poshakwala (1996)*** used daily BSE National Index data for the period 1987-1994. The study found that the market is inefficient in weak form. ***Kumar (1999)*** employed new methodology to examine weak form of efficiency namely, Dickey Fuller unit root test and Co-Integration Regression Dubin Watson (CRDW) test on stock indices of some selected Asian stock market from July 1997 to 1999. The Study exhibited that stock price determination process in India and other Asian Stock markets are independent of each other. ***Pandey (2003)*** tested market efficiency by using run test and ACF for the period 1996-2002. The series of stock prices failed to confirm random walk theory. ***Samanta (2004)*** applied spectral shape test for BSE 100 from 1993 to 2001. The study showed inefficiency during each sub period till June 1996. A high level of efficiency was found from July 1996 to November 1999 and lower level of efficiency thereafter. ***Dhankar and Chakraborty (2005)*** used variance root test which violated random walk hypothesis.

Inconclusive empirical results of the past studies, methodological variations, change in subject area (i.e. stocks and stock indices) and time period draws the attention of the present scholars to undertake this study using recent data and up-to-date methodology.

Methodology

Database and Structural Stability-

The weekly SENSEX data of BSE and S&P CNX Nifty data of NSE have been used for the purpose of our study and our study period spans from January 2000 to January 2018. The data is collected from Capitoline Database Package and Prowess of CMIE database package.

In order to generate valid inference from the tests that we are going to apply for examining market efficiency, the 18 years long data spanning over the study period must be structurally stable, i.e., there should not be any unexpected shift or break in the time series. Existence of any structural change can lead to biased and erroneous estimation of the parameters related to the models. Inference drawn from the application of the whole data with structural break further leads to huge forecasting error. Therefore, as we are using long period data structural break point test should be applied at the initial stage and in the presence of the structural break. The data must be divided as per break

points for analysis and interpretation. We have identified initially the existence of structural break(s) graphically using scatter plots of the variables concerned over time and visual existence of structural break has been verified and substantiated using chow test. After detecting structural break(s), we have applied following four test of market efficiency in weak form for each sub period having no structural break.

Run test

Non Parametric run test is a distribution free test used to detect whether a series is from random process or not. Randomness exhibits the non-predictability of the stock price or stock price return. A run is the 'sequence of identical occurrence preceded and followed by different occurrence or by none at all'. *Bradly (1960)* represented that these different run statistics can be used as sample information to test the dependence of the series.

Basically our data here represents stock price (i.e., stock indices value). So any increase in value of stock price return in relation to its preceding is marked positive '+'(n_1 being the total number of positive signs) and similarly any decrease in the value of stock price or return is represented as negative '-'(n_2 being the total number of negative signs). Further, if there is no increase or decrease in value in respect of its previous value, it is represented by zero '0'. New run(R) begins where any change occurs from positive to negative or negative to positive signs in price change, ignoring zero. To test the randomness of the sequence run test is conducted which is defined as –

H_0: The return series is generated from random process.

H_1: The return series is not generated from random process. Approximately here run statistic follows standard normal distribution, when

$$Z(Test\ Statistics) = \sum \frac{\{R - E(R)\}}{SE(R)}$$

$$E(R)(mean) = \left(\frac{2n_1n_2}{n_1n_2}\right) + 1$$

$$SE(R)(Standard\ Error) = \sqrt{\frac{2n_1n_2(2n_1n_2 - n_1n_2)}{\{(n_1+n_2)^2(n_1+n_2-1)\}}}$$

At 5% level of significance, the run test rejects null hypothesis when $|Z| \geq 1.96$ ($= Z_{\alpha/2}$)

Run Test is a simple non-parametric test (also widely used by earlier scholars) by which weak form of stock market efficiency can be checked without making any restrictive assumptions like parametric tests which are, however, more robust than the former one.

Stationary test

It can be stated that if y_t is a random walk, then Δy_t must be stationary. Augmented Dickey Fuller Test measures the stationarity of a time series. It assumes that the error term is correlated. It is conducted by augmenting the equations by adding lagged value of the dependent variable as explanatory variables. It can be defined as-

$H_0: \delta = 0$ (There is a unit root or the time series is non-stationary)

$H_1: \delta < 0$ (There is no unit root or the time series is stationary)

Augmented Dickey Fuller (ADF) test is estimated in 3 different forms---

y_t is a random walk	$\Delta y_t = \delta y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta y_{t-1} + u_t$
y_t is a random walk with drift	$\Delta y_t = \beta_1 + \delta y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta y_{t-1} + u_t$
y_t is a random walk with drift and trend	$\Delta y_t = \beta_1 + \beta_2 t + \delta y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta y_{t-1} + u_t$

where t = time variable

In our study the third model has been applied to get a more general view on existence or non-existence of stationarity in the time series data. This stationary test is considered by Time Series Econometrics as necessary test if one wants to deal with a time series data and if one applies the conventional t or T test.

Autocorrelation test

Serial autocorrelation is defined as 'Correlation between successive members of a series of observation over a period of time'. Interdependence of random numbers generated through random process in a sequence shall have zero autocorrelation. Correlations between successive members of a series of observations that are separated by *K* (=1, 2, 3…..) different lags are represented by autocorrelation function (ACF). The statistician *Bartlett (1935)* has shown that ACF of a purely random sample follows normal distribution. So in case of a random series ACF at all lags is zero. The measure of ACF is:

$\rho_k = \frac{\sum_{t=1}^{n}(y_t - \bar{y})(y_{t+k} - \bar{y})}{\sum_{t=1}^{n}(y_t - \bar{y})^2}$ for K=1, 2, 3 …

Further, there are several sophisticated tests for autocorrelations of different orders. Here we have applied *Ljung box (Q) Statistic*. It is a portmanteau test which measures group autocorrelations of tine series instead of measuring for a particular lag i.e., it tests whether the group autocorrelations significantly differ from zero. Q-Statistic can be defined as:

$$Q = n(n-2)\sum_{1}^{m}\left(\frac{\widehat{\rho_k^2}}{n-k}\right)$$

Where *n*= number of sample observations, $\widehat{\rho_k}$= sample autocorrelation at lag *k*, *m* = number of lags tested. For level of significance α, the critical region for rejection of hypothesis of random process is $Q > x^2_{\alpha,m}$.

Autocorrelation test is a parametric test which is applied here to make comparison with the findings of the earlier studies but presently scholars are using volatility test as the basis of the presumption that less volatility without any specific pattern is experienced by an efficient stock market. This volatility test is explained below.

Volatility test

Generalized ARCH (GARCH) Model:

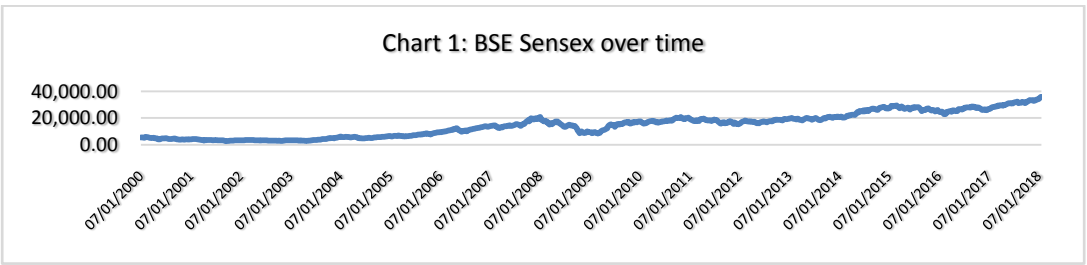
Volatility measures the uncertainty in individual series. In financial market there is a tendency of volatility to appear in bunches. Thus small returns expect to follow small return and large return to follow another large return. This phenomenon (known as Volatility Cluster) leads to information arrival in bunches, therefore, price changes also occur in bunches rather than evenly spread over time. To test the volatility of individual series GARCH model is developed by Bollerslev (1986) and Taylor (1986). The Standard GARCH (1, 1) specification –

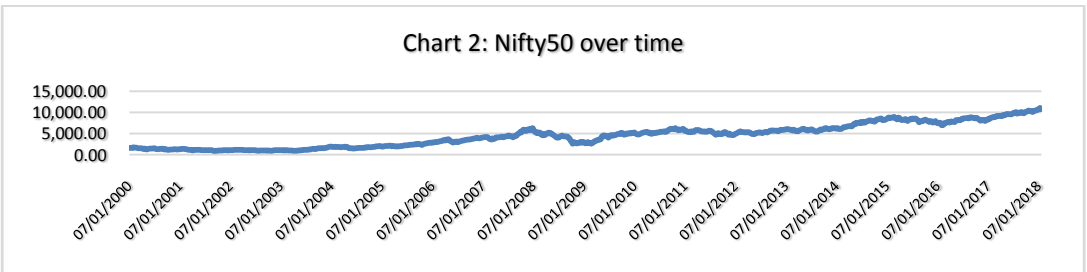
$$\sigma_t^2 = \alpha_0 + \alpha_1 u_{t-1}^2 + \beta \sigma_{t-1}^2$$

Where σ_t^2 is the conditional variance i.e. one period ahead forecast of variance based on past information. 'α_1' represent ARCH effect and ß represent GARCH effect. If both the coefficient are individually significant and their sum is close to one than the series is volatile and the related market is said to be inefficient.

MAJOR FINDINGS

Initially presence of Structural break point is analyzed through graphical representation of the SENSEX of BSE and Nifty of NSE Indices and their respective return data. We see from Figure 1 and Figure 2 a smooth rise in both the Indices up to 1/11/2008 but thereafter we get declining and fluctuating trend.





Chow Structural Stability Test

Graphical representation is only an initial step of data analysis but to get meaningful conclusion supportive statistical measure should be undertaken. Here we apply Statistical test known as Chow test for diagnosis of structural breakpoint. Null hypotheses of the given test implies-H_0: No breakpoint within the data.

Table - A: Estimated Results of Chow Test for breakpoint 11/1/2008.

Chow Test Statistic at Breakpoint	F-Statistic	Prob.
BSE Sensex	6.838553	0.0001
Nifty50	7.22622	0.0001

Authors' own calculation using EViews 7

We find that the probability values are significant around 9/11/2007 to 29/2/2008 (see Table 1 in Appendix) for both the indices, but at point 11/1/2008 it is found highly significant, i.e., less than 0.05, there by rejecting null hypotheses. Therefore, 11/1/2008 is treated as breakpoint for analysis in this study due to which we segregate the data set into two parts- Part 1, i.e., before 11/1/2008 consisting of 415observations and Part 2, i.e., after 11/1/2008 consisting of 523 observations. The break point as analyzed in our study relate to the Global Financial Crisis of 2007-08. Bhatt (2011), also observed that the Sensex fell from its closing peak of 20873 on January 2008 to nearly 8000 in October-November 2008.

Descriptive Statistic:

Regarding the descriptive (see Table 2 in Appendix) Skewness and Kurtosis depict that the return data before break and after break does not follow approximately normal distribution as the calculated Z values does not lie between ±1.96.

Efficiency Tests Results:

Table B: Estimated Results of Run Test.

Indices Returns	Part 1		Part 2	
	Z	Prob.	Z	Prob.
BSE Sensex Return	-2.657	.008	-.569	.569
Nifty50 Return	-2.460	.014	-.655	.513

Authors' own calculation using IBM SPSS Statistics 20.

The results of run test for both BSE Sensex and Nifty50 exhibit significant result corresponding to Part 1 more specifically, the p-value of BSE SENSEX (.008) and Nifty 50 (0.014) return are less than 0.05 which represent that the results are statistically significant

there by rejecting null hypotheses. So, BSE Sensex and Nifty50 return data are found to be non-random.

But in regard to Part 2 in both cases we get insignificant result. The p-value of BSE Sensex (.569) and Nifty50 (.513) returns are greater than 0.05 which represent insignificant result there by accepting null hypotheses. So, in Part 2 both the indices return found to be random.

Table-C: Estimated Results of Autocorrelation Test

		Part 1				Part 2			
		BSE Sensex		Nifty50		BSE Sensex		Nifty50	
Indices		t-Statistic	Prob.	t-Statistic	Prob.	t-Statistic	Prob.	t-Statistic	Prob.
Augmented Dickey-Fuller test statistic		0.008	0.996	0.306	0.999	-2.889	0.167	-2.853	0.179
Test critical values:	1% level	-3.981		-3.980		-3.976		-3.976	
	5% level	-3.421		-3.421		-3.418		-3.418	
	10% level	-3.133		-3.133		-3.132		-3.132	
Return									
Augmented Dickey-Fuller test statistic		-19.316	0.000	-18.891	0.000	-13.720	0.000	-22.224	0.000
Test critical values:	1% level	-3.980		-3.980		-3.976		-3.976	
	5% level	-3.421		-3.421		-3.418		-3.418	
	10% level	-3.133		-3.133		-3.132		-3.132	

Authors' own calculation using EViews 7.

As per the ADF test statistics (Table-C) the model for each of BSE Sensex, Nifty50 and their respective return data is found valid with constant and linear trend. The p-value ofBSE Sensex (0.996, 0.167) and Nifty50 (0.999, 0.179) Indices are greater than 0.05 thereby depicting insignificant result with the acceptance of null hypotheses, i.e., here we get the presence of unit root. So, BSE Sensex and Nifty50 Index data are Non-Stationary in both Part 1 and Part 2.

The p-values of both the return series in Part 1 and Part 2 are 0.000, i.e., statistically significant. So here alternative hypotheses is accepted which means that both the return series are stationary due absence of unit root.

Table-D: Estimated Results of Autocorrelation Test

Ljung-Box Test	Part 1			Part 2		
	X-squared	df	p-value	X-squared	df	p-value
BSE Sensex Return	23.935	17	0.1212	49.678	17	4.74E-05
Nifty50 return	24.215	17	0.1137	39.664	17	0.001443

Authors' own calculation using R

The estimated Autocorrelation Function (see Table 3.a in Appendix.) in Part 1 mostly depicts insignificant result except for lags 9 and 10 in BSE and lag 9 in NSE. The value of Ljung-Box (Q) Statistic in BSE (0.1212) and NSE (0.1137) give the combined insignificant result. So there exist no autocorrelation in both the return indices in Part 1.

But the ACF (see Table 3. b. in Appendix) in Part 2 is found to be mostly significant except for lag 10 in NSE values Ljung-Box (Q) Statistic of BSE (4.74E-05) and NSE (0.001) present the combined statistically significant result thereby depicting existence of autocorrelation in the return data of both BSE and NSE indicating inefficiency.

Chart-3: Volatility in BSE and NSE before breakpoint

Part 1

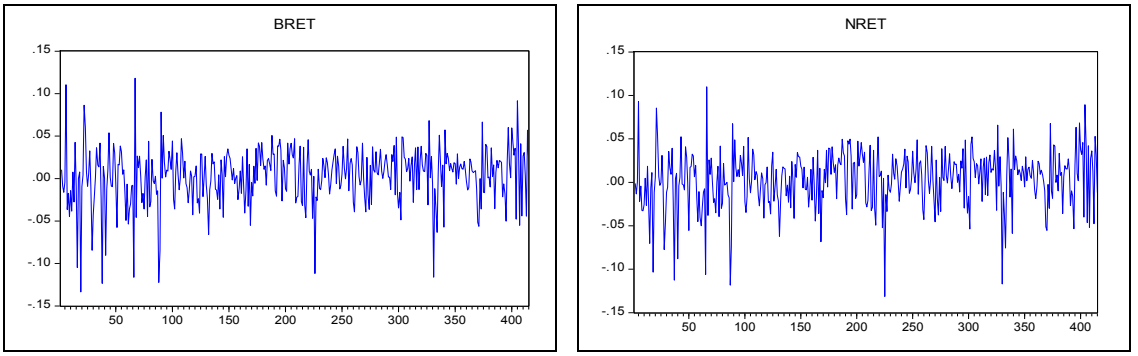


Chart-4: Volatility in BSE and NSE after breakpoint

Part 2

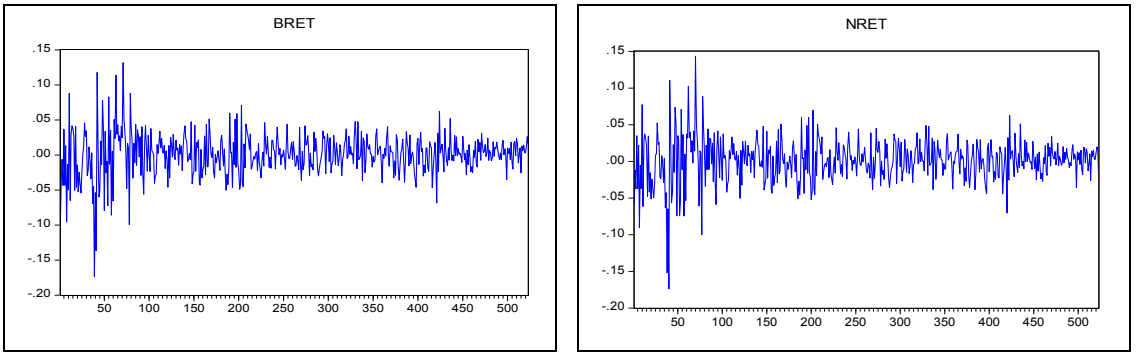


Table-E: Estimated Results of Volatility Test

	Part 1				Part 2			
	BSE		NSE		BSE		NSE	
	Z-Statistic	Prob.	Z-Statistic	Prob.	Z-Statistic	Prob.	Z-Statistic	Prob.
ARCH	3.291	0.001	2.362	0.018	3.3169	0.0009	4.338	0.000
GARCH	38.718	0.000	7.817	0.000	41.7482	0.0000	44.967	0.000

Authors' own calculation using EViews 7

From graphical representation of the return series (Chart-3 and Chart-4) we observe the presence of volatility clustering as bunches of large return followed by large return and bunches of small return are followed by small retune. Further, we have applied GRCH (1, 1) model to test the volatility of the data. The estimated result (Table-E) depicted significant ARCH effect both in BSE (0.001, 0.0009) and NSE (0.018, 0.000) in Part 1 and Part 2. The GARCH effects are also highly significant in BSE (0.000, 0.000) and NSE (0.000, 0.000) in Part 1 and Part 2, thereby establishing thereby depicting high level of volatility in both BSE and NSE before and after break.

CONCLUSION

In Part 1(i.e., before break point) stationarity and existence of no autocorrelation implies efficiency in both BSE and NSE data but there're also found non-random (from run test) and volatile (from ARCH GARCH specification) indicating inefficiency in the Indian Stock Market prior to 11/1/2008. In Part 2 (i.e., after breakpoint) Run test and Stationarity test applied on both the indices indicate efficiency but existence of autocorrelation and volatility clustering fail to justify that. Due to the observed contradictory results (see Table 4 in Appendix) neither BSE nor NSE can unhesitantly be said to support Efficient Market Hypothesis during the study period, comprising the period of first generation reforms (Part 1) and the period of second generation reform (Part 2).

However, as i) run test is less robust ii) autocorrelation test (followed by test of Q statistic) is based on respective econometric assumptions and iii) return data in finance literature is mostly found to follow random walk model, we, like present scholars, may give emphasis to the volatility test by which we see that the Indian stock market represented by two indices (namely Sensex and Nifty) is inefficient in its weak form for both the periods (i.e., Part 1 and Part 2).

This hinted that speculation in the Indian Stock market can lead to higher earnings, at least by a few. But common investor's incentive needs to be protected as not many are aware of the anomalies that occur through speculations in the market being an inefficient one. The 'width and breadth' of the market has to be increased with constant updated information technology. The online based platforms is not enough, the integration of the whole financial sector and thereby interlinking it with others along with maintaining stability is very important step to make the market more vibrant. There lays a long path to travel for its improvement and development under the surveillance of SEBI.

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APPENDIX

Table 1- Chow Test Statistic

	BSE Sensex		Nifty50	
	F-statistic	Prob. F(3,932)	F-statistic	Prob. F(3,932)
11/9/2007	5.234957	0.0014	3.911851	0.0086
11/16/2007	3.841489	0.0095	5.004414	0.0019
11/23/2007	4.855501	0.0023	3.759615	0.0106
11/30/2007	3.84417	0.0094	4.419556	0.0043
12/7/2007	4.494229	0.0039	5.452019	0.001
12/14/2007	5.370067	0.0011	5.935537	0.0005
12/20/2007	5.562402	0.0009	4.654541	0.0031
12/31/2007	4.45773	0.0041	6.217463	0.0004
1/4/2008	6.046096	0.0004	7.499895	0.0001
1/11/2008	**6.838553**	**0.0001**	**7.22622**	**0.0001**
1/18/2008	7.257909	0.0001	4.74045	0.0027
1/25/2008	4.556756	0.0035	3.613297	0.013
2/1/2008	3.904963	0.0087	3.470603	0.0157
2/8/2008	3.854935	0.0093	2.951272	0.0318
2/15/2008	3.174656	0.0235	3.514108	0.0148
2/22/2008	3.817408	0.0098	3.009597	0.0294
2/29/2008	3.159957	0.024	3.372525	0.018

Table 2: Descriptive Statistics

DESCRIPTIVE-		**Part 1**		**Part 2**	
		BSE Sensex Return	**Nifty50 Return**	**BSE Sensex Return**	**Nifty50 Return**
N	Statistic	414	414	523	523
Range	Statistic	.252	.241	.306	.317
Minimum	Statistic	-.134	-.131	-.174	-.174
Maximum	Statistic	.118	.110	.132	.144

Mean	Statistic	.003	.003	.001	.001
	S.E.	.002	.002	.001	.001
S.D.	Statistic	.033	.032	.030	.030
Variance	Statistic	.001	.001	.001	.001
Skewness	Statistic	-.763	-.689	-.421	-.475
	S.E	.120	.120	.107	.107
	Z value	-6.358	-5.742	-3.935	-.4.439
Kurtosis	Statistic	2.636	2.029	4.391	4.819
	S.E	.239	.239	.213	.213
	Z value	11.029	8.49	20.615	22.624

Table 3.a. – ACF before breakpoint

Part 1								
	BSE Sensex Return				Nifty50 Return			
Lags	AC	PAC	Q-Stat	Prob	AC	PAC	Q-Stat	Prob
1	0.069	0.069	1.9685	0.161	0.088	0.088	3.2291	0.072
2	0.03	0.025	2.3407	0.31	0.037	0.029	3.796	0.15
3	0.05	0.046	3.3833	0.336	0.055	0.05	5.0687	0.167
4	-0.031	-0.038	3.7863	0.436	-0.023	-0.033	5.2877	0.259
5	0.014	0.016	3.8688	0.568	0.013	0.014	5.3537	0.374
6	-0.058	-0.061	5.2737	0.509	-0.048	-0.052	6.3109	0.389
7	-0.107	-0.097	10.094	0.183	-0.12	-0.111	12.45	0.087
8	0.084	0.1	13.119	0.108	0.062	0.084	14.075	0.08
9	0.114	0.117	18.664	0.028	0.094	0.098	17.852	0.037
10	0.023	0.009	18.889	0.042	0.008	-0.003	17.88	0.057
11	-0.035	-0.062	19.419	0.054	-0.027	-0.049	18.192	0.077
12	0.059	0.061	20.923	0.052	0.046	0.049	19.114	0.086
13	0.031	0.019	21.332	0.067	0.026	0.013	19.398	0.111
14	0.055	0.051	22.628	0.067	0.087	0.077	22.668	0.066
15	-0.026	-0.013	22.911	0.086	-0.009	-0.006	22.703	0.091

16	-0.049	-0.03	23.931	0.091	-0.058	-0.047	24.181	0.086
17	-0.003	-0.027	23.935	0.121	0.009	-0.008	24.215	0.114

Table.3.b: ACF after breakpoint

Part 2								
	BSE Return				Nifty Return			
Lags	AC	PAC	Q-Stat	Prob	AC	PAC	Q-Stat	Prob
1	0.023	0.023	0.2897	0.59	0.03	0.03	0.4682	0.494
2	0.162	0.162	14.17	0.001	0.108	0.108	6.6716	0.036
3	-0.085	-0.095	18.019	0	-0.048	-0.055	7.9013	0.048
4	0.072	0.053	20.795	0	0.055	0.047	9.5068	0.05
5	-0.089	-0.067	24.992	0	-0.094	-0.087	14.16	0.015
6	0.082	0.063	28.559	0	0.071	0.066	16.854	0.01
7	-0.002	0.028	28.56	0	-0.024	-0.006	17.169	0.016
8	0.019	-0.022	28.743	0	-0.003	-0.027	17.174	0.028
9	-0.019	-0.002	28.944	0.001	-0.015	0.005	17.297	0.044
10	-0.033	-0.046	29.514	0.001	-0.016	-0.03	17.432	0.065
11	-0.045	-0.03	30.586	0.001	-0.097	-0.083	22.432	0.021
12	-0.032	-0.022	31.124	0.002	-0.001	0.005	22.433	0.033
13	0.102	0.113	36.723	0	0.076	0.095	25.554	0.02
14	0.06	0.06	38.688	0	0.085	0.076	29.445	0.009
15	0.097	0.058	43.736	0	0.075	0.059	32.467	0.006
16	0.081	0.082	47.319	0	0.081	0.056	35.982	0.003
17	0.066	0.038	49.678	0	0.082	0.079	39.668	0.001

Table 4. Major findings in brief.

TESTS	Part 1		Part 2	
	BSE	**NSE**	**BSE**	**NSE**
Run Test	Non-Random	Non-Random	Random	Random
Stationarity Test	Sensex non-stationery Return Stationery	Nifty-non-stationery Return-stationery	Sensex non-stationery Return Stationery	Nifty-non-stationery Return-stationery
Autocorrelation Test	No Autocorrelation	No Autocorrelation	Autocorrelation	Autocorrelation
Volatility Test	ARCH & GARCH effect exist	ARCH & GARCH effect exist	ARCH & GARCH effect exist	ARCH & GARCH effect exist

STUDY ON PROXY ADVISORY FIRMS & IMPACT ON CORPORATE DECISIONS

Meenu Gupta

Abstract:

The voting decision by institutional investors of whether to vote "for" or "against" the resolution at general meetings is increasingly been driven by the recommendations of proxy advisory firms. This shareholder activism will improve the corporate governance culture, transparency in disclosures and level of engagement with stakeholders across companies in India. The introduction of Companies Act and SEBI LODR Regulations made voting mandatory by institutional investors thereby enabling investors to freely have their say in corporate decisions. The study undertaken shows that proxy advisory firms are highly influential over voting outcomes, however, corporates can no more predict the votes of this group of shareholders, as they seem to be making an attempt to increase their participation in an informed manner and have no clear fiduciary duty to act in best interest of shareholders and may be subject to conflicts of interest. The need is to adopt standards to eliminate global proxy advisory firms accuracy, transparency, and accountability and for Indian corporates to act rationally while proposing an item of business and address concerns of advisory firms.

Key Words:

Shareholder Activism, Proxy Advisory Firms, Institutional Investors

Introduction

Shareholders in India have now increasingly been contributing in company as an active participant and having their say on table as to how the company should be run. It is evidently proved that shareholders are gradually seeing themselves as owners than as mere investors and shareholder activism is a clear indicator of the same. This should act as a catalyst in improving the corporate governance culture, transparency in disclosures and level of engagement with stakeholders across companies in India. With the view of growth of proxy advisory industry, the paper seeks to analyze role of proxy advisory firms and how its impacting the corporate decisions in India.

Proxy Advisory Firms: An Overview

Few years back there used to be sporadic participation of shareholders at the general meetings of Companies. Now shareholders have waken up and enlightened to their responsibilities and are becoming conscious of the price that they pay because of their passivity. Though a comparatively recent concept in India, although 30 years old globally, shareholder advisory services are a progressive development that can positively influence the way how publicly listed companies are governed. The purpose is to assist voting shareholders with valuable insights, alongwith advice on how to vote on a resolution. India has three such firms, while the US consists of two, with no regulatory authority to govern the foreign advisory firms.

In the wake of corporate scandals that have hit the financial markets, it was greatly desired that retail investors should have their say in numerous and significant corporate decisions, similar to the "Say-on-Pay" reforms of US, wherein it allowed shareholders to have right to vote on remuneration of senior executives of Company. Further, institutional investors have also been involved in voting decisions at the meetings in UK following the famous Stewardship Code, in order to enhance corporate governance. In addition, Proxy advisory firms have been given power to have their advice and keep watch on all financial, investments, long-term and significant decisions related to governance issues of companies they have invested in.

If we were to observe the origin of the term 'proxy advisory', it is derived from the concept of 'proxy votes' wherein the institutional investors or shareholders have been empowering another individual called 'proxy advisors' to vote on his behalf on the resolutions undertaken in general meetings. Proxy advisors are the most unique, though not the owners of shares in a company, nor vote proxies and are also not hired by a company, still they have significant influence in company due to their advisory services to their shareholders clients.

It is held that the most important internal corporate governance framework to be ushered in by board of directors wherein the elected board members are responsible for functioning of top management. However, the institutional investors, holding large chunk of company's shares, are the crucial shareholders to monitor the external corporate governance mechanism.

Generally, the promoters, be it the private business families or the government, were largely responsible for controlling the public or private listed companies. Insurance

companies, mutual funds, and global institutional investors, had significant percentage of shares in listed companies in India. It is till late eighties that institutional investors in India were government owned and they remained passive with respect to participation in agendas of general meetings while supporting the promoters on any governance issue. Though late nineties experienced the entry of private institutional investors, however, their participation continues to be passive. It is then the entry of foreign institutional investors in Indian stock market in mid and late nineties that experienced the revolution in environment as they behave actively in governance issues.

In the year 2000, the financial market regulator Securities Exchange Board of India (SEBI) had come out with structured corporate governance norms for listed companies through Clause 49 of listing agreement. Still the domestic institutional investors continued to remain passive and seldom involved in governance issues. Hence the question of voting against management-proposed resolutions in shareholder meetings did not arise at all. So the proxy advisory industry was non-existent in India.

The year 2009, then witnessed the sudden corporate scandal in Indian financial market in the software firm Satyam Computers. It mandated SEBI to take governance steps and effective measures to ensure elimination of such scandals in future. A regulation was then came out in 2010 with a demand for improved transparency in Indian mutual funds in voting decisions at the resolutions of shareholders meetings of their investee companies. The regulation required mutual funds to disclose their general policies and procedures to determine the manner in which voting rights could be exercised on the shares held by them. Mutual funds were also required to disclose on their website the manner in which they exercised their votes on resolutions in shareholder meetings.

With the view that USA has introduced the proxy advisory concept after SEC enforced the regulation requiring mutual funds to disclosetheir voting records and with the SEBI coming out with mutual funds votingdisclosure requirements regulation in February2010, need was felt that proxy advisory firms could also emerge in India.

The whole reason lying behind emergence of proxy advisory service is to improve corporate governance in businesses and empower institutional investors (who hold large proportion of company's shares) and minority shareholders.

Significance & Role of Proxy Advisors

Institutional investors, holding a large chunk of company's shares, may influence the operations of a company primarily by his shareholding and in turn affect the shareholder value and the quality of corporate governance. Institutional investors with his shareholding influence the company's operations and are crucial players in corporate democracy, having power to influence the decisions at general meetings agendas. Though contain large chunk of shareholding, institutional investors lack adequate expertise or resources or infrastructure to ensure proper governance of their portfolio investees and to consider thoughtfully the number of proxy issues that come before them for a vote. As a result, they rely largely on the advice of proxy advisory firms.

Though the concept is an age-old in lots of countries, it is new in India. Additionally, with the concern for corporate governance after the corporate scandals, the introduction of Companies Act 2013 focused entirely on ushering governance in businesses and keeping in mind the consequences of non-approval of numerous proposals of related party transactions, approval/reapprove and remuneration of directors, the role of proxy advisors seems to have become all the more important.

Also, investment in varied companies across the globe require considering the knowledge of complex compliance system and requirements, and the different legal processes. Since the institutional investors invest entirely across the globe, proxy advisors serve as great help in issuing valuable research relating to corporate governance of that country for taking informed decisions.

Their recommendations exert huge influence on the outcome of company's voting results. For instance, in US, Exxon Mobil Corporation recently stated that 'proxy advisors hold a position of unparalleled influence", and estimated that between 20-25% of the votes cast at Exxon Mobil's most recent Annual General Meeting were voted automatically in accordance with proxy advisor recommendations. Their motive is to advice and recommend institutional investors of the deep view and rationale behind the resolution that is to be passed at the general meetings by company, and assist them whether to vote 'for' or 'against' the resolution.

It was also stated in World Bank's report on the role of institutional investors in ensuring corporate governance of their portfolio companies in India that considering their roles in meetings, they have a very passive participation in voting resolution of companies rather than being active. The review report has been concerned in issuing a mandatory policy for institutional investors to disclose their corporate governance policies to the market in considerable details. The same concern has came out from the OECD paper.

Further, the similar statement was made in the quarterly briefing in April 2013 of National Stock Exchange of India Ltd (NSE), that the outside shareholders, either retail or institutional, have remain passive in India. They were rarely the active participants in meetings of shareholders' due to retail shareholders holding meager proportion of company's shares. Even both the domestic and foreign institutional shareholders who should have, do not have a say in voting resolutions or, if in any case they had, it was always to vote in favor of promoters and the management.

Thus, in the realm of all such issues, proxy advisory firms were the saviors who, while making voting recommendations, also clearly rationalize the resolutions made at the general meetings. Their recommendations help institutional investors to have a more clear view of the different categories of items discussed at the meetings and to reach a decision of whether to vote 'for' or 'against' the proposal, thereby ensuring informed voting decision.

Due to cross border voting, language of a country may be the obstacle in voting by investors. Proxy advisor can be of help in mitigating these language issues. They may also enable investors to have a voting

platform in cases where electronic voting is a pre-requisite at general meetings.

In addition, since the conduct of general meetings across the globe have been during a certain period of the year, investors have difficulty collecting the information about all companies and agenda items at meetings and will unable to arrive at an informed voting decision. Proxy advisors therefore assist with its advice and recommendations.

It will serve as a useful tool to the promoters as well as a powerful indicator in the hands of institutional and minority shareholders, if executed well. It is entirely based on intelligent judgement, without which, there could be serious repercussions to the entire investor segment leading to significant erosion of shareholders value.

Proxy Advisory Firms analyse corporate proposals and make recommendations in the manner in which minority shareholders should exercise their voting rights at General Meetings. They issue recommendations on proposals for restructuring, mergers, re-appointment / remunerations of directors, auditors and audit committees and identification of critical related party transactions, in accordance with governance requirements in various company laws.

The Cases where proxy advisory firms catched headlines in India

- A US proxy advisory firm, Institutional Shareholder Services Inc. (ISS) issued recommendation to shareholders to vote against the resolution demanding the reappointment of HDFC's Deepak Parekh. Parekh was the name widely known for creating such a big institution called HDFC, a household name among home loan-seekers.

As advised by their proxy advisory firms, Foreign Institutional Investors (FIIs) having around 23% stake in HDFC voted against Parekh's reappointment as the non-executive chairman. The firms were of the view that he was having a board membership on eight other companies as per the provisions of Companies Act 2013, thereby he was left with limited time to serve with his duties at HDFC effectively. Age of the Chairman was also the concern in addition to the lack of clarity on succession planning.

ISS proxy analysis and voting recommendations said that "investors may be concerned whether directors could fulfill their fiduciary responsibilities when they are serving on many boards. While the demands of each board will vary, and the capacity of each person will vary, holding the equivalent of more than 6 directorships with publicly listed companies may make it challenging for a director to devote adequate time to the affairs of each company."

In India, a special resolution with shareholders' approval is needed for non-executive directors above 75 years of age to continue in the job. And a special resolution requires the stamp of approval from more than 75% of shareholders to continue as director on board. And at the AGM of India's biggest mortgage lender, Parekh got 77.36% votes in his favour and the mandate to continue in his role. While 23% voted against it.

The foreign advisory firms recommendations are based on global norms which says "a

director who sits on the board of more than five public companies is construed as 'over boarded' and thus, be automatically disqualified" as happened recently in the case of two directors at HDFC - Bansi Mehta and Bimal Jalan who had to forgo reappointment before the AGM as proxy advisory firms insisted on a younger board with appropriate board refreshment. If there is a board where many directors are above 75 years, the average age, the reason and contributions made by the board members are considered and appropriate recommendations are made.

- Case: In April 2018, Proxy advisor firm, ISS, recommended shareholders of GE Company to vote against the resolution of keeping accounting firm KPMG as the company's auditor due to the concern of GE's previously undisclosed liabilities and accounting practices. Another proxy advisors firm Glass, Lewis & Co. cited concerns about a Securities & Exchange Commission investigation into Company's accounting practices.

Regulation or Code of Conduct for Proxy Advisors

An EU Code of Conduct has been advised to be developed by European Securities and Market Authorities (ESMA) that should include:

1. Disclosure and managing conflicts of interest: It is advised that no conflicts of interest should arise with advisors' investor clients, and in case of any potential arousal, proper disclosure of the conflict, with the steps undertaken to mitigate the conflict so as for the client to properly assess the advisor's recommendations.
2. Transparency to ensure accuracy and reliability of advice: Proxy advisors should disclose the research information and the process conducted to make the general and specific recommendations for voting decisions and any limitations or conditions specified on the account of advice provided so as investors appropriately use the proxy's advice.

This will include:

a. Disclosing general voting policies and methodologies
b. Considering local market conditions
c. Providing information on engagement with issuers

Guidelines for United States by Securities and Exchange Commission

SEC in June 2014 issued guidelines for proxy advisory firms to comply:

1. They must be capable and competent enough to adequately analyze proxy issues;
2. They must identify, disclose and manage conflicts of interests, if any, with robust policies and procedures and to provide current and accurate information;
3. They should disclose to investor clients, any significant and material relationship including conflicts of interests, if any, raised from providing consultancy services to companies.
4. They must disclose potential conflicts of interest.

With the wide concept of ensuring good corporate governance, and the role proxy advisors play in ensuring good governance,

continuous regulations and guidelines are being formed to ensure independent, reliable advice by proxy advisory firms, in order to mitigate the conflicts of interests.

India-SEBI (Research Analysts) Regulation, 2014

SEBI prescribes recently notified regulations to be complied by proxy advisory firms while providing its services to their investor clients. These Regulations protect investors from any motivated research reports by advisory firms. Also, it ensures avoiding conflicts of interest through prescribing provisions. The Regulation requirements include:

Mandatory registration & capital requirement:

- Mandatory registration with SEBI by proxy advisory firms.
- Maintenance of minimum capital adequacy. Firm should contain minimum asset value of Rs1 lakh for individuals and Rs25 lakh for corporate body.
- The employees of proxy advisors should atleast be a graduate in any discipline to be eligible for providing services.

Arms' length:

- Should disclose policies and procedures for interacting with issuers, informing issuers about the recommendations and review of recommendations.
- Arms' length relationship between its research activities and other activities.
- Disclosure and management of conflicts of interests.

Records Maintenance

- Documentation of voting recommendations maintained should be furnished to the Board, if needed.
- To disclose the extent of research involved in a particular recommendation and the extent and effectiveness of its controls and procedures in ensuring the accuracy of issuer data.
- Establishment of internal policies for dealings of proxy advisors, limitations on publication, adequacy of documentary research, etc.
- Boards may inspect books of records, documentation, and issue directions in the interests of securities market or investors.

How advisory firms impact corporate decisions

When the consequences of proposed resolutions conducted at the members' meeting do not go well at big name companies, the role of proxy advisory firms appear as the prominent parties to be engaged in. In a recent case, member meetings of companies like Alkem Laboratories Limited, concern was shown by proxy firms on the agenda of appointment and increase in remuneration of four directors of the company. As per the views of SES, one of the proxy firms in India, remuneration paid to directors doesn't have any variable component. They are of the view that directors' performance should be benchmarked against the individual's target as well as company's overall performance, and therefore the remuneration to an executive director must include a variable performance based component.

Further recently, questions were raised on similar issues by proxy firms for leading business houses and accordingly, recommendations were made by some firms to the investor clients to vote "against" the proposed resolution in meetings. A resolution by 5paisa Capital Ltd. was proposed to approve material related party transactions, wherein the company has not disclosed any period/tenure of approval of such transactions with related parties. Advisory firms are of the view that such resolutions with perpetual approval provide unfettered power to the Board of Directors. Although, such transactions are in the normal course of business of company, however, SES believes that, as a good governance practice, the company must take such approval of the shareholders on a yearly basis or for a fixed term. Therefore, the resolution was turned down.

Table 1: Advisory & its Effect on Voting

Company Name	**Date**	**Type of Agenda Item**	**Vote 'for' or 'Against'**
United Bank of India	27th Feb 2018	Issue of shares under ESPS 2018	Against
Advisory View: Bank is seeking shareholders' approval for issue of 5crore new equity shares to employees of bank under UBI ESPS 2018. The bank has authorized Remuneration Committee of Board for administration and implementation of the same. However, the committee of bank is not compliant with the provisions of Listing Regulations and the Companies Act 2013. Due to non-compliance of remuneration committee, SES raises concern over issue of equity shares as the bank has authorized the said committee for implementation of Scheme. Therefore, SES recommends that shareholder vote AGAINST the resolution.			
Reliance Infrastructure Ltd.	28th Feb 2018	Approve sale/disposal of business by sales of shares of Subsidiary Company	Against
Advisory View: Company is seeking shareholders' approval to sell its shareholding in Reliance Electric Generation & Supply Limited to Adani Transmission Ltd for approximately 13251 votes. The company has not disclosed that how the value has been arrived and what will be the potential impact of sale on company's revenues, profits and balance sheet position. The company has provided generic objectives for deployment of funds generated through this sale. Considering these, SES recommends that shareholders vote AGAINST the resolution.			
Sundram Fasteners Ltd	2nd January 2018	Re-appointment of Managing Director	Against
Advisory View: Company is seeking shareholders' approval to re-appoint Ms. Arundhati Krishna for a period of five years from Septmeber18, 2018 to September 17, 2023 on the Board of Company. No concern has been identified regarding her profile and attendance performance. However, the Company has not placed any absolute cap on commission / total remuneration and the Board has absolute discretion to fix the commission. Further, based on the payment of total board remuneration, it appears that promoters are			

extracting ownership premium from the company. Therefore, SES recommends that shareholders vote AGAINST the resolution.			
Alkem Laboratories Limited	6th January 2018	Appointment & increase in remuneration of MD	Against
Advisory View: Company is seeking shareholders' approval to appoint and to increase the remuneration of four directors. No concern has been identified regarding their profile, time commitment and attendance. Further, remuneration paid to directors does not have any variable component. SES is of the opinion that directors' performance should be benchmarked against the individual's target as well as company's overall performance, and therefore, the remuneration to an Executive Director must include a variable performance based component.			
5paisa Capital Ltd.	22nd January, 2018	Approval of Related Party Transactions	Against
Advisory View: Company is seeking shareholder's approval to approve material related party transactions with India Infoline Limited as an Ordinary Resolution. However, the company has not disclosed any period/tenure of approval of such transactions with related parties. Such resolutions with perpetual approval provide unfettered power to the Board of Directors. Although, such transactions are in the normal course of business of company, however, SES believes that, as a good governance practice, the company must take such approval of the shareholders on a yearly basis or for a fixed term.			

Source: SES Advisory

Effect on Corporate Democracy

Shareholder votes were largely been influenced by proxy advisory firms due to the increased shareholding with institutional investors and the emerging regulatory reforms to improve shareholder participation. It is thus all the more important for advisory firms to issue to issue recommendations that is independent, reliable and unbiased and be free of conflicts of interest. Increased competition could, to some extent, mitigate these conflicts, however, not adequately enough to completely eliminate it.

These regulations help improving the governance norms and gradually changing the scenario over a period of time. Though on one side, proxy advisory firms can be relied upon for their advice and recommendations, these genuine advices might not be as per the expectations of promoter of Issuer Company.

Challenges with Advisory Firms

1. Technology and Artificial Intelligence (AI) are the order of the day. They can be deployed in a host of decision making functions. There is a caveat, though when you use them in matters that require judgement and consideration, such machine-learnt advice can be arbitrary. The very fact that wisdom of law-makers led them to continue to allow persons above 75 to serve on boards provided they obtain a special resolution to that effect-is itself

a clear indication of the need for a deeper judgement call.

The guillotine approach that stems from data-based statistical analysis, can destroy the credibility of these advisory services, which otherwise can be robust institutional practices promoting good governance. If they want to be taken seriously, they should institute mechanisms that take judgement calls, rather than prescribe a trigger-happy approach to all issues.

2. Proxy advisory firms are regulated only in one jurisdiction in the world, i.e in India, while other countries consist of only guidelines and best practices to govern them. It is a huge concern that those unregulated proxy advisors, performing on behalf of both promoters and shareholders, create conflicts of interest. Since institutional investors contain large shares in Indian corporates, global proxy advisors can tilt those votes. Also, the methodology and accuracy of information provided, transparency-related issues and accountability have always been questioned. Though, to regulate the proxy advisory sector in US, a Bill has been introduced with features including federal registration, right of corporate review before making investor advice, provide advance copies, disclosure of research methodologies, among others. It is also feared that the basis of recommendations made by proxy advisor firms were not disclosed and had conflicts of interests in their offerings. ISS, for instance, had a wholly-owned subsidiary called ISS Corporate Services, which provided consultancy Services to more than 1100 corporate clients across the world on their corporate governance practices in order to improve shareholders value and reduce risk.

3. Conflicts of interests: Though the voting recommendations by proxy advisors has largely been followed by investors as per their advice, the rationale and contents of their research are usually unavailable to company to ascertain the reason for voting, especially when it may be against a motion. With the non-availability of rationale for voting recommendation by proxy advisor, the defeat of resolution is very much possible or low number of votes in favour of the resolution. Proxy advisors are expected to be independent in their voting decisions to the investors while also remain unbiased so as to ensure an efficient and large shareholder activism. The times occur when these proxy firms serve as both consultants to investees and advisor to the investor wherein the conflicts of interests arises and voting decisions are the result of biased recommendations, thereby negatively impacting shareholders' value.

At times relationship of proxy advisor with issuer is also the issue. The proxy advisor may issue biased advice to the investor in case it has relations, commercial or personal, with the issuer or issuer's major shareholders.

Conclusion

The advent of Proxy Advisory Firms in India have made minority shareholders and institutional investors to actively participate in major decisions of Companies impacting them. The earlier system of show-off hands

voting system has always kept away the defeat of resolutions, however, now the introduction of e-voting in Companies Act and SEBI LODR Regulations mandating voting by institutional investors, investors are free to announce their disconsent through the vote, being actually influenced by the recommendations of proxy advisors.

Research shows that proxy firms are highly influential over voting outcomes, however, have no clear fiduciary duty to act in best interest of shareholders and institutional investors and may be subject to conflicts of interests. The need is to ensure companies also engage proactively with them while also eliminating the need that institutional investors depend on corporate proxy statements for all agenda items.

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THE ROLE OF UNSOLICITED PROPOSALS IN DEVELOPING PUBLIC INFRASTRUCTURE: AN EMPIRICAL STUDY

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Abstract:

Infrastructure development is one of the major indicators of growth of a nation. While governments across developing countries have explored various options for efficient and speedy development of their country's infrastructure, there exist many gaps which need further attention. To overcome these gaps, most of the countries are increasingly looking forward for the private sector participation for development of public infrastructure and services. Involving private sector through Public Private Partnerships (PPPs) offers a promising alternative to conventional public procurement methods for financing mega infrastructure projects.

In any Conventional method of project development, the conceptualization, designing and planning of an infrastructure project is undertaken by the government. However, a private sector entity may also take the initiative for designing projects for development of social infrastructure in-line with the government's suo moto thought process. The proposals put forth by private sector other than the conventional route undergoing Request for Proposal (RFP), and Request for Quotation (RFQ) for development of public infrastructure are commonly known as unsolicited proposals (USPs).

This paper discusses the positive and negative side of USPs and investigates the roles and requirement of USPs in developing public infrastructure for addressing the fast growing infrastructural gaps, mostly in developing countries. This paper also highlights various methods of procurement of USPs and discusses its impact on various stakeholders. It mainly focuses on specific countries like Chile, Philippines and India where USPs are regarded as a tool for infrastructure development in many areas.

Key Words:

Unsolicited Proposals, Public Infrastructure, Infrastructural Gaps, Public Private Partnerships (PPP)

I. Introduction

An unsolicited proposal can be defined as a written proposal for a new or innovative concept or idea submitted to a public agency by a private entity for the purpose of obtaining government approval and to enter into a contract with the government for developing public infrastructure. It is not in response to a request for proposal, an announcement by broad agency, or any other solicitation or program initiated by the government. The proposals are completely voluntary and initiated by the private party in order to draw attention of the government with an intention of development of the project with government support.

Governments are under no commitment to accept an USP, but economic and political conditions of the country may prompt them to consider USP for developing public infrastructure under a PPP framework (Agarwal, 2014). Many governments worldwide have relied upon USPs to meet the growing public infrastructure needs; however, a major concern with award of a public project through an USP is the lack of competition and transparency. The lack of procedural clarity for dealing with USPs has also been identified as an important bottleneck to the institutional environment of PPPs. Also, in absence of a specific framework, there is an increased likelihood of corruption and political benefaction being involved while awarding the project.

II. Governments motivation behind accepting a USPs

USP is generally not preferred by the Governments and may be accepted only in exceptional circumstances. The USP must fulfill certain predefined conditions as stated in the national PPP policy of the country to be considered for evaluation. Governments consider USPs for two main reasons:

(1) Lack of technical or financial capacity to develop and structure projects within the public entity

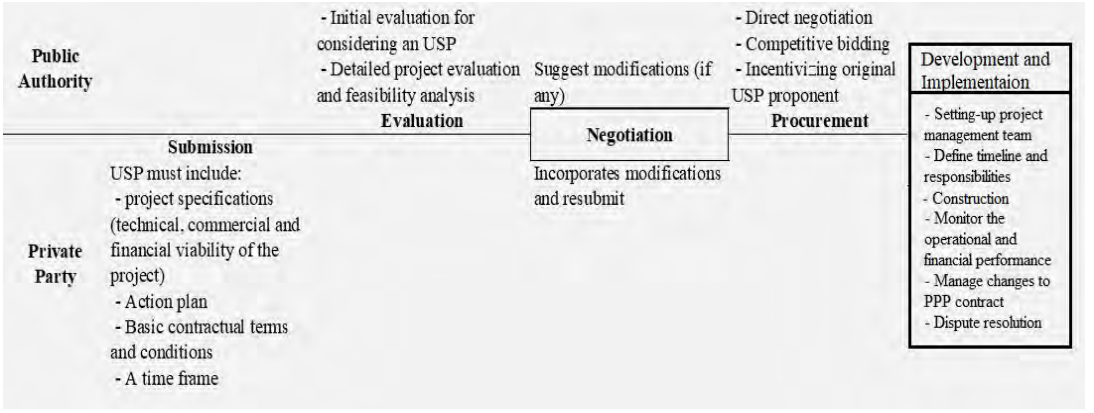
(2) To encourage private-sector innovation for developing and delivering public sector services

Cost efficiencies and rapid project development are some other important policy reasons for the Governments to allow USPs and treat them as special cases.

III. Methods adopted by public authorities for procurements under a USP framework

The complete procedure for developing a project through a USP can be divided into 5 stages - viz. Submission of unsolicited proposal, Evaluation, Negotiation and approval, Procurement, Development and implementation - as shown below:

Generalised procedure for dealing with an USP



Source: Developed by the author with reference to: (Jhingan, Gandhi, & Lal, 2016)

While some countries such as Sri Lanka require the adoption of normal procurement procedures (competitive bidding) dealing with solicited proposals to be applied equally to USPs; others adopt rules so as to allow the original USP proponent a predefined advantage within in otherwise fully competitive bidding process, examples being India (in a number of its States), Argentina, Chile, Indonesia, South Korea, Philippines, South Africa and Taiwan(The Practical Lawyer, 2016). Hence, the project initiated under a USP can be procured by the government under three different frameworks:

- Competitive bidding
- Direct negotiation
- Incentivizing original USP proponent

Competitive bidding is the process of inviting a bid and allocating the project to the best bidder without giving any competitive advantage to the original USP proponent. Sri Lanka is one country where this procedure is followed irrespective of the origin of the proposal. It does not provide any competitive advantage to project proponent in case of a USP.

Direct negotiation: The project can be allocated to the original USP proponent on the basis of direct negotiation on terms and conditions between both the parties, although, countries do have specific norms to go for direct negotiation with the proponent. Some governments may justify direct negotiation for USP as fulfilling urgent project specific requirements. However, the experiences of several countries, such as Bangkok Elevated Road and Train System (BERTS) in Thailand and the Dabhol Power Plant in India have shown that sole-source

negotiations usually take much more time than originally expected and often end up delaying the project by several years and even termination (Hodges & Dellacha, 2007).

Incentivizing original USP proponent: The countries which have inbuilt mechanism for incentivizing the original USP proponent use three broad approaches (IBRD & IDA, 2017) for awarding the project: the Bonus system, Automatic pre-qualification and the Swiss Challenge system. India is one of the countries which offer some competitive benefits to the original proponent in case of a USP.

- ***Bonus point system***

Bonus point system gives some advantage to the original USP proponent in terms of specified percentage points during the evaluation of bid. The Experience Review Report (World Bank Group, 2017) found that the bonus mechanism does not necessarily limit the competition as long as bonuses constitute a small percentage of bid evaluation points.

- ***Automatic pre-qualification***

The original USP Proponent is automatically included in either the initial bidding stage or the final bidding stage (in the case of a multiple staged bidding procedure). However, the USP Proponent still needs to clearly demonstrate its capacity to implement the project.

Automatic pre-qualification method is not a commonly used procedure, but it has the benefit of not directly impacting competitive tension as it does not provide any advantage in the bidding capacity of original USP proponent.

- ***The Swiss Challenge system***

Under the Swiss Challenge system, the original USP proponent is given a right to match with a more competitive bid to win the contract. This limits the competition significantly and most of the procurements that allow the right to match receive few or no competing bids.
The table below gives a comparative perspective of how different approaches are used by different countries for developing public infrastructure under an USP.

Different mechanisms used by different countries for accepting USP

Mechanism	Country	Condition(s)
Direct negotiation with the USP proponent	India	If the project involves innovative or proprietary technology which is exclusively available with the person globally or; Public party fails to select a developer through competitive public bidding process or; Infrastructure project which is an essential link for another bigger infrastructure project owned or operated by the same person.

	Peru and Chile	If no competing bid is submitted within a specified period of time
	South Africa	A "market test" determines whether other firms are interested in the project, after which the public agency can negotiate directly
	Senegal	If the USP meets a number of minimum requirements as specified
	Kenya and Australia	As the default procurement option for USPs
Competitively tendering the USPs	Sri Lanka, South Africa (National Treasury) and Virginia (United States)	
Swiss challenge or Right to Match	India, Philippines, Peru, Colombia, Jamaica and Italy	Most competitive tenders that provide the USP proponent with the right to match attract very few or no competing bidders. In case the project is given to third party for development the project development cost can be reimbursed.
The Bonus Mechanism	Chile, Colombia and South Korea	**Columbia:**3 percent to 10 percent **South Korea:** 10 percent: USP is accepted without any modification 5 percent: USP is accepted after modifications suggested by public authority
Automatic pre-qualification	South Africa and the Philippines	Original USP proponent need to justify its capabilities and available resources for undertaking and delivering the project efficiently.

Source: Review of Experiences with Unsolicited Proposals in Infrastructure Projects, March 2017. The World Bank. Table: Complied on the basis of author's analysis.

IV. Experiences of Governments with USPs

India

In India, there is no central policy for accepting an unsolicited proposal, although, a few state governments including Andhra Pradesh and Gujarat have directly dealt with unsolicited proposals in the past. The Andhra Pradesh Infrastructure Development Enabling Act, 2001, mentions adopting of "Swiss Challenge" approach for dealing with an USP(GoAP, 2011). Some of the other Indian state governments allowing project procurement via USP through Swiss challenge method include Rajasthan and Madhya Pradesh. Similarly, Gujarat

Infrastructure Development (Amendment) Act, 2006, also mentions adoption of "Direct Negotiation" and "Swiss Challenge" approaches for project development through an USP (Government of Gujarat, 2006).

In case of original USP proponent losing the bid and the project is awarded to a third party; the project development cost is re-reimbursed to the original USP proponent with a capping to certain parentage of total project cost.

Predefined conditions for considering a USP in India are as below (Agarwal, 2014):

Project should not:

- require any form of guarantees from any national or state or local government or its agencies. This is standard criteria which also exclude any form of government funding for the project for the private proponent.
- require transfer of ownership of land belonging to the Central or State or local government or its agencies
- have been identified earlier by the Contracting Authority, as duly documented in its published plans or in any of its official document

Project should:

- involve use of proprietary technology, or new or innovative technology or design or it provides a new and cost-effective method of service delivery

Project involves delivery of facilities or services to:

- predominantly rural or peri-urban areas or population below poverty line
- public healthcare or education or public shelter or vocational training or rural information technology

This clearly highlights the government focus on developing social infrastructure through USPs method of development by attracting private sector investment through this method. In a way, it encourages private sectors to enter into the social sector development through this route. But, there is hardly any project developed through this route in India.

USP cases in India

Andhra Pradesh

Project: Elevated expressway - Hyderabad to the new international airport

USP status: Rejected

Project status: completed in October 2009

The project for building elevated expressway was presented as a USP by GMR under the Andhra Pradesh Infrastructure Development Enabling Act, 2001. GMR proposed to implement the project on design, finance and construct basis. To get its returns on investment GMR asked Hyderabad Urban Development Authority to provide about 500 acres of land along the new expressway corridor. However, Government of Andhra Pradesh (GoAP) did not see clear economic justification for the USP, and aside from the poor economic

rationale, there was no strong justification to use a USP. GoAP rejected GMR's USP and implemented the project under a conventional engineering-procurement-construction (EPC) mechanism.

Gujarat

Project: Liquefied natural gas (LNG) terminal with a floating storage and re-gasification unit (FSRU) in Jafrabad

USP status: Accepted

Project status: To be commissioned in January 2019

In 2012, SWAN Energy Limited (SEL) proposed to develop a liquefied natural gas (LNG) terminal with a floating storage and re-gasification unit (FSRU) in Jafrabad and approached the Gujarat Maritime Board (GMB) with an USP.

FSRUs when compared to traditional on-shore LNG terminals, offer huge cost, time and environmental benefits and are cheaper to develop. The technology was not used in India until SEL's proposal to GMB. The LNG port and jetty-moored FSRU will be developed on a build, own, operate and transfer (BOOT) project model. The company had secured all necessary permissions for the project and the concession agreement[1] is ready for execution.

Chile

During the early years of its USP program; Chile used USPs to expand the number of projects to be developed and implemented in a short timeframe with the objective of faster infrastructure development. In Chile, a central unit located at the national level (Ministry of Public Works[2]) is responsible for both accepting and processing USPs. All USPs need to pass through a two staged procedure, with more rigorous submission requirements at the latter stage.

The minimum submission requirements for USP submission under Chile's USP framework includes:

- The name and type of project;
- Project location;
- Estimation of demand and annual expected growth;
- Land expropriation requirements;
- Description of the works and services;
- Expected investment and operational costs;
- Financial analysis;
- Expected risks with respect to existing projects;
- Contract conditions - concession length, level of subsidy, etc.; and
- A declaration of the need to conduct environmental impact studies.

Chile government accepts USPs outside of the government's own pipeline of development projects, and requires the USPs to be in-line with the government's plans. In Chile, the public agency may go for

[1] The project has bagged a concession agreement for 30 years plus 20 years with Gujarat Maritime Board (GMB).

[2] Ministerio de ObrasPublicas, or MOP

a direct negotiation with the USP proponent if no competing bidders express interest, otherwise, bonus mechanism is most commonly used for procurement process.

USP cases in Chile

Project: Expansion and rehabilitation of the 55-kilometer highway between Puerto Montt and Pargua

USP status: Accepted – Bidding with bonus mechanism – Awarded to a third party

Project status: Completed

Proposed by: Itinere Chile S.A in October 2004

The project aimed to address the issues like congestion, road deterioration, and frequent accidents and to take advantage of a growth travel demand between the city of Puerto Montt and Chiloé Island. In 2005, the MOP accepted the project and declared the project as a public interest project. The procurement started in November 2008 and the project contract was awarded to a competing bidder: Concesiones Viarias Chile S.A. in February 2010.

Philippines

Evidence suggests that many governments are satisfied with a broad definition of innovation that makes projects unidentified by public agencies; eligible for consideration as USPs. Although, Philippines classifies projects as "innovative" if they introduce unique products, processes or technologies, typically requiring the protection of intellectual property rights. Philippines have decentralized USP submission processes which allow an USP proponent to submit the proposal to different departments and at different levels of government.

Philippines follow a single stage evaluation procedure that needs to be completed with 120 days from the date of submission. The Swiss Challenge or right to match is the most common incentive mechanism used for procurement.

USP cases in Philippines

Transportation

Project: New Manila International Airport Project

USP status: Under Review - Department of Transportation

Project status: Under Review

Proposed by: San Miguel Corporation

A recently submitted USP for the construction and operation & maintenance of a new modern airport in Bulacan with a design capacity of 200 million passengers per year, consisting of 4 runways and all aviation related facilities.

Power

Project: Caliraya-Botocan-Kalayaan Power Plant

USP status: Accepted

Project status: Completed

Proposed by: IMPSA, Argentina

BROT Agreement between National Power Corporation and IMPSA of Argentina became effective on 07 February 2001.All rehabilitation and construction works were completed in 2004. The duration concession agreement is 25 years from February 2001 to February 2026.

V. Advantages and disadvantages of USPs

Different governments have different motivations and objectives for accepting or not accepting an USP. The policies and procedures laid down for accepting an USP depends upon government's technical and physical capacity to implement public development projects.

Advantages

a. Addresses the capacity gaps within the public agencies

Generally, an USP is considered to be very useful where governments have limited technical and financial capacity to develop a steady pipeline of PPP projects. In India and Philippines, public capacity constraints are characterized by limited expertise rather than its complete absence. Whereas Chile, possess the required levels of public-sector capacity, but lacks the resources to develop and implement the number of infrastructure projects required (World Bank Group, 2017).

b. Promotes innovation and incentivizes private sector participation

Governments might consider approving an USP to take advantage of private sector innovation, creativity and efficiencies in delivering public infrastructure projects. Governments which allow innovative USPs include: South Africa, India, Jamaica, Senegal, the Philippines, Australia and many more.

c. Reduced transaction costs

USP proposals are projects that are not initiated by the government and hence the initial investment (both time and money) is undertaken by the USP proponent. Although some governments such as Argentina, Chile and Korea; have provisions for including development costs in the tender documents as an expense to be paid to the original project developer, however, this cost is to be borne by the bid winner and not by the government.

d. Faster implementation

Government officials see project development as a burdensome task and prefer projects initiated by the private sector for developing the public infrastructure of the country. To cite an example Colombia's 2012 PPP law have intentionally structured USP framework in a way so as to ensure faster implementation.

e. Increasing the scope of infrastructure development - Potential route for bringing local projects under national focus

Some of the local level projects that are not in consideration by the government at the state or central level may be submitted by private sector as an USP considering the social importance of the same. These projects may include the ones which have been overlooked by the government for a long time.

Disadvantages

a. Risks related to sufficient transparency or competition

Major risks and challenges that are faced by a USP framework include lack of transparency and competition; and perceptions of corruption and fraud amongst the consumers. Organizing a truly competitive process is very challenging if the USP proponent is provided with the right to match (Swiss Challenge method) for bidding. In this case, there is high possibility of few bidders bidding for the project.

On the other hand, the Bonus Point mechanism does not necessarily distort competition if bonuses constitute small percentages. To cite anexample, the government of Chile has provision of Bonus points for the original USP proponent and based on past experiences, it has been seen that not necessarily the project is awarded to the original USP proponent.

Some governments have successfully used mechanisms to avoid transparency risk and foster competition. Some of the mechanisms used are as below:

i. Avoiding directly negotiating with the USP proponent;
ii. Only small proportional percent as Bonus points
iii. Sufficient time for preparing bid by a competitor

b. Asymmetries in competition

There are elemental asymmetries that exist between the original USP proponent and other competitive bidders, such as:

i. Informational asymmetry

The original proponent has already been through all the background studies and feasibilities analysis before the government releases the RFP for the project. This creates a sufficient amount of informational gap leading to informational asymmetry between the original USP proponent and other competing bidders. This would definitely give a leading edge to the original USP proponent.

ii. Bidding asymmetry

Bidding asymmetry is due to time given to bidders to prepare counter proposals vis-à-vis time taken by originator for preparation. In many cases, other bidders do not have a time advantage to go through all the parameters to design a proper proposal to counter and win the project within a specific time period.

c. Absence of legal validity and framework

Some countries including India do not have a centrally accepted framework for USP adoption into the legal system. To cite an example in the state of Maharashtra[3], India, the Swiss challenge method of award of a public project via a USP was challenged in the court of law, although, the decision went in favour of the allocation but with a clear indication of a need to develop and adopt a legal framework for USPs.

[3] "Swiss Challenge" method was adopted by the MHADA (Maharashtra Housing and Area Development Authority) for procuring a project submitted by a private developer as an USP.

d. Difficult to measure value for money in absence of comparable competing bid

It has seen in many cases that a competitive bid is not received, especially in case of procurement through Swiss challenge. This makes it difficult for public agencies to draw any inferences for value for money being delivered by the project.

e. Withdrawal of offer by original unsolicited bidder

This may happen if the original USP proponent at a later stage realizes that the proposal from competing bidders are much higher than the one submitted by an USP. The original USP proponent may withdraw the initial offer and try negotiating for higher proportions of returns.

VI. Discussion on roles of USPs in developing public infrastructure

USP's are powerful means to generate new ideas and attract private sector and help government to capitalize on private sector inventions for delivering infrastructural solutions with respect to current gaps in public infrastructure. Many countries have introduced USP frameworks as part of their new PPP policies and/or laws. The roles of USPs in developing public infrastructure cannot be brought out clearly owing to limited experiences of most countries with USPs. Even mature PPP economies like India, have very little experience when it comes to USPs. Whereas Chile, encourages USPs for developing public infrastructure; countries like India and Philippines still stand against and discourage use of USPs.

Chilean experience is considered to be one of the most successful cases of implementation of USPs (Camacho, Rodrigues, & Vieira, 2017). The experiences from Chile do suggest that USPs can be significantly utilized for bringing in the private sector investment for public infrastructure development and addressing the infrastructural gaps of a country. Chile has successfully implemented a transparent competitive bidding mechanism with bonus point model to the original USP proponent. In doing so, it has avoided the risks and disadvantages associated with USPs. India and Philippines which are struggling with corruption allegations may take lessons from Chile to build upon a transparent and corruption free framework for USP.

In the case of developing a legal framework, if the precedent is set by the court with a previous order, there may not be requirement for a specific law. It would be advisable to specify the conditions under which the USP can be pitched. A legal framework though deemed necessary may hinder the private player from investing and usually create another layer of protectionism through systematic corruption through government departments.

Similarly, in absence of competitive bid, government can set its own benchmark by creating several parameters to find competitive value for money. This may not be looked through monetary aspects only. The direct and indirect impacts may also be taken into consideration for sustainability of the project for a long term and prices to be set that will allow a private player to invest in a particular project. Also, government can consider providing a performance guarantee to hold price when the USP goes to competitive bid to ensure that the

original USP proponent sticks to the project cost even if competitors are providing better price for the project.

VII. Recommendations

Though government may have its own research team and think tanks working on innovative ideas to search for sustainable solutions, it requires crowd pooling for new ideas and methods to implement various schemes. USPs serve in a better way to pool in the private sector to generate ideas and further work on to implement it on the ground. Though, government may come under public scrutiny with allegations of supporting a few industrialists for vested interest, it can design a procurement structure giving enough scope of competition and at the same time compensating the original USP proponent. Some of the suggested recommendations that can help in better utilisation of USPs are as below:

Availability of a well-defined submission framework

The availability of a well-articulated submission framework not only guides the USP proponents in developing quality proposals but also ensures that the USP meets the government's requirements and is processed efficiently in compliance with the public agency's requirements.

A detailed-out submission framework may clearly spell out the required documentation required for ease of processing, a centralized unit at a designated authority in case of central projects and state units in case of USPs dealing with state subjects. A detailed-out review procedure with timeline, responsibility division, fee components if any and compliance mechanism would go a long way in properly implementing the USP framework.

This would help mitigate lot of anomalies and confusions regarding USPs submission. A clear idea on subjects, themes, projects and the procedure would help eliminate ambiguity from the private players who would like to enter through the USP window. Studies do suggest an increase in volume of USPs in countries that adopted a formal framework (IGM Rebel Advisory LLC, 2014). However, provision for a USP submission and evaluation fee can be included in the framework to bring down the number of unwanted and poor proposals.

Well defined evaluation procedures

A well-established evaluation procedure will ensure that only eligible projects pass through the screening process and reach out to the authority for further evaluation. Government may carve out basic feasibility criteria along with broad public objectives of any USPs in defined sectors. It will ensure that non-serious and non-conforming project proposals are screened out at an early stage so that precious time and money are saved from both public and private parties.

The matrix for evaluation of any USPs should consider the sustainability issues along with value for money, affordability, people friendly and transparency and accountability norms.

Well - developed procurement procedures

Various procurement strategies such as competitive bidding, bonus point method,

and Swiss challenge method have been described in this paper. Incentivising the original proponent through bonus points is the most commonly used mechanism by public authorities. However, public authorities should ensure a transparent process so as to avoid any negative impacts on the overall competition during the bidding process. There should be a fair competition with all formalities laid out in public domain in a transparent manner. The success of Chile in utilizing USPs for infrastructure development may be taken as case in example.

There is an apprehension that Swiss challenge method may hinder other players to enter into the field as it will be challenged by the original USP proponent. But, this method would give the government to actually find a least cost development model for proposed intervention. Though, L1 approach or least cost method is not always a great way for awarding projects with fear of substandard development to save on costs, it would help government save huge money upfront that can be utilized elsewhere.

The bonus point method is assumed to be acceptable by all as it would give a clear signal to other players that government is taking care of the original proponent by some way or the other. But, the percentage point's advantage is very crucial at the final stage while awarding a contract and that may become a bone of contention. This may lead to unnecessary arbitration in the courts. Anyhow, with or without any incentives to the original proponents, if government wants to go further with project development, the original proponent of the project would always be an inch ahead from the competition. As they have already gained the expertise with time and money invested to develop the proposal and have all the feasibility studies with them. They are better positioned to take a stand if situation arises.

World Bank in its Experience Review report favours the bonus mechanism system as it argues that the model does not necessarily distort competition if bonuses constitute small percentages and have all other bidders buying in at an earlier stage.

VIII. Conclusion

Overall, USPs represents a pooling of innovative approaches from outside the government framework for creation of sustainable infrastructure. The government needs to think-through about the incentives for a non-government entity to come forward for a USP and deliver by its own. Apart from direct award of contract to the USP project proponent, which needs to be justified by government, all other routes are transparent and subject to the similar bidding process as normal PPPs. Swiss Challenge and multi-player counter bidding are established practices to award the project under PPP route and are completely transparent in nature. The only constraint may come if there is no market available for user fees based PPP project such as smaller towns or rural areas. Big players might not be interested to come forward and competition may not be a viable solution. In this case, government may want to tweak its strategy to favour local players for delivering the project with local government assistance.

Governments are free to decide on the fate of USPs and they need to find ways to adopt USPs to the formal system of procurement.

They may use it as a tool for innovative idea generation and customize accordingly to solicit proposals under the normal way of competitive bidding and compensating the private proponents for their effort. The USPs way of project development will remain matter of debate until and unless sound policies are framed in this regard.

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VOLATILITY IN THE MID - CAP AND SMALL - CAP EQUITY MARKET – A CASE STUDY BASED ON BSE MID - CAP INDEX AND BSE SMALL - CAP INDEX

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Abstract:

Volatility modelling in the stock market has significant implications in Economics and Finance. High volatility in the stock prices has adverse effects in an economy. This paper is developed to study the ARCH effect, asymmetric effect and Persistence of time varying volatility of Indian mid-cap and small-cap equity market return using non-linear asymmetric EGARCH (Exponential GARCH) Model developed by Nelson (1991). The empirical study is based on daily return of BSE Mid-cap Index and BSE Small-cap Index from the beginning of March 2012 till the end of February 2018. Apart from using own past information we have used BSE sensex as control variable in the mean return equation. The nature of volatility of stock returns is found to possess the asymmetrical property i.e leverage effect. Volatility is also persistent in these markets. Both the indices have shown volatility clustering phenomena during the study period.

Key Words:

Volatility, Leverage, ARCH Effect, Long Memory

1.1 Introduction

Volatility is the measures of uncertainty about the variation in the return of stock market, bond market, commodity market and foreign exchange market. Higher the volatility implies large fluctuation in the stock market return, whereas low volatility indicates fluctuation in the value of security is not dramatically. Very recently modelling of volatility of a financial time series has gained large popularity among the researchers and academicians and market players. Volatility can be of two types, Unconditional volatility-which is the single measure of volatility of asset return over the time and Conditional volatility- which is varying over the time. Conditional volatility depends on own past volatility (Autoregressive), depending upon past asset returns (conditional) and exhibits volatility clustering as well as leverage effect is perceived in the volatility of returns. This clustering means that there are periods when these series show wide swings for extended period followed by a period of relative calm. Knowledge of such volatility is extremely important to investors. The investors in the stock market or bond market, like domestic investors or foreign portfolio investors, are significantly affected by the nature of volatility. So modelling of stock return volatility became a necessity for those who are participating in the capital market. Volatility in the financial time series was first observed by Bechilier in 1900. Volatility clustering has first identified in 1963 by Mendel Bort. However, formal modelling of volatility is introduced by Engle in 1982 in his Autoregressive Conditional Hetroscedasticity (ARCH) model. A Generalized ARCH (GARCH) model was developed by Bollerslev (1986). Nelson (1991) has introduced non-linier Exponential GARCH (EGARCH) model, which is the logarithmic expression of the conditional volatility used to capture the leverage (asymmetric) effects and long memory property (persistence) of volatility. Identification of the nature of time varying conditional volatility has become one of crucial research area in Finance in recent time. This research works has been conducted to study the nature volatility in the Indian Mid-size and Large-size capital market in the present time. This paper has identified and addressed the issues in respect of stock market conditional volatility. Here, we study the ARCH effect (volatility clustering), asymmetric effect (negative correlation exists between past return and volatility. Negative return due to bad news has more impact on volatility than positive return due to good news) and Persistence of time varying volatility (present volatility is dependent of past period volatility) of Indian equity market return using EGARCH Model, one of the variant of ARCH (Auto regressive conditional hetroscedasticity) family.

1.2 Literature Survey

- Floros (2008) modelled the volatility applying daily data from two Middle East stock indices viz., the Egyptian CMA index and the Israeli TASE-100 index and used GARCH, EGARCH and TGARCH. The study found that the coefficient of EGARCH model showed a negative and significant value for both the indices, indicating the existence of the leverage effect.
- Ahmed and Aal (2011) studied Egyptian stock market return volatility and his study showed that

EGARCH is the best fit model among the other models for measuring volatility.

- Karmakar (2005) estimated volatility model to capture the feature of stock market volatility in India. The study also investigated the presence of leverage effect in Indian stock market and the study showed that the GARCH (1,1) model provided reasonably good forecasts of market volatility. Whereas, in his another study he (Karmakar2007) found that the conditional variance was asymmetric during the study period and the EGARCH-M was found to be an adequate model that reveals a positive relation between risk and return.
- Goudarzi and Ramanarayanan (2010) examined the volatility of Indian stock market using BSE 500 stock index as the proxy for ten years. ARCH and GARCH models were estimated and the best model was selected using the model selection criterion viz., Akaike information Criterion (AIC) and Schwarz Information Criterion (SIC). The study found that GARCH (1,1) was the most appropriate model for explaining volatility clustering.
- Goudarzi and Ramanarayanan (2011) in their study, they investigated the volatility of BSE 500 stock index and modelled two non-linear asymmetric model viz., EGARCH (1,1) and TGARCH (1,1) and found that TGARCH(1,1) model was found to be the best preferred model as per Akaike information Criterion (AIC) and Schwarz Information Criterion (SIC).
- Mittal, Arora, and Goyal (2012) examined the behaviour of Indian stock price and investigated to test whether volatility is asymmetric using daily returns from 2000 to 2010. The study reported that GARCH and PGARCH models were found to be best fitted models to capture symmetric and asymmetric effect respectively.

Based on the above literature review we can observed that in India very few empirical work have been conducted to model the stock market volatility of Mid-cap and Small-cap Stock Market indices. Hence, this paper is developed to bridge the research gap.

1.3 Objectives of the Study

1. To study the existence of unit root (Stationarity) in the return data of Mid-cap Index and Small-cap Index of BSE using ADF (Augmented Dickey-Fuller) Test.
2. To identify the nature of distribution Leptokurtic (High peak and fat tail) or Mesokurtic (Normal distribution) of Mid-cap index and Small-cap Index of BSE using Jarque-Bera statistic
3. To capture the leverage effect of the volatility in the Mid-cap index and Small-Cap Index of BSE using EGARCH Model
4. To Study the Persistence and Clustering of volatility using EGARCH Model.

1.4 Research Methodology

For this empirical study, we have selected BSE Mid-cap Index and BSE Small-cap Index from the widely traded stock exchange in India- the Bombay Stock Exchange (BSE). Apart from using own past information we have used BSE Sensex as control variable, which can influence the return of BSE Mid-cap Index and BSE Small-cap Index. The returns of stock indices are calculated based on logarithmic transformation of daily index value.

Sample: For the purpose of the study we have used the Closing value of BSE Mid-cap Index and BSE Small-cap Index of BSE.

Sample period: The sample covers daily observation of indices from the beginning of March 2012 till the end of February 2018. In total there are 1498 observations.

Data source: The entire data has collected from BSE Website.

Research tools: Various statistical tools ADF (Augmented Dickey-Fuller) and Jarque-Bera statistic were utilised to study the stationarity of the return serried and test of normality of the distribution respectively. Here we use the ARCH-LM test are applied to check whether we can use ARCH Models or not. For exploring the leverage effect and clustering effect, we have used non-linear asymmetric EGARCH model. Volatility has been measured for the returns, but before doing all these test, first we calculate the daily return of the Index data taking the log of first difference of daily closing Index Value,
$R_t = \text{Log}\ (P_t / P_{t-1})$,

Where P_t is the closing Index value at time t and P_{t-1} is the corresponding value at time t-1.

Research Software: The entire econometrics analysis has been done using E-views 8 Econometrics package.

1.5 Research Findings

(a) Descriptive statistics:

Table 1: Descriptive Statistics of Mid-cap and Small-cap Stock Market

	RMCI	RSCI		RMCI	RSCI
Mean	0.000645	0.000666	Skewness	-0.92115	-1.11807
Median	0.001641	0.002087	Kurtosis	7.032552	9.312486

Maximum	0.041067	0.056568	Jarque-Bera	1212.909	2767.483
Minimum	-0.07996	-0.09219	Probability	0	0
Std. Dev.	0.009864	0.010449	Annualised return	16.25%	16.78%

The average daily return is positive for the both the market, which indicates that on an average market, is moving upward. However, the annualised return of small-cap market (RSCI) (16.78%) is higher than mid-cap market (RMCI) (16.25%). The annualised return is calculated by multiplying 252 with daily average return. The annualised standard deviation is calculated but multiplying √252 with the standard deviation. The result shows that annualised SD of small-cap stock market (16.58%) is higher than mid-cap stock market return (15.64%).The descriptive statistics shows that the daily returns of both the market is negatively skewed which indicates that probability of earning return less than average return is more.

The kurtosis of the distribution is much higher than 3, which implies that return series are not following normal distribution (Mesokurtic) rather than fat tail i.e. leptokurtic distribution. This statement is further confirmed by Jarque-Bera test statistic, which is significant at 1% level of significance. Hence, we can reject the null hypothesis that return distribution is normally distributed (Symmetric) and conclude that return series follow asymmetric distribution.

(b) Stationarity of Data

Table 2: Augmented Dickey-Fuller test statistic test statistic

		RMCI		RSCI		RSEN	
		t-Statistic	**Prob.***	**t-Statistic**	**Prob.***	**t-Statistic**	**Prob.***
Augmented Dickey-Fuller test statistic		**-33.5229**	**0**	**-31.2527**	**0**	**-35.5677**	**0**
Test critical values:	**1% level**	**-3.434561**		**-3.43456**		**-3.43456**	
	5% level	**-2.863287**		**-2.86329**		**-2.86329**	
	10% level	**-2.567748**		**-2.56775**		**-2.56775**	

Here we test the existence of unit root of these stock return series. The index data is basically a non stationary. However, we are testing volatility of the return data of these series. Here we have converted the series into log form and then take the first difference of the new series, which ultimately the stationary series of daily stock return. The stationarity

is further confirmed by Augmented Dickey-Fuller test. The tabulated value of these series is much higher than critical values at 1%, 5% and 10% level of significance. Hence we reject the null hypothesis that these series have no unit root and conclude that the time series data used for the entire study period is stationary.

(c) Volatility Modelling

Table: 3 Test of Hetroscedasticity in the Residual of Return Model using ARCH-LM Test

RMCI				RSCI			
F-statistic	44.71375	Prob. F(1,1477)	0	F-statistic	36.72	Prob. F(1,1477)	0
Obs*R-squared	43.45866	Prob. Chi-Square(1)	0	Obs*R-squared	35.87	Prob. Chi-Square(1)	0

The ARCH-LM test is applied in Mid-cap Stock return and Small-cap stock return to find out the presence of ARCH (Auto Regressive Conditional Hetroscedasticity) effect in the residuals from the estimated return Model of Mid-cap Index and Small-cap Index. From the table 3, it is observed that the ARCH-LM test statistics is highly significant. Since $p < 0.05$, the null hypothesis of 'no arch effect' is rejected at 1% level, which confirms the presence of arch effects in the residuals of time series models in the returns and hence we can use GARCH family for estimation of volatility. Here we have used EGARCH (1,1) to study the persistence of volatility, asymmetric effect and Volatility clustering of Indian equity market return. The EGARCH model as proposed by Nelson (1991) to model the volatility of stock return in logarithmic form is as follows:

LOG(GARCH) = ω + α *ABS(RESID(-1)/@SQRT(GARCH(-1))) + γ*RESID(-1)/@SQRT(GARCH(-1)) + β*LOG(GARCH(-1))

Where α is the coefficient of ARCH effect (Clustering of conditional volatility), γ is the coefficient of Asymmetric effect or Leverage effect in the volatility and β is the coefficient of persistence of volatility.

Table 4: EGARCH model to estimate the volatility of Mid-cap Stock Index

Dependent Variable: RMCI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Mean Equation				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	9.55E-05	0.000151	0.630486	0.5284
RMCI(-1)	0.117772	0.01494	7.883013	0
RSEN	0.824805	0.013113	62.89842	0
Variance Equation				
ω	-2.06291	0.428539	-4.81382	0

α	0.260663	0.041009	6.356259	0
γ	-0.08539	0.017878	-4.7761	0
β	0.819436	0.039624	20.68014	0
Akaike info criterion				-7.456014
Schwarz criterion				-7.430948

Table 5: EGARCH model to estimate the volatility of Small-cap Stock Index

Dependent Variable: RSCI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Mean Equation				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	-8.43E-05	0.00017	-0.49727	0.619
RSCI(-1)	0.192325	0.017694	10.86953	0
RSEN	0.751049	0.014677	51.17269	0
Variance Equation				
ω	-1.629832	0.231933	-7.02716	0
α	0.322612	0.031263	10.31918	0
γ	-0.078173	0.017597	-4.44249	0
β	0.861459	0.021912	39.31463	0
Akaike info criterion				-7.17008
Schwarz criterion				-7.14501

The leverage effect has captured by parameter (γ) in EGARCH model for estimation of volatility is negative and significant at 1% level of significance, as expected for both the stock market return in BSE, which signifies that a positive shock has less effect on the conditional variance LOG (GARCH) compared to negative news or shocks. So good new (GST, high GDP Growth, etc.) can generate less volatility than bad news (unemployment, inflation, demonetisation etc.) for stock market return. The negative correlation of past return and future volatility, measured by Leverage effect is high in case of Mid-cap stock return (RMCI) (-0.08539) than Small-cap stock return (-0.078173).

The Clustering of volatility in stock return (ARCH effect) is captured by the parameter (α) in EGARCH model. Volatility clustering means large fluctuation is followed by large fluctuation (during the turbulence period) and small fluctuation is followed by small fluctuation (during the tranquillity period). A coefficient in both the market is statistically significant at 1% level of significance, which implies presence of volatility in the capital market of India. Although we can observe that the ARCH effect is more in Small Cap stock market (0.322612) than Mid Cap stock market (0.260663).

The persistence of volatility in stock return is measured by the parameter (β) in this exponential model. Flow of the information is the source of volatility. As information flow is slow and therefore news, whether good or bad, is coming to the market could

not absorbed immediately. Hence volatility is persistent for long days. Persistence is the one of the stylised fact, when coming to the analysing of time series. Persistence implies volatility of today can be spill over for many coming days. So volatility has long memory. From the table 4 and 5 we can say that in both stock market volatility is persistent. β is statistically significant in the study at 1% level. However, degree of persistence is more in the Small Cap stock market (0.861459) than Mid Cap market (0.819436).

Table 6: Existence of ARCH effect in the Residual in the EGARCH Model

RMCI				RSCI			
F-statistic	0.04099	Prob. F(1,1477)	0.8396	F-statistic	0.2240	Prob. F(1,1477)	0.636
Obs*R-squared	0.04104	Prob. Chi-Square(1)	0.8394	Obs*R-squared	0.2243	Prob. Chi-Square(1)	0.6358

The quality of model is determined by the diagnostic checking through ARCH-LM test in the Residual of these models. From the table 6 it is clear that there is no ARCH effect in the residual calculated from the conditional volatility models. We have accepted the hypothesis that there is no ARCH effect in the residual. Hence, we can suggest that the building of the model is satisfactory.

1.6 Conclusion

Volatility is an important determinant in the investment decision in the stock market. The investors in the stock market are also likely to be affected by the volatility of stock prices as high volatility could mean huge losses or gains and hence greater uncertainty. Further, in the volatile capital market, it is difficult for the companies to raise capital. Now, before investing in the Mid-size and Small-size capital market as well as raising finance from these markets, Investors and company should aware the nature of volatility in those markets. In this empirical research we have tried to model the conditional volatility of BSE Mid-cap and BSE Small-cap stock Index return for exploring their nature. Findings of this study will assist the participants of capital market for taking more informed decisions. We have applied the non-linear Exponential Generalised Autoregressive Conditional Hetroscedasticity (EGARCH) model to capture the volatility clustering, leverage effect and long memory property of volatility over the study period. The model is employed after confirming that the return series has Unit Root (Stationary) using ADF test. The significance of Jarque-Bera statistic is suggesting the asymmetry of the distribution. High kurtosis (>3) indicates that the distribution of market return is leptokurtosis. We have observed the volatility clustering in both the markets as α coefficient is statistically significant in both equations. We also perceived asymmetry effect of information, as γ coefficient is negative and statistically significant at 1% level of significance, which implies negative shock (information) in the Indian capital market will raise more volatility than positive shock. We have observed that volatility is persistent in the recent time as β coefficient is statistically significant which

implies volatility of today not only influence the volatility of tomorrow but also about the volatility of many days ahead in the stock market. We have identified that return of BSE Sensex is the significant dependent variable to estimate return of Mid-cap and Small-cap Capital market from the mean equation in Table 4 and Table 5. The diagnostic check for the residual of the volatility model confirms that the model fitted above is satisfactory (Table 6). Further the study supports the findings of Ahmedand Aal (2004), Karmakar (2005) and work of Mittal, Arora (2012). The paper is, however, not devoid of limitations. They are as follows: first the data used in this study is restricted upto 6 years; however, we can extend our study period upto 10 years to explore the nature of volatility of these two markets over long period; second, we have used the inter day volatility for the study, although, we can study the nature of intraday volatility and compare it with the previous one; last but not least in this study we have ignore the impact of volatility while modelling the return equation, to explore the relationship of risk and return. However, we can use EGARCH-M model for study of the nature of volatility and the relationship of risk and return. Subject to these limitations this paper indicates that the volatility in the stock market in India is persistent and volatility clustering as well as leverage effect in the volatility of returns is perceived in both the capital markets.

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Annexure

Date	BSE_MID_CAP	BSE-SENSEX	BSE_SMALL_CAP	BSE-LAR_CAP_INDEX
9-Mar-12	6330.15	17503.24	6749.21	2084.62
12-Mar-12	6397.06	17587.67	6796.26	2090.13
13-Mar-12	6474.44	17813.62	6865.93	2061.83
14-Mar-12	6495.34	17919.3	6846.64	2039.76
15-Mar-12	6405.36	17675.85	6780.45	2035.81
16-Mar-12	6361.59	17466.2	6704.46	2079.06
19-Mar-12	6300.56	17273.37	6632.28	2090.37
20-Mar-12	6335.9	17316.18	6630.43	2116.42
21-Mar-12	6459.33	17601.71	6712.2	2129.49
22-Mar-12	6312.62	17196.47	6599.69	2098.48
23-Mar-12	6350.92	17361.74	6626.35	2071.91
26-Mar-12	6249.17	17052.78	6533.36	2046.65
27-Mar-12	6245.06	17257.36	6522.05	2053.02
28-Mar-12	6190.94	17121.62	6451.49	2087.78
29-Mar-12	6200.87	17058.61	6496.8	2036.31
30-Mar-12	6346.38	17404.2	6629.38	2056.13
2-Apr-12	6414.81	17478.15	6741.03	2018.38
3-Apr-12	6475.5	17597.42	6817.69	2040.2
4-Apr-12	6473.87	17486.02	6844.9	2022.33
9-Apr-12	6386.76	17222.14	6800.56	2017.69
10-Apr-12	6370.45	17243.84	6792.31	2060.78
11-Apr-12	6330.39	17199.4	6774.06	2071.82
12-Apr-12	6383.95	17332.62	6842.25	2088.68
13-Apr-12	6337.97	17094.51	6799.23	2076.51
16-Apr-12	6388.94	17150.95	6837.26	2043.03
17-Apr-12	6435.22	17357.94	6880.36	2045.76
18-Apr-12	6464.86	17392.39	6914.49	2039.18
19-Apr-12	6480.93	17503.71	6932.83	2055.25
20-Apr-12	6417.72	17373.84	6900.58	2031.33
23-Apr-12	6310.31	17096.68	6794.56	2038.03
24-Apr-12	6301.98	17207.29	6789.81	2062.48
25-Apr-12	6267.1	17151.29	6753.87	2067.21
26-Apr-12	6247.89	17130.67	6726.37	2077.23
27-Apr-12	6240.8	17134.25	6697.89	2060.14
28-Apr-12	6272.33	17187.34	6726.17	2025.94
30-Apr-12	6315.85	17318.81	6764.62	2033.9
2-May-12	6298.95	17301.91	6777.94	2025.83
3-May-12	6234.75	17151.19	6709.96	2020.46
4-May-12	6100.8	16831.08	6588.26	2019.89
7-May-12	6132.58	16912.71	6608.35	2041.53
8-May-12	6053.89	16546.18	6550.82	2037.84
9-May-12	5994.5	16479.58	6469.96	2018.62
10-May-12	5998.32	16420.05	6454.2	1979.05
11-May-12	5948.71	16292.98	6395.38	1990.38
14-May-12	5888.95	16215.84	6314.57	1947.44
15-May-12	5925.77	16328.25	6335.27	1935.89

16-May-12	5879.42	16030.09	6264.95	1932.23
17-May-12	5880.57	16070.48	6270.36	1918.24
18-May-12	5864.72	16152.75	6255.42	1907.74
21-May-12	5888.63	16183.26	6317.41	1922.07
22-May-12	5854.18	16026.41	6274.69	1891.15
23-May-12	5830.22	15948.1	6238.23	1894.85
24-May-12	5874.78	16222.3	6284.84	1904.16
25-May-12	5900.51	16217.82	6318.33	1909.65
28-May-12	5971.77	16416.84	6373.46	1891.84
29-May-12	5963.5	16438.58	6384.37	1881.81
30-May-12	5886.92	16312.15	6307.15	1912.62
31-May-12	5907.95	16218.53	6271	1913.69
1-Jun-12	5821.63	15965.16	6194.44	1937.58
4-Jun-12	5809.23	15988.4	6180.43	1939.28
5-Jun-12	5828.46	16020.64	6193.22	1923.36
6-Jun-12	5932.3	16454.3	6284.62	1917.12
7-Jun-12	5975.23	16649.05	6313.63	1884.75
8-Jun-12	5988.21	16718.87	6326.14	1887.56
11-Jun-12	5976.48	16668.01	6339.5	1891.47
12-Jun-12	6013.37	16862.8	6357.24	1941.55
13-Jun-12	6000.94	16880.51	6365.3	1961.63
14-Jun-12	5924.59	16677.88	6322.47	1968.74
15-Jun-12	5958.5	16949.83	6351.44	1962.5
18-Jun-12	5895.36	16705.83	6307.09	1986.55
19-Jun-12	5905.48	16859.8	6306.55	1988.87
20-Jun-12	5954.37	16896.63	6356.49	1963.11
21-Jun-12	6002.48	17032.56	6405.08	1994.8
22-Jun-12	6010.21	16972.51	6407.5	1965.01
25-Jun-12	6008.46	16882.16	6422.72	1981.72
26-Jun-12	6030.09	16906.58	6424.05	1989.03
27-Jun-12	6051.5	16967.76	6444.39	2005.87
28-Jun-12	6055.46	16990.76	6458.85	1998.65
29-Jun-12	6153.72	17429.98	6543.75	1986.11
2-Jul-12	6209.24	17398.98	6615.29	1989.85
3-Jul-12	6238.89	17425.71	6667.98	1997.99
4-Jul-12	6292.88	17462.81	6726.55	1999.4
5-Jul-12	6349.26	17538.67	6836.54	2050.43
6-Jul-12	6313.9	17521.12	6822.52	2052.05
9-Jul-12	6238.19	17391.98	6750.33	2057.16
10-Jul-12	6306.68	17618.35	6805.1	2062.65
11-Jul-12	6298.96	17489.14	6789.08	2071.4
12-Jul-12	6261.89	17232.55	6744.53	2067.1
13-Jul-12	6247.89	17213.7	6737.42	2049.49
16-Jul-12	6208.86	17103.31	6696.02	2077.04
17-Jul-12	6158.24	17105.3	6638.1	2063.46
18-Jul-12	6190.76	17185.01	6657.53	2036.49
19-Jul-12	6198.18	17278.85	6682.47	2032.74
20-Jul-12	6184.1	17158.44	6675.35	2021.05
23-Jul-12	6103.25	16877.35	6599.2	2017.74
24-Jul-12	6112.93	16918.08	6608	2026.15

25-Jul-12	6066.29	16846.05	6555.87	2035.79
26-Jul-12	5940.94	16639.82	6420.07	2022.66
27-Jul-12	5887.5	16839.19	6357.6	1988.54
30-Jul-12	5977.84	17143.68	6439.79	1993.7
31-Jul-12	6012.28	17236.18	6447.89	1985.24
1-Aug-12	6069.67	17257.38	6520.3	1960.8
2-Aug-12	6083.56	17224.36	6550.79	1978.83
3-Aug-12	6072.53	17197.93	6545.7	2017.51
6-Aug-12	6104.97	17412.96	6597.21	2027.46
7-Aug-12	6126.27	17601.78	6620.79	2032.73
8-Aug-12	6114.2	17600.56	6595.87	2028.9
9-Aug-12	6098.12	17560.87	6568.63	2023.75
10-Aug-12	6099.61	17557.74	6549.77	2047.46
13-Aug-12	6129.41	17633.45	6579.92	2068.38
14-Aug-12	6147.67	17728.2	6596.4	2068.12
16-Aug-12	6155.02	17657.21	6614.07	2063.34
17-Aug-12	6157.96	17691.08	6615.25	2061.83
21-Aug-12	6172.84	17885.26	6649.68	2073.07
22-Aug-12	6160.16	17846.86	6634.77	2084.9
23-Aug-12	6155	17850.22	6626.53	2077.43
24-Aug-12	6119.21	17783.21	6574.78	2077.91
27-Aug-12	6057.08	17678.81	6511.59	2099.36
28-Aug-12	5994.43	17631.71	6419.06	2094.96
29-Aug-12	5962.21	17490.81	6364.32	2093.74
30-Aug-12	5996	17541.64	6381.27	2084.79
31-Aug-12	6005.02	17429.56	6395.09	2069.84
3-Sep-12	6010.62	17384.4	6397.28	2063.21
4-Sep-12	6042.41	17440.87	6422.53	2045.48
5-Sep-12	6023.53	17313.34	6391.36	2051.89
6-Sep-12	6042.31	17346.27	6406.94	2037.58
7-Sep-12	6111.43	17683.73	6455.7	2031.21
8-Sep-12	6142.74	17749.65	6496.23	2038.91
10-Sep-12	6159.76	17766.78	6541.65	2021.25
11-Sep-12	6176.3	17852.95	6579.68	2026.21
12-Sep-12	6201.59	18000.03	6610.08	2064.24
13-Sep-12	6190.2	18021.16	6593.54	2072.31
14-Sep-12	6244.9	18464.27	6623.12	2082.54
17-Sep-12	6316.02	18542.31	6697.66	2097.26
18-Sep-12	6371.71	18496.01	6746.66	2098.31
20-Sep-12	6330.28	18349.25	6710.97	2151.13
21-Sep-12	6432.43	18752.83	6809.21	2166.25
24-Sep-12	6453.88	18673.34	6866.91	2165.7
25-Sep-12	6483.49	18694.41	6903.15	2149.18
26-Sep-12	6501.14	18632.17	6947.84	2200.34
27-Sep-12	6532.77	18579.5	6958.46	2193.03
28-Sep-12	6607.29	18762.74	7017.89	2194.44
1-Oct-12	6665.85	18823.91	7117.36	2188.93
3-Oct-12	6704.36	18869.69	7186.01	2184.68
4-Oct-12	6731.89	19058.15	7210.87	2206.6
5-Oct-12	6678.77	18938.46	7145.71	2213.54

8-Oct-12	6649.38	18708.98	7134.07	2220.13
9-Oct-12	6680.8	18793.36	7157.38	2242.29
10-Oct-12	6594.71	18631.1	7048.17	2227.74
11-Oct-12	6671.27	18804.75	7107.66	2200.96
12-Oct-12	6676.85	18675.18	7109.73	2210.86
15-Oct-12	6681.07	18713.55	7140.25	2191.24
16-Oct-12	6633.01	18577.7	7111.01	2213.97
17-Oct-12	6630.03	18610.77	7132.34	2201.54
18-Oct-12	6706.82	18791.93	7193.89	2204.58
19-Oct-12	6671.62	18682.31	7169.75	2188.92
22-Oct-12	6664.75	18793.44	7191.65	2192.23
23-Oct-12	6649.09	18710.02	7173.49	2215.33
25-Oct-12	6659.2	18758.63	7161.41	2201.92
26-Oct-12	6603.15	18625.34	7086.24	2214.14
29-Oct-12	6574.77	18635.82	7043.62	2204.21
30-Oct-12	6508.64	18430.85	6954.74	2209.98
31-Oct-12	6565.99	18505.38	6989.17	2192.88
1-Nov-12	6621.8	18561.7	7041.47	2193.7
2-Nov-12	6645.45	18755.45	7064.38	2167.29
5-Nov-12	6628.44	18762.87	7057.09	2176.65
6-Nov-12	6665.32	18817.38	7082.13	2186.34
7-Nov-12	6718.23	18902.41	7133.83	2208.06
8-Nov-12	6726.95	18846.26	7119.02	2209.17
9-Nov-12	6660.68	18683.68	7069.65	2217.68
12-Nov-12	6682.29	18670.34	7084.03	2229.63
13-Nov-12	6729.3	18618.87	7172.15	2223.24
15-Nov-12	6718.1	18471.37	7191.99	2204.04
16-Nov-12	6658.33	18309.37	7110.75	2203.52
19-Nov-12	6598.99	18339	7050.54	2196.75
20-Nov-12	6548.63	18329.32	6988.46	2182.49
21-Nov-12	6572.67	18460.38	7015.48	2160.93
22-Nov-12	6593.77	18517.34	7042.95	2160.68
23-Nov-12	6597.42	18506.57	7057.11	2157.41
26-Nov-12	6663.34	18537.01	7117.4	2172.95
27-Nov-12	6741.84	18842.08	7183.47	2180.03
29-Nov-12	6827.02	19170.91	7216.12	2178.6
30-Nov-12	6901.99	19339.9	7275.65	2183.17
3-Dec-12	6985.48	19305.32	7338.13	2217.1
4-Dec-12	6992.27	19348.12	7381.73	2254.68
5-Dec-12	7024.71	19391.86	7419.82	2276.84
6-Dec-12	7075.92	19486.8	7453.77	2275.25
7-Dec-12	7070.37	19424.1	7445.98	2280.84
10-Dec-12	7116.6	19409.69	7470.08	2286.54
11-Dec-12	7034.9	19387.14	7402.1	2299.5
12-Dec-12	7039.07	19355.26	7420.17	2290.04
13-Dec-12	6957.53	19229.26	7348.17	2288.58
14-Dec-12	6999.05	19317.25	7353.72	2285.98
17-Dec-12	7040.47	19244.42	7387.33	2281.98
18-Dec-12	7077.37	19364.75	7431.17	2266.81
19-Dec-12	7116.56	19476	7463.51	2278.99

20-Dec-12	7101.79	19453.92	7434.86	2273.53
21-Dec-12	6997.72	19242	7325.51	2288.14
24-Dec-12	7022.91	19255.09	7348.99	2302.52
26-Dec-12	7069.09	19417.46	7375.8	2296.51
27-Dec-12	7037.09	19323.8	7321.67	2269.37
28-Dec-12	7092.94	19444.84	7342.2	2271.63
31-Dec-12	7112.89	19426.71	7379.94	2289.99
1-Jan-13	7197.58	19580.81	7452.88	2280.01
2-Jan-13	7238	19714.24	7519.83	2293.47
3-Jan-13	7293.85	19764.78	7589.41	2293.64
4-Jan-13	7314.12	19784.08	7615.6	2311.85
7-Jan-13	7331.5	19691.42	7657.34	2328.73
8-Jan-13	7336.11	19742.52	7634.8	2335.21
9-Jan-13	7301.23	19666.59	7615.98	2338.16
10-Jan-13	7265.41	19663.55	7574.51	2329.22
11-Jan-13	7156.88	19663.64	7454.76	2332.86
14-Jan-13	7243.06	19906.41	7509.65	2322.41
15-Jan-13	7262.44	19986.82	7504.83	2320.59
16-Jan-13	7164.68	19817.63	7411.71	2312.98
17-Jan-13	7182.25	19964.03	7409.18	2341.89
18-Jan-13	7165.46	20039.04	7370.34	2353.34
21-Jan-13	7155.39	20101.82	7371.65	2332.6
22-Jan-13	7090.05	19981.57	7312.28	2349.66
23-Jan-13	7025.31	20026.61	7246.78	2359.18
24-Jan-13	6848.68	19923.78	7069.84	2367.56
25-Jan-13	6974.23	20103.53	7142.71	2353.3
28-Jan-13	6975.84	20103.35	7162.05	2353.19
29-Jan-13	6935.93	19990.9	7096.94	2335.93
30-Jan-13	6933.78	20005	7081.73	2359.54
31-Jan-13	6970.88	19894.98	7074.07	2360.37
1-Feb-13	6967.5	19781.19	7056.48	2349.48
4-Feb-13	6909.58	19751.19	7006.73	2352.93
5-Feb-13	6863.7	19659.82	6935.67	2347.16
6-Feb-13	6865.3	19639.72	6952.46	2333.58
7-Feb-13	6805.07	19580.32	6859.1	2325.98
8-Feb-13	6756.01	19484.77	6794.14	2315.93
11-Feb-13	6743.99	19460.57	6773.11	2317.09
12-Feb-13	6722.9	19561.04	6738.77	2308.58
13-Feb-13	6704.09	19608.08	6707.53	2293.75
14-Feb-13	6608.41	19497.18	6583.07	2291.37
15-Feb-13	6626.86	19468.15	6540.92	2300.52
18-Feb-13	6654.67	19501.08	6587.48	2303.25
19-Feb-13	6729.07	19635.72	6649.73	2287.56
20-Feb-13	6717.81	19642.75	6673.72	2285.11
21-Feb-13	6607.44	19325.36	6557.61	2289.22
22-Feb-13	6609.03	19317.01	6564.76	2307.41
25-Feb-13	6529.53	19331.69	6475.65	2308.78
26-Feb-13	6414.32	19015.14	6318.36	2271.15
27-Feb-13	6461.73	19152.41	6331.05	2272.64
28-Feb-13	6302.78	18861.54	6206.22	2271.92

1-Mar-13	6320.95	18918.52	6195.32	2236.46
4-Mar-13	6234.35	18877.96	6078.12	2252.86
5-Mar-13	6337.72	19143.17	6145.89	2213.92
6-Mar-13	6410.07	19252.61	6238.02	2218.26
7-Mar-13	6440.81	19413.54	6290.76	2208.48
8-Mar-13	6487.15	19683.23	6333.78	2243.49
11-Mar-13	6501.5	19646.21	6351.34	2258.3
12-Mar-13	6460.31	19564.92	6317.65	2275.44
13-Mar-13	6395.63	19362.55	6237.64	2306.46
14-Mar-13	6426.02	19570.44	6231.76	2303.8
15-Mar-13	6386.13	19427.56	6179.53	2293.65
18-Mar-13	6367.78	19293.2	6137.85	2268.47
19-Mar-13	6280.68	19008.1	6041.78	2293.04
20-Mar-13	6161.6	18884.19	5901.6	2278.17
21-Mar-13	6095.84	18792.87	5829.1	2260.43
22-Mar-13	6079.79	18735.6	5772.93	2224.41
25-Mar-13	6060.15	18681.42	5726.91	2205.46
26-Mar-13	6053.5	18704.53	5729.03	2189.42
28-Mar-13	6142.06	18835.77	5804.65	2184.84
1-Apr-13	6220.75	18864.75	5938.17	2178.65
2-Apr-13	6309.84	19040.95	6073.78	2180.01
3-Apr-13	6258.56	18801.64	6048.75	2198.38
4-Apr-13	6143.27	18509.7	5923.07	2204.08
5-Apr-13	6144.36	18450.23	5914.39	2224.61
8-Apr-13	6133.17	18437.78	5906.74	2196.82
9-Apr-13	6071.99	18226.48	5856.92	2159.85
10-Apr-13	6104.13	18414.45	5857.63	2153.26
11-Apr-13	6107.92	18542.2	5894.84	2150.53
12-Apr-13	6099.64	18242.56	5872.11	2128.59
15-Apr-13	6108.65	18357.8	5897.52	2152.97
16-Apr-13	6161.39	18744.93	5922.71	2165.27
17-Apr-13	6172.3	18731.16	5940.3	2141.9
18-Apr-13	6218.15	19016.46	5975.59	2155.55
22-Apr-13	6307.43	19169.83	6029.5	2200.7
23-Apr-13	6283.69	19179.36	6051.9	2199.63
25-Apr-13	6315.29	19406.85	6057.17	2231.93
26-Apr-13	6275.12	19286.72	6023.86	2249.75
29-Apr-13	6317.59	19387.5	6040.18	2251.29
30-Apr-13	6344.04	19504.18	6021.16	2278.98
2-May-13	6392.67	19735.77	6055.73	2262.93
3-May-13	6375.97	19575.64	6032.38	2276.43
6-May-13	6450.71	19673.64	6090.16	2288.62
7-May-13	6504.85	19888.95	6126.49	2315.35
8-May-13	6535.37	19990.18	6155.4	2296.22
9-May-13	6506.87	19939.04	6152.7	2306.4
10-May-13	6519.29	20082.62	6166.34	2331.44
11-May-13	6539.54	20122.32	6186.46	2340.34
13-May-13	6444.69	19691.67	6114.25	2333.67
14-May-13	6462.31	19722.29	6116.67	2348.17
15-May-13	6564.46	20212.96	6176.89	2305.18

16-May-13	6592.21	20247.33	6190.94	2310.54
17-May-13	6613.98	20286.12	6199.19	2366.28
20-May-13	6587.97	20223.98	6186.65	2374.37
21-May-13	6547.32	20111.61	6159.83	2382.65
22-May-13	6492.77	20062.24	6109.07	2375.02
23-May-13	6363.82	19674.33	5974.45	2359.86
24-May-13	6387.13	19704.33	5992.46	2350.77
27-May-13	6459.86	20030.77	6039.78	2303.03
28-May-13	6498.66	20160.82	6068.62	2309.06
29-May-13	6473.28	20147.64	6058.72	2345.27
30-May-13	6475.92	20215.4	6037.43	2357.29
31-May-13	6389.47	19760.3	5943.46	2352.48
3-Jun-13	6405.9	19610.48	5936.06	2359.21
4-Jun-13	6412.43	19545.78	5952.22	2307.97
5-Jun-13	6416.51	19568.22	5959.49	2290.96
6-Jun-13	6423.7	19519.49	5968.12	2283.46
7-Jun-13	6388.02	19429.23	5962.31	2285.36
10-Jun-13	6331.85	19441.07	5915.24	2283.67
11-Jun-13	6230.49	19143	5807.46	2269.22
12-Jun-13	6193.41	19041.13	5775.07	2267.27
13-Jun-13	6108.46	18827.16	5713.73	2232.9
14-Jun-13	6180.98	19177.93	5772.45	2221.1
17-Jun-13	6201.25	19325.87	5795.22	2194.21
18-Jun-13	6203.09	19223.28	5809.53	2235.24
19-Jun-13	6235.79	19245.7	5838.77	2251.28
20-Jun-13	6115.66	18719.29	5738.07	2241.25
21-Jun-13	6037.6	18774.24	5717.3	2245.02
24-Jun-13	5883.19	18540.89	5593.63	2183.2
25-Jun-13	5856.61	18629.15	5570.25	2186.38
26-Jun-13	5817.2	18552.12	5549.67	2153.99
27-Jun-13	5832.58	18875.95	5567.25	2162.5
28-Jun-13	5964.5	19395.81	5643.52	2153.8
1-Jul-13	6072.55	19577.39	5753.44	2190.69
2-Jul-13	6050.08	19463.82	5747.95	2248.53
3-Jul-13	5947.75	19177.76	5665.4	2274
4-Jul-13	5981.07	19410.84	5677.08	2261.65
5-Jul-13	5991.99	19495.82	5692.05	2223.26
8-Jul-13	5988.69	19324.77	5670.28	2246.82
9-Jul-13	6032.43	19439.48	5712.08	2257.64
10-Jul-13	6008.07	19294.12	5710.02	2239.95
11-Jul-13	6048.54	19676.06	5747.84	2255.12
12-Jul-13	6048.41	19958.47	5737.16	2239.97
15-Jul-13	6102.81	20034.48	5782.86	2282.69
16-Jul-13	6014.41	19851.23	5737.39	2311.51
17-Jul-13	5984.46	19948.73	5725.02	2324.45
18-Jul-13	6028.58	20128.41	5738.71	2299.59
19-Jul-13	5993.46	20149.85	5706.48	2306.13
22-Jul-13	5995.99	20159.12	5688.21	2328.25
23-Jul-13	5999.29	20302.13	5682.48	2327.09
24-Jul-13	5889.83	20090.68	5601.87	2325.98

25-Jul-13	5837.42	19804.76	5562.19	2342.25
26-Jul-13	5779.6	19748.19	5516.32	2312.87
29-Jul-13	5703.83	19593.28	5468.92	2281.13
30-Jul-13	5591.94	19348.34	5360.56	2273.4
31-Jul-13	5543.13	19345.7	5311.06	2252.58
1-Aug-13	5450.6	19317.19	5247.08	2221.94
2-Aug-13	5429.04	19164.02	5178.03	2219.9
5-Aug-13	5443.56	19182.26	5193.61	2212.01
6-Aug-13	5301.78	18733.04	5101.24	2189.96
7-Aug-13	5337.47	18664.88	5165.97	2193.51
8-Aug-13	5409.14	18789.34	5234.25	2140.46
12-Aug-13	5492.25	18946.98	5315.98	2135.22
13-Aug-13	5554.03	19229.84	5369.42	2152.52
14-Aug-13	5590.79	19367.59	5385.49	2171.88
16-Aug-13	5439.05	18598.18	5269.44	2204.65
19-Aug-13	5362.79	18307.52	5211.48	2221.39
20-Aug-13	5340.23	18246.04	5223.2	2132.99
21-Aug-13	5274.03	17905.91	5181.12	2099.24
22-Aug-13	5310.17	18312.94	5208.86	2095.13
23-Aug-13	5358.75	18519.44	5247.51	2055.54
26-Aug-13	5390.78	18558.13	5289.45	2100.44
27-Aug-13	5278.28	17968.08	5199.66	2121.11
28-Aug-13	5224.13	17996.15	5145.47	2124.55
29-Aug-13	5300.72	18401.04	5180.73	2054.62
30-Aug-13	5300.4	18619.72	5191.25	2053.3
2-Sep-13	5375.72	18886.13	5243.79	2099.05
3-Sep-13	5275.98	18234.66	5193.94	2122.03
4-Sep-13	5329.9	18567.55	5230.96	2150.53
5-Sep-13	5420.23	18979.76	5310.31	2075.93
6-Sep-13	5451.01	19270.06	5343.81	2114.19
10-Sep-13	5525.51	19997.09	5402.81	2164.92
11-Sep-13	5599.29	19997.45	5462.77	2198.86
12-Sep-13	5596.98	19781.88	5476.54	2279.26
13-Sep-13	5629.15	19732.76	5509.42	2286.23
16-Sep-13	5598.69	19742.47	5477.71	2260.82
17-Sep-13	5575.99	19804.03	5473.2	2261.13
18-Sep-13	5601.25	19962.16	5477.47	2259.97
19-Sep-13	5724.85	20646.64	5541.25	2265.93
20-Sep-13	5677.24	20263.71	5485.3	2283.58
23-Sep-13	5605.06	19900.96	5453.36	2364.9
24-Sep-13	5609.63	19920.21	5452.51	2327.24
25-Sep-13	5616.13	19856.24	5448.64	2283.79
26-Sep-13	5627.58	19893.85	5479.62	2284.26
27-Sep-13	5621.77	19727.27	5496.88	2276.67
30-Sep-13	5605.98	19379.77	5466.24	2279.38
1-Oct-13	5637.7	19517.15	5492.13	2263.81
3-Oct-13	5715.72	19902.07	5538.61	2227.07
4-Oct-13	5731.01	19915.95	5565.54	2242.26
7-Oct-13	5756.91	19895.1	5591.79	2288.45
8-Oct-13	5768.05	19983.61	5621.34	2288.51

9-Oct-13	5816.72	20249.26	5651.71	2286.77
10-Oct-13	5851.3	20272.91	5691.51	2296.35
11-Oct-13	5870.6	20528.59	5718.33	2327.7
14-Oct-13	5906.81	20607.54	5747.69	2331.71
15-Oct-13	5829.99	20547.62	5693.21	2358.39
17-Oct-13	5837.29	20415.51	5699.98	2366.54
18-Oct-13	5895.23	20882.89	5737.88	2357.83
21-Oct-13	5946.16	20893.89	5810.83	2343.09
22-Oct-13	5987.79	20864.97	5871.38	2394.37
23-Oct-13	5986	20767.88	5855.97	2400.9
24-Oct-13	5995.83	20725.43	5853.1	2401.15
25-Oct-13	5965.48	20683.52	5825.75	2390.48
28-Oct-13	5920.07	20570.28	5797.28	2384.18
29-Oct-13	6005.77	20929.01	5827.47	2374.02
30-Oct-13	6021.01	21033.97	5864.79	2359.11
31-Oct-13	6107.35	21164.52	5896.11	2403.75
1-Nov-13	6177.4	21196.81	5939.6	2414.65
3-Nov-13	6242.56	21239.36	6020.79	2431.04
5-Nov-13	6297.94	20974.79	6053.56	2437.79
6-Nov-13	6287.5	20894.94	6099.74	2418.19
7-Nov-13	6220.47	20822.77	6030.12	2406.77
8-Nov-13	6210.94	20666.15	6013.09	2393.84
11-Nov-13	6160.97	20490.96	5976.24	2377.42
12-Nov-13	6113.14	20281.91	5930.58	2353.59
13-Nov-13	6076.79	20194.4	5891.97	2329.44
14-Nov-13	6141.05	20399.42	5956.17	2321.01
18-Nov-13	6213.36	20850.74	6013.3	2347.08
19-Nov-13	6241.96	20890.82	6032.67	2397.49
20-Nov-13	6235.71	20635.13	6046.34	2402.3
21-Nov-13	6162.01	20229.05	5991.2	2373.75
22-Nov-13	6154.28	20217.39	5994.11	2326.48
25-Nov-13	6223.8	20605.08	6052.45	2325.82
26-Nov-13	6207.69	20425.02	6002.22	2371.59
27-Nov-13	6223.1	20420.26	5993.87	2350.06
28-Nov-13	6273.45	20534.91	6048.96	2350.62
29-Nov-13	6325.58	20791.93	6099.52	2363.28
2-Dec-13	6377.12	20898.01	6166.16	2393.96
3-Dec-13	6391.52	20854.92	6182.81	2408.05
4-Dec-13	6349.55	20708.71	6178.86	2403.7
5-Dec-13	6357.73	20957.81	6203	2387.55
6-Dec-13	6388.98	20996.53	6225.77	2417.01
9-Dec-13	6419.57	21326.42	6250.03	2424.52
10-Dec-13	6402.77	21255.26	6205.11	2460.24
11-Dec-13	6396.43	21171.41	6209.86	2449.8
12-Dec-13	6382.96	20925.61	6189.9	2438.57
13-Dec-13	6302.5	20715.58	6131.12	2411.08
16-Dec-13	6321.14	20659.52	6152.91	2384.81
17-Dec-13	6318.97	20612.14	6150.65	2378.71
18-Dec-13	6404.17	20859.86	6220.03	2373.99
19-Dec-13	6391.62	20708.62	6212.29	2403.77

20-Dec-13	6502.49	21079.72	6291.96	2385.72
23-Dec-13	6584.11	21101.03	6367.46	2427.61
24-Dec-13	6619.19	21032.71	6433.61	2432.96
26-Dec-13	6646.27	21074.59	6507.67	2426.64
27-Dec-13	6663.76	21193.58	6516.08	2431.42
30-Dec-13	6657.31	21143.01	6530.2	2443.88
31-Dec-13	6705.56	21170.68	6551.13	2436.08
1-Jan-14	6737.16	21140.48	6649.16	2440.75
2-Jan-14	6617.76	20888.33	6514.24	2440.05
3-Jan-14	6659.18	20851.33	6553	2407.09
6-Jan-14	6682.78	20787.3	6615.03	2404.03
7-Jan-14	6657.63	20693.24	6639.11	2396.53
8-Jan-14	6696.6	20729.38	6658.46	2383.92
9-Jan-14	6643.7	20713.37	6611.03	2389.84
10-Jan-14	6581.22	20758.49	6569.79	2385.24
13-Jan-14	6590.88	21134.21	6594.32	2387.33
14-Jan-14	6569.99	21032.88	6581.22	2426.56
15-Jan-14	6581.7	21289.49	6600.88	2415.42
16-Jan-14	6574.09	21265.18	6583.95	2443.22
17-Jan-14	6487.03	21063.62	6476.76	2440.98
20-Jan-14	6552.89	21205.05	6527.77	2417.37
21-Jan-14	6582.56	21251.12	6553.01	2432.75
22-Jan-14	6595.75	21337.67	6571.11	2436.04
23-Jan-14	6564.27	21373.66	6563.03	2444.67
24-Jan-14	6455.26	21133.56	6444.46	2447.38
27-Jan-14	6273.44	20707.45	6274.4	2419.19
28-Jan-14	6273.12	20683.51	6290.13	2369.38
29-Jan-14	6282.5	20647.3	6273.95	2365.46
30-Jan-14	6211.37	20498.25	6181.8	2364.43
31-Jan-14	6308.05	20513.85	6263.35	2346.7
3-Feb-14	6257.47	20209.26	6233.74	2354.23
4-Feb-14	6281.98	20211.93	6245.72	2320.84
5-Feb-14	6310.66	20261.03	6305.42	2321.99
6-Feb-14	6299.59	20310.74	6309.01	2328
7-Feb-14	6336.84	20376.56	6328.76	2335.23
10-Feb-14	6339.94	20334.27	6339.88	2343.14
11-Feb-14	6357.57	20363.37	6346.53	2338.05
12-Feb-14	6357.75	20448.49	6349.09	2342.56
13-Feb-14	6304.78	20193.35	6282.49	2350.67
14-Feb-14	6311.88	20366.82	6279.69	2319.34
17-Feb-14	6300.67	20464.06	6280.6	2337.22
18-Feb-14	6345.46	20634.21	6330.72	2346.28
19-Feb-14	6376.94	20722.97	6372.2	2366.1
20-Feb-14	6377.02	20536.64	6361.85	2376.5
21-Feb-14	6422.05	20700.75	6393.33	2354.9
24-Feb-14	6441.6	20811.44	6415.63	2376.28
25-Feb-14	6462.32	20852.47	6421.7	2388.17
26-Feb-14	6469.03	20986.99	6436.27	2393.62
28-Feb-14	6500.42	21120.12	6445.04	2407.92
3-Mar-14	6480.74	20946.65	6449.16	2422.96

4-Mar-14	6565.59	21209.73	6515.79	2402.67
5-Mar-14	6627.51	21276.86	6546.44	2432.29
6-Mar-14	6708	21513.87	6626.46	2441.87
7-Mar-14	6693.44	21919.79	6612.45	2472.03
10-Mar-14	6722.74	21934.83	6663.1	2518.8
11-Mar-14	6703.41	21826.42	6664.69	2523.81
12-Mar-14	6708.22	21856.22	6665.13	2513.63
13-Mar-14	6671.54	21774.61	6650.19	2514.8
14-Mar-14	6656.18	21809.8	6627.68	2507.06
18-Mar-14	6719.37	21832.61	6691.68	2510.66
19-Mar-14	6739.58	21832.86	6722.35	2515.09
20-Mar-14	6715.3	21740.09	6726.67	2517.92
21-Mar-14	6769.94	21753.75	6785.11	2503.85
22-Mar-14	6792.15	21755.32	6831.99	2506.04
24-Mar-14	6800.92	22055.48	6841.91	2539.86
25-Mar-14	6842.16	22055.21	6853.11	2542.6
26-Mar-14	6868.07	22095.3	6848.39	2548.29
27-Mar-14	6909.67	22214.37	6916.5	2564.9
28-Mar-14	7010.29	22339.97	6999.06	2587.41
31-Mar-14	7082.86	22386.27	7071.96	2594.75
1-Apr-14	7086	22446.44	7106.72	2599.6
2-Apr-14	7198.92	22551.49	7220.36	2613.07
3-Apr-14	7170.75	22509.07	7207.45	2607.49
4-Apr-14	7197.62	22359.5	7265.05	2591.52
7-Apr-14	7165.36	22343.45	7281.07	2592.74
9-Apr-14	7285.39	22702.34	7427.35	2632.58
10-Apr-14	7331.28	22715.33	7473.88	2638.57
11-Apr-14	7338.46	22628.96	7523.18	2629.54
15-Apr-14	7311.99	22484.93	7501.5	2609.99
16-Apr-14	7232.76	22277.23	7418.22	2586.18
17-Apr-14	7339.29	22628.84	7524.01	2626.77
21-Apr-14	7397.41	22764.83	7627.97	2642.62
22-Apr-14	7386.17	22758.37	7629.1	2641.45
23-Apr-14	7395.06	22876.54	7646.1	2650.84
25-Apr-14	7373.64	22688.07	7597.34	2627.54
28-Apr-14	7438.49	22631.61	7617.28	2620.05
29-Apr-14	7406.12	22466.19	7615.66	2601.69
30-Apr-14	7323.46	22417.8	7489.87	2591.42
2-May-14	7357.46	22403.89	7532.81	2590.76
5-May-14	7348.06	22445.12	7498.09	2593.04
6-May-14	7370.69	22508.42	7532.83	2599.45
7-May-14	7360.08	22323.9	7526.99	2577.92
8-May-14	7347.98	22344.04	7539.64	2579.6
9-May-14	7456.09	22994.23	7593.68	2655.91
12-May-14	7510.73	23551	7632.29	2717.06
13-May-14	7618.62	23871.23	7762.92	2758.41
14-May-14	7704.1	23815.12	7859.03	2761.2
15-May-14	7640.1	23905.6	7791.12	2766.48
16-May-14	7765.72	24121.74	7885.76	2801.73
19-May-14	8091.27	24363.05	8344.7	2837.07

20-May-14	8232.4	24376.88	8600.33	2839.28
21-May-14	8342.36	24298.02	8758.28	2829.93
22-May-14	8518.22	24374.4	8960.7	2839.66
23-May-14	8668.32	24693.35	9128.04	2879.14
26-May-14	8485.06	24716.88	8923.65	2874.29
27-May-14	8429.2	24549.51	8883.65	2853.97
28-May-14	8463.09	24556.09	9028.82	2859.87
29-May-14	8434.4	24234.15	8985.37	2822.06
30-May-14	8467.22	24217.34	9015.73	2820.2
2-Jun-14	8650.52	24684.85	9196.92	2874.32
3-Jun-14	8705.06	24858.59	9305.87	2895.42
4-Jun-14	8865.94	24805.83	9488.71	2892.77
5-Jun-14	8955.91	25019.51	9623.92	2921.53
6-Jun-14	9098.54	25396.46	9774.04	2966.38
9-Jun-14	9237.15	25580.21	9991.05	2997.69
10-Jun-14	9211.85	25583.69	10017.44	2994.95
11-Jun-14	9118.89	25473.89	9950.03	2978.18
12-Jun-14	9166.31	25576.21	9985.48	2989.65
13-Jun-14	8935.93	25228.17	9674.58	2942.25
16-Jun-14	8966.88	25190.48	9704.39	2941.24
17-Jun-14	9101.47	25521.19	9901.56	2982.27
18-Jun-14	9035.25	25246.25	9873.64	2952.51
19-Jun-14	8997.35	25201.8	9842.98	2942.88
20-Jun-14	8961.96	25105.51	9761.22	2931.07
23-Jun-14	9018.07	25031.32	9816.35	2923.72
24-Jun-14	9161.18	25368.9	9977.71	2961.63
25-Jun-14	9208.66	25313.74	10012.79	2955.81
26-Jun-14	9180.84	25062.67	9981.38	2926.58
27-Jun-14	9205.17	25099.92	10022.29	2932.7
30-Jun-14	9378.95	25413.78	10203.19	2972.69
1-Jul-14	9433.74	25516.35	10321.63	2983.75
2-Jul-14	9506.9	25841.21	10434.18	3021.47
3-Jul-14	9490.58	25823.75	10419.38	3016.41
4-Jul-14	9545.75	25962.06	10508.03	3030.71
7-Jul-14	9557.14	26100.08	10570.78	3044.78
8-Jul-14	9210.21	25582.11	10128.01	2975.21
9-Jul-14	9077.36	25444.81	9944.15	2959.26
10-Jul-14	9132.18	25372.75	10019.97	2957.42
11-Jul-14	8875.24	25024.35	9688.11	2908.55
14-Jul-14	8873.7	25006.98	9642.46	2909.55
15-Jul-14	9044.92	25228.65	9856	2938.87
16-Jul-14	9165.92	25549.72	10057.37	2976.39
17-Jul-14	9291.69	25561.16	10193.12	2983.93
18-Jul-14	9252.8	25641.56	10180.84	2989.54
21-Jul-14	9300.42	25715.17	10269.59	2996.08
22-Jul-14	9311.09	26025.8	10268.76	3029.03
23-Jul-14	9311.72	26147.33	10204.18	3037.94
24-Jul-14	9293.46	26271.85	10229.33	3050.72
25-Jul-14	9178.21	26126.75	10037.17	3030.47
28-Jul-14	9139.22	25991.23	9966.64	3016.47

30-Jul-14	9171.51	26087.42	9964.93	3033.93
31-Jul-14	9188.19	25894.97	9989.42	3009.35
1-Aug-14	9114.33	25480.84	9890.97	2966.51
4-Aug-14	9196.81	25723.16	9999.75	2997.78
5-Aug-14	9272.54	25908.01	10111.27	3020.87
6-Aug-14	9201.24	25665.27	10096.28	2992.98
7-Aug-14	9150.74	25589.01	10043.21	2985.2
8-Aug-14	8962.18	25329.14	9828.3	2951.08
11-Aug-14	9012.05	25519.24	9902.67	2973.79
12-Aug-14	9055.95	25880.77	9947.06	3014.16
13-Aug-14	8900.75	25918.95	9711.31	3014.43
14-Aug-14	9007.85	26103.23	9824.06	3037.32
18-Aug-14	9170.34	26390.96	10047.47	3072.66
19-Aug-14	9270.86	26420.67	10168.8	3082.26
20-Aug-14	9276.34	26314.29	10263.51	3074.12
21-Aug-14	9320.55	26360.11	10298.5	3079.18
22-Aug-14	9340.87	26419.55	10298.52	3086.11
25-Aug-14	9281.1	26437.02	10255.38	3081.54
26-Aug-14	9258.82	26442.81	10173.38	3078.55
27-Aug-14	9326.59	26560.15	10253.87	3089.92
28-Aug-14	9298.9	26638.11	10264.45	3097.29
1-Sep-14	9444.59	26867.55	10397.59	3129.37
2-Sep-14	9523.77	27019.39	10492.42	3147.96
3-Sep-14	9604.87	27139.94	10533.72	3159.65
4-Sep-14	9615.07	27085.93	10495.46	3150.69
5-Sep-14	9668.76	27026.7	10627.07	3147.72
8-Sep-14	9793.67	27319.85	10851.83	3183.74
9-Sep-14	9843.37	27265.32	10885.98	3178.55
10-Sep-14	9850.79	27057.41	10951.03	3154.5
11-Sep-14	9963.51	26995.87	11110.92	3151.54
12-Sep-14	9983.08	27061.04	11166.79	3157.15
15-Sep-14	10000.86	26816.56	11245.52	3132.45
16-Sep-14	9659.31	26492.51	10796.31	3087.07
17-Sep-14	9683.92	26631.29	10829.84	3101.42
18-Sep-14	9861.22	27112.21	11121.16	3158.04
19-Sep-14	9865.26	27090.42	11191.18	3154.6
22-Sep-14	9884.82	27206.74	11248.69	3163.68
23-Sep-14	9696.15	26775.69	10969.3	3113.94
24-Sep-14	9580.83	26744.69	10791.44	3107.86
25-Sep-14	9350.72	26468.36	10444.79	3072.55
26-Sep-14	9421.4	26626.32	10510.99	3095.22
29-Sep-14	9516.78	26597.11	10667.67	3090.65
30-Sep-14	9530.35	26630.51	10681.46	3092.77
1-Oct-14	9511.4	26567.99	10641.82	3085.13
7-Oct-14	9425.39	26271.97	10557.96	3049.2
8-Oct-14	9403.83	26246.79	10564.14	3045.39
9-Oct-14	9576.38	26637.28	10731.69	3089.18
10-Oct-14	9444.41	26297.38	10611	3049.4
13-Oct-14	9489.76	26384.07	10646.47	3059.49
14-Oct-14	9473.08	26349.33	10631.25	3051.14

16-Oct-14	9243.95	25999.34	10343.09	3004.06
17-Oct-14	9272.49	26108.53	10313.97	3014.13
20-Oct-14	9376.08	26429.85	10363.45	3054.84
21-Oct-14	9461.81	26575.65	10382.72	3074.23
22-Oct-14	9575.83	26787.23	10504.15	3100.92
23-Oct-14	9673.03	26851.05	10662.65	3110.03
27-Oct-14	9592.09	26752.9	10642.69	3097.85
28-Oct-14	9600.4	26880.82	10724.06	3110.13
29-Oct-14	9650.29	27098.17	10790.46	3134.99
30-Oct-14	9714.43	27346.33	10827.46	3163.89
31-Oct-14	9834.6	27865.83	10930.95	3223.4
3-Nov-14	9941.4	27860.38	11077.12	3225.55
5-Nov-14	9964.61	27915.88	11160.98	3228.55
7-Nov-14	9999.69	27868.63	11117.17	3227.94
10-Nov-14	10013.27	27874.73	11134.81	3228.33
11-Nov-14	10085.65	27910.06	11161.95	3234.65
12-Nov-14	10133.27	28008.9	11184.35	3243.53
13-Nov-14	10102.17	27940.64	11159.54	3232.78
14-Nov-14	10154.81	28046.66	11217.39	3246.23
17-Nov-14	10247.7	28177.88	11337.96	3263.78
18-Nov-14	10275.3	28163.29	11443.16	3264.39
19-Nov-14	10210.6	28032.85	11368.55	3246.18
20-Nov-14	10203.73	28067.56	11336.73	3255.25
21-Nov-14	10195.79	28334.63	11325.84	3283.58
24-Nov-14	10202.97	28499.54	11318.83	3300.31
25-Nov-14	10057.41	28338.05	11055.96	3273.65
26-Nov-14	10119.95	28386.19	11180.24	3280.23
27-Nov-14	10171.92	28438.91	11241.65	3286.8
28-Nov-14	10270.61	28693.99	11270.79	3321.05
1-Dec-14	10262.9	28559.62	11189.7	3308.25
2-Dec-14	10356.11	28444.01	11251.21	3296.67
3-Dec-14	10499.86	28442.71	11435.88	3301.43
4-Dec-14	10525.82	28562.82	11471.25	3312.51
5-Dec-14	10498.29	28458.1	11474.69	3302
8-Dec-14	10369.84	28119.4	11374.63	3263.79
9-Dec-14	10206.53	27797.01	11194.12	3224.43
10-Dec-14	10301.35	27831.1	11312.54	3231.55
11-Dec-14	10239.7	27602.01	11236.53	3207.41
12-Dec-14	10108.6	27350.68	11068.48	3181.64
15-Dec-14	10062.58	27319.56	10997.91	3176.15
16-Dec-14	9764.69	26781.44	10628.62	3117.49
17-Dec-14	9706.45	26710.13	10516.12	3103.73
18-Dec-14	9964.67	27126.57	10860.76	3155.93
19-Dec-14	10000.41	27371.84	10922.21	3179.66
22-Dec-14	10092.16	27701.79	10960.24	3215.88
23-Dec-14	10059.29	27506.46	10890.44	3194.21
24-Dec-14	10074.52	27208.61	10892.93	3162.31
26-Dec-14	10115.85	27241.78	10894.89	3168.78
29-Dec-14	10203.64	27395.73	10952.38	3188.49
30-Dec-14	10258.64	27403.54	10971.1	3192.1

31-Dec-14	10372.58	27499.42	11087.07	3204.91
1-Jan-15	10440.17	27507.54	11225.22	3207.56
2-Jan-15	10530.2	27887.9	11308.15	3248.41
5-Jan-15	10547.17	27842.32	11320.21	3242.04
6-Jan-15	10235.74	26987.46	10986.22	3146.64
7-Jan-15	10234.55	26908.82	10988.99	3138.51
8-Jan-15	10420.63	27274.71	11185.88	3189.03
9-Jan-15	10426.01	27458.38	11198.34	3206.76
12-Jan-15	10486.18	27585.27	11291.5	3223.18
13-Jan-15	10492.77	27425.73	11251.51	3212.35
14-Jan-15	10471.91	27346.82	11201.08	3207.67
15-Jan-15	10598.69	28075.55	11314.1	3286.17
16-Jan-15	10633.11	28121.89	11309.93	3293.65
19-Jan-15	10681.02	28262.01	11399.86	3311.38
20-Jan-15	10727.81	28784.67	11446.27	3363.68
21-Jan-15	10702.24	28888.86	11422.88	3376.28
22-Jan-15	10710.24	29006.02	11449.5	3390.6
23-Jan-15	10695.67	29278.84	11366.09	3421.44
27-Jan-15	10780.47	29571.04	11424.48	3452.62
28-Jan-15	10808.44	29559.18	11369.11	3453.35
29-Jan-15	10771.08	29681.77	11378.75	3464.9
30-Jan-15	10738.59	29182.95	11329.26	3417.13
2-Feb-15	10799.13	29122.27	11456.84	3413.3
3-Feb-15	10768.23	29000.14	11426.78	3397.11
4-Feb-15	10741.38	28883.11	11432.4	3383.66
5-Feb-15	10603.57	28850.97	11283.14	3377.84
6-Feb-15	10490.68	28717.91	11077.34	3359.37
9-Feb-15	10342.27	28227.39	10911.54	3306.95
10-Feb-15	10381.76	28355.62	10899.01	3323.68
11-Feb-15	10543.11	28533.97	11059.39	3349.67
12-Feb-15	10662.11	28805.1	11200.15	3381.87
13-Feb-15	10740.95	29094.93	11239.28	3414.39
16-Feb-15	10737.99	29135.88	11246.45	3419.49
18-Feb-15	10828.41	29320.26	11363.92	3441.01
19-Feb-15	10832.61	29462.27	11374.76	3453.87
20-Feb-15	10836.18	29231.41	11426.24	3429.46
23-Feb-15	10745.42	28975.11	11389.48	3398.84
24-Feb-15	10724.7	29004.66	11300.11	3403.2
25-Feb-15	10701.11	29007.99	11254.82	3404.59
26-Feb-15	10616.28	28746.65	11163.76	3376.9
27-Feb-15	10811.46	29220.12	11319.56	3436.88
28-Feb-15	10810.85	29361.5	11266.44	3453.19
2-Mar-15	10952.93	29459.14	11370.8	3473.08
3-Mar-15	11081.83	29593.73	11528.89	3489.65
4-Mar-15	10964.27	29380.73	11381.65	3463.76
5-Mar-15	11045.08	29448.95	11456.85	3469.58
9-Mar-15	10901.24	28844.78	11351.94	3400.66
10-Mar-15	10860.25	28709.87	11319.62	3386.17
11-Mar-15	10816.33	28659.17	11283.78	3382.75
12-Mar-15	10945.28	28930.41	11385.31	3414.29

13-Mar-15	10794.88	28503.3	11209.56	3364.42
16-Mar-15	10758.4	28437.71	11111.82	3357.19
17-Mar-15	10820.21	28736.38	11134.41	3392.16
18-Mar-15	10850.16	28622.12	11162.17	3379.79
19-Mar-15	10786.17	28469.67	11097.78	3359.53
20-Mar-15	10625.28	28261.08	10859.75	3333.98
23-Mar-15	10539.11	28192.02	10720.03	3321.71
24-Mar-15	10493.15	28161.72	10650.93	3319.74
25-Mar-15	10443.19	28111.83	10579.96	3315.23
26-Mar-15	10355.03	27457.58	10474.56	3247.04
27-Mar-15	10359.93	27458.64	10440.69	3241.01
30-Mar-15	10559.52	27975.86	10795.4	3301.14
31-Mar-15	10592.22	27957.49	10890.45	3300.27
1-Apr-15	10750.42	28260.14	11146.72	3334.48
6-Apr-15	10869.82	28504.46	11299.3	3364.42
7-Apr-15	10950.54	28516.59	11431.08	3369.53
8-Apr-15	11022.17	28707.75	11635.38	3392.4
9-Apr-15	11050.25	28885.21	11717.48	3410.36
10-Apr-15	11093.02	28879.38	11846.33	3413.45
13-Apr-15	11127.42	29044.44	11942.03	3435.2
15-Apr-15	11070.76	28799.69	11901.39	3404.85
16-Apr-15	10993.02	28666.04	11792.74	3385.34
17-Apr-15	10771.77	28442.1	11622.23	3352.42
20-Apr-15	10553.96	27886.21	11369.59	3291.22
21-Apr-15	10506.71	27676.04	11332.89	3264.2
22-Apr-15	10546.24	27890.13	11328.51	3281.86
23-Apr-15	10607.07	27735.02	11309.9	3266.43
24-Apr-15	10435.64	27437.94	11008.62	3230.45
27-Apr-15	10216.34	27176.99	10694.81	3195.13
28-Apr-15	10368.47	27396.38	10840.87	3223.06
29-Apr-15	10408.76	27225.93	10960.52	3205.04
30-Apr-15	10416.29	27011.31	10944.03	3185.19
4-May-15	10549.42	27490.59	11169.65	3244.29
5-May-15	10613.15	27440.14	11178.17	3244.11
6-May-15	10265.23	26717.37	10829.79	3154.26
7-May-15	10065.56	26599.11	10647.99	3134.56
8-May-15	10236.21	27105.39	10829.06	3188.96
11-May-15	10453.96	27507.3	10967.62	3239.1
12-May-15	10274.08	26877.48	10778.7	3162.92
13-May-15	10433.87	27251.1	10872.85	3208.33
14-May-15	10526.94	27206.06	10972.34	3207.52
15-May-15	10563.92	27324	11040.79	3220.45
18-May-15	10667.07	27687.3	11147.92	3263.27
19-May-15	10651.02	27645.53	11187.73	3261.71
20-May-15	10650.78	27837.21	11206.85	3283.36
21-May-15	10606.92	27809.35	11200.86	3282.22
22-May-15	10619.81	27957.5	11207.66	3296.8
25-May-15	10611.11	27643.88	11183.38	3265.66
26-May-15	10609.96	27531.41	11165.65	3252.25
27-May-15	10616.47	27564.66	11162.41	3248.1

28-May-15	10560.04	27506.71	11145.04	3240.59
29-May-15	10716.09	27828.44	11280.57	3282.2
1-Jun-15	10712.43	27848.99	11279.78	3275.78
2-Jun-15	10474.51	27188.38	11047.18	3203.23
3-Jun-15	10329.46	26837.2	10828.18	3158.36
4-Jun-15	10347.45	26813.42	10823.73	3158.31
5-Jun-15	10353.93	26768.49	10851.5	3153.41
8-Jun-15	10194	26523.09	10697.56	3123.17
9-Jun-15	10161.25	26481.25	10661.85	3117.54
10-Jun-15	10270.77	26840.5	10779.75	3156.05
11-Jun-15	10088.07	26370.98	10612.18	3097.34
12-Jun-15	10121.94	26425.3	10573.78	3101.63
15-Jun-15	10120.8	26586.55	10618.4	3115.02
16-Jun-15	10197.68	26686.51	10654.9	3124.16
17-Jun-15	10344.51	26832.66	10796.55	3140.59
18-Jun-15	10427.16	27115.83	10911.7	3171.82
19-Jun-15	10487.12	27316.17	10942.79	3195.27
22-Jun-15	10643.69	27730.21	11095.5	3242.64
23-Jun-15	10651.92	27804.37	11144.97	3254.35
24-Jun-15	10617.38	27729.67	11083.65	3241.69
25-Jun-15	10689.75	27895.97	11109.3	3257.4
26-Jun-15	10686.11	27811.84	11124.49	3248.06
29-Jun-15	10540.13	27645.15	10958.56	3225.15
30-Jun-15	10679.99	27780.83	11075.35	3243.85
1-Jul-15	10819.31	28020.87	11235.68	3274.77
2-Jul-15	10871.84	27945.8	11299.99	3273.5
3-Jul-15	10870	28092.79	11303.58	3287.9
6-Jul-15	10962.77	28208.76	11426.99	3302.03
7-Jul-15	11019.99	28171.69	11498.32	3299.15
8-Jul-15	10877.11	27687.72	11351.27	3244.41
9-Jul-15	10844.7	27573.66	11313.98	3231.39
10-Jul-15	10870.45	27661.4	11335.94	3241.33
13-Jul-15	11027.41	27961.19	11480.12	3277.77
14-Jul-15	11042.47	27932.9	11521.92	3275.22
15-Jul-15	11051.66	28198.29	11578.69	3302.98
16-Jul-15	11198.24	28446.12	11665.43	3333.86
17-Jul-15	11220.18	28463.31	11716.37	3337.1
20-Jul-15	11250.1	28420.12	11763.34	3335.34
21-Jul-15	11090.59	28182.14	11576.82	3303.23
22-Jul-15	11234.56	28504.93	11676.16	3340.88
23-Jul-15	11216.19	28370.84	11736.13	3327.23
24-Jul-15	11147.99	28112.31	11668.12	3299.28
27-Jul-15	10994.02	27561.38	11543.11	3239.7
28-Jul-15	10974	27459.23	11522.93	3227.84
29-Jul-15	11071.42	27563.43	11619.02	3240.62
30-Jul-15	11158.4	27705.35	11723.88	3259.8
31-Jul-15	11273.02	28114.56	11830.8	3302.69
3-Aug-15	11330.91	28187.06	11941.2	3307.27
4-Aug-15	11457.23	28071.93	12021.14	3301.71
5-Aug-15	11544.46	28223.08	12136.01	3321.97

6-Aug-15	11585.58	28298.13	12121.68	3329.67
7-Aug-15	11557.52	28236.39	12104.47	3321.16
10-Aug-15	11555.4	28101.72	12054.99	3304.8
11-Aug-15	11502.55	27866.09	11919.04	3276.67
12-Aug-15	11216.34	27512.26	11664.73	3232.2
13-Aug-15	11190.06	27549.53	11567.64	3234.87
14-Aug-15	11453.78	28067.31	11766.78	3296.15
17-Aug-15	11488.32	27878.27	11791.61	3280.54
18-Aug-15	11542.31	27831.54	11891.91	3276.83
19-Aug-15	11549.06	27931.64	11920.69	3286.8
20-Aug-15	11317.88	27607.82	11680.81	3245.82
21-Aug-15	11216.65	27366.07	11610.44	3217.7
24-Aug-15	10354.74	25741.56	10587.9	3023.78
25-Aug-15	10560.32	26032.38	10694.67	3058.37
26-Aug-15	10477.16	25714.66	10711.73	3022.48
27-Aug-15	10738.38	26231.19	10985.54	3086.47
28-Aug-15	10759.41	26392.38	10992.82	3104.61
31-Aug-15	10734.42	26283.09	10971.27	3093.38
1-Sep-15	10523.83	25696.44	10733.38	3022.25
2-Sep-15	10437.07	25453.56	10749.63	2997.1
3-Sep-15	10560.21	25764.78	10873.55	3037.63
4-Sep-15	10359.9	25201.9	10605.24	2972.47
7-Sep-15	10132.58	24893.81	10418.63	2933.48
8-Sep-15	10235.71	25317.87	10481.66	2980.13
9-Sep-15	10434.37	25719.58	10674.77	3029.22
10-Sep-15	10502.52	25622.17	10631.62	3018.33
11-Sep-15	10519.96	25610.21	10698.61	3015.02
14-Sep-15	10653.14	25856.7	10792.91	3049.27
15-Sep-15	10570.88	25705.93	10733.14	3031.16
16-Sep-15	10552.66	25963.97	10685.6	3056.5
18-Sep-15	10646.06	26218.91	10804.06	3089.55
21-Sep-15	10692.79	26192.98	10935.3	3087.19
22-Sep-15	10524.54	25651.84	10802.87	3024.65
23-Sep-15	10574.19	25822.99	10879.56	3038.54
24-Sep-15	10597.87	25863.5	10942.14	3043.87
28-Sep-15	10573.12	25616.84	10916.07	3015.36
29-Sep-15	10617.3	25778.66	10903.71	3029.96
30-Sep-15	10799.2	26154.83	11020.83	3071.72
1-Oct-15	10818.68	26220.95	11042.6	3076.03
5-Oct-15	11012.57	26785.55	11221.53	3141.74
6-Oct-15	11046.54	26932.88	11298.73	3155.93
7-Oct-15	11056.21	27035.85	11344.11	3165.45
8-Oct-15	10944.74	26845.81	11327.17	3147.36
9-Oct-15	10937.76	27079.51	11348.58	3167.03
12-Oct-15	10954.7	26904.11	11349.57	3151.08
13-Oct-15	10957.09	26846.53	11395.89	3144.09
14-Oct-15	10919.86	26779.66	11435.88	3137.15
15-Oct-15	11006.6	27010.14	11490.44	3162.89
16-Oct-15	11047.92	27214.6	11495.7	3184.71
19-Oct-15	11124.31	27364.92	11584.73	3197.67

20-Oct-15	11183.6	27306.83	11605.88	3193.69
21-Oct-15	11166.93	27287.66	11562.43	3189.37
23-Oct-15	11138.23	27470.81	11519.28	3204.53
26-Oct-15	11080.63	27361.96	11436.88	3191.36
27-Oct-15	11098.05	27253.44	11453.88	3181.51
28-Oct-15	11036.87	27039.76	11452.57	3159.39
29-Oct-15	10988.8	26838.14	11403.93	3137.51
30-Oct-15	10974.6	26656.83	11315.39	3119.42
2-Nov-15	10983.25	26559.15	11292.2	3113.57
3-Nov-15	11013.5	26590.59	11336.29	3118.5
4-Nov-15	11034.2	26552.92	11298.88	3112.61
5-Nov-15	10871.46	26304.2	11119.36	3081.44
6-Nov-15	10826.63	26265.24	11052.33	3077.48
9-Nov-15	10871.75	26121.4	11138.36	3065.44
10-Nov-15	10688.86	25743.26	11047.71	3016.12
11-Nov-15	10801.24	25866.95	11211.18	3033.46
13-Nov-15	10653.48	25610.53	11125.44	3006.69
16-Nov-15	10677.31	25760.1	11181.44	3019.65
17-Nov-15	10710.61	25864.47	11233.45	3032.56
18-Nov-15	10637.66	25482.52	11153.95	2995.75
19-Nov-15	10765.79	25841.92	11299.34	3037.45
20-Nov-15	10858.41	25868.49	11367.71	3041.22
23-Nov-15	10897.66	25819.34	11419.59	3039.12
24-Nov-15	10906.21	25775.74	11457.54	3033.37
26-Nov-15	10934.72	25958.63	11508.83	3053.09
27-Nov-15	10984.57	26128.2	11545.84	3071.33
30-Nov-15	10989.76	26145.67	11636.49	3069.9
1-Dec-15	11075.83	26169.41	11689.46	3075.02
2-Dec-15	11097.58	26117.85	11690.45	3067.86
3-Dec-15	11050.88	25886.62	11632.43	3041.92
4-Dec-15	10935.11	25638.11	11557.52	3013.11
7-Dec-15	10924.4	25530.11	11575.66	3007.82
8-Dec-15	10796.92	25310.33	11421.65	2982.3
9-Dec-15	10606.8	25036.05	11166.12	2946.47
10-Dec-15	10701.97	25252.32	11304.26	2972.47
11-Dec-15	10576.02	25044.43	11213.18	2946.07
14-Dec-15	10645.41	25150.35	11257.8	2960.82
15-Dec-15	10705.55	25320.44	11335.84	2978.68
16-Dec-15	10743	25494.37	11363.4	2999.06
17-Dec-15	10910.7	25803.78	11559.19	3035.06
18-Dec-15	10919.25	25519.22	11531.86	3006.85
21-Dec-15	10988.74	25735.9	11625.95	3030.82
22-Dec-15	10954.24	25590.65	11623.3	3014.63
23-Dec-15	10987.5	25850.3	11673.27	3044.21
24-Dec-15	11018.17	25838.71	11730.59	3044.14
28-Dec-15	11034.09	26034.13	11785.42	3064.96
29-Dec-15	11080.62	26079.48	11769.97	3069.32
30-Dec-15	11103.83	25960.03	11778.54	3056.55
31-Dec-15	11143.08	26117.54	11836.71	3075.27
1-Jan-16	11245.42	26160.9	11940.75	3083.17

4-Jan-16	11110.45	25623.35	11807.82	3021.11
5-Jan-16	11172.43	25580.34	11900.79	3019.38
6-Jan-16	11139.49	25406.33	11850.34	3001.78
7-Jan-16	10849.23	24851.83	11509.68	2930.87
8-Jan-16	10992.26	24934.33	11651.97	2944.9
11-Jan-16	10887.69	24825.04	11596.84	2930.84
12-Jan-16	10785.79	24682.03	11476.93	2911.39
13-Jan-16	10736.42	24854.11	11274.59	2926.96
14-Jan-16	10629.07	24772.97	11131.38	2916.37
15-Jan-16	10343.73	24455.04	10782.88	2875.28
18-Jan-16	10062.35	24188.37	10345.81	2839.87
19-Jan-16	10238.44	24479.84	10525.92	2869.91
20-Jan-16	10032.45	24062.04	10311.17	2820.93
21-Jan-16	10002.74	23962.21	10365.52	2807.65
22-Jan-16	10193.05	24435.66	10598.38	2862.86
25-Jan-16	10217.05	24485.95	10697.91	2868.22
27-Jan-16	10247.88	24492.39	10758.95	2868.35
28-Jan-16	10211.08	24469.57	10754.52	2865.17
29-Jan-16	10417.26	24870.69	10869.84	2912.43
1-Feb-16	10476.82	24824.83	10901.41	2910.33
2-Feb-16	10294.52	24539	10764.74	2872.5
3-Feb-16	10160.76	24223.32	10522.01	2834.61
4-Feb-16	10142.09	24338.43	10442.69	2851.27
5-Feb-16	10335.07	24616.97	10569.53	2886.81
8-Feb-16	10311.1	24287.42	10567.14	2850.11
9-Feb-16	10114.11	24020.98	10425.69	2815.19
10-Feb-16	10018.12	23758.9	10277.71	2781.41
11-Feb-16	9690.9	22951.83	9801.26	2687.94
12-Feb-16	9615.24	22986.12	9682.55	2692.67
15-Feb-16	9949.13	23554.12	10006.99	2761.52
16-Feb-16	9707.11	23191.97	9782.18	2717.11
17-Feb-16	9752.59	23381.87	9803.14	2738.82
18-Feb-16	9814.35	23649.22	9860.79	2769.96
19-Feb-16	9802.77	23709.15	9876.53	2777.57
22-Feb-16	9876.06	23788.79	9921.69	2788.05
23-Feb-16	9731.28	23410.18	9798.14	2742.82
24-Feb-16	9654.52	23088.93	9685.86	2706.94
25-Feb-16	9544.37	22976	9598.11	2689.6
26-Feb-16	9572.68	23154.3	9555.23	2711.23
29-Feb-16	9575.1	23002	9548.33	2697.36
1-Mar-16	9866.27	23779.35	9856.56	2784.44
2-Mar-16	10051.86	24242.98	10073.97	2838.55
3-Mar-16	10110.46	24606.99	10209.66	2878.78
4-Mar-16	10224.84	24646.48	10285.75	2884.35
8-Mar-16	10199.44	24659.23	10309.98	2886.76
9-Mar-16	10295.51	24793.96	10314.04	2902.45
10-Mar-16	10262.09	24623.34	10294.96	2884.16
11-Mar-16	10270.7	24717.99	10277.99	2893.38
14-Mar-16	10302.62	24804.28	10320.56	2903.44
15-Mar-16	10221.51	24551.17	10256.5	2876.81

16-Mar-16	10179.85	24682.48	10239.25	2888.72
17-Mar-16	10232.92	24677.37	10245.98	2893.99
18-Mar-16	10300.37	24952.74	10308.76	2929.03
21-Mar-16	10444.24	25285.37	10448.48	2968
22-Mar-16	10498.83	25330.49	10477.04	2973.16
23-Mar-16	10524.47	25337.56	10501.8	2973.93
28-Mar-16	10381.41	24966.4	10328.46	2934.09
29-Mar-16	10359.81	24900.46	10300.92	2928.56
30-Mar-16	10547.24	25338.58	10493.25	2980.44
31-Mar-16	10618.95	25341.86	10541.68	2983.97
1-Apr-16	10642.32	25269.64	10639.84	2975.38
4-Apr-16	10668.29	25399.65	10695.3	2992.56
5-Apr-16	10511.24	24883.59	10545.67	2932.8
6-Apr-16	10573.83	24900.63	10641.71	2937.66
7-Apr-16	10526.54	24685.42	10597.42	2913.09
8-Apr-16	10594.26	24673.84	10664.46	2916.48
11-Apr-16	10709.79	25022.16	10731.95	2957.95
12-Apr-16	10817.39	25145.59	10828.24	2973
13-Apr-16	10916.3	25626.75	10943.02	3027.32
18-Apr-16	11053.3	25816.36	11064.19	3050.01
20-Apr-16	11064.13	25844.18	11134.48	3053.36
21-Apr-16	11009.3	25880.38	11076.85	3052.75
22-Apr-16	11018.64	25838.14	11078.84	3049.45
25-Apr-16	11003.75	25678.93	11035.6	3030.92
26-Apr-16	11090.49	26007.3	11111.11	3071.32
27-Apr-16	11104.84	26064.12	11142.41	3077.84
28-Apr-16	11018.47	25603.1	11025.93	3026.69
29-Apr-16	11042.92	25606.62	11020.59	3026.29
2-May-16	11164.4	25436.97	11063.86	3011.89
3-May-16	11069.36	25229.7	11032.53	2990.28
4-May-16	10933.93	25101.73	10924.46	2970.96
5-May-16	10924.5	25262.21	10920.66	2983.95
6-May-16	10965.28	25228.5	10899.31	2982.07
9-May-16	11102.18	25688.86	11030.13	3031.13
10-May-16	11124.88	25772.53	11042.02	3038.32
11-May-16	11143.31	25597.02	11038.37	3021.17
12-May-16	11220.67	25790.22	11140.7	3043.99
13-May-16	11156.07	25489.57	11113.3	3011.52
16-May-16	11189.07	25653.23	11123.58	3028.61
17-May-16	11203.61	25773.61	11144.56	3039.56
18-May-16	11202.69	25704.61	11168.8	3032.22
19-May-16	11077.23	25399.72	11055.81	2996.13
20-May-16	11023.18	25301.9	10964.26	2983.91
23-May-16	10991.09	25230.36	10922.41	2977.51
24-May-16	10973.3	25305.47	10851.66	2982.88
25-May-16	11079.97	25881.17	10953.83	3052.84
26-May-16	11191.27	26366.68	11048.11	3103.12
27-May-16	11347.03	26653.6	11110.96	3138.18
30-May-16	11386.36	26725.6	11157.59	3147.84
31-May-16	11366.04	26667.96	11142.42	3143.05

1-Jun-16	11332.32	26713.93	11162.99	3148.43
2-Jun-16	11406.72	26843.14	11195.66	3163.56
3-Jun-16	11394.64	26843.03	11148.71	3164.98
6-Jun-16	11384.14	26777.45	11172.92	3157.63
7-Jun-16	11417.06	27009.67	11280.67	3181.74
8-Jun-16	11475.91	27020.66	11381.03	3185.87
9-Jun-16	11421.84	26763.46	11385.07	3161.66
10-Jun-16	11376.37	26635.75	11362.72	3148.52
13-Jun-16	11319.66	26396.77	11311.76	3125.15
14-Jun-16	11340.45	26395.71	11372.61	3125.21
15-Jun-16	11406.7	26726.34	11464.13	3161.26
16-Jun-16	11364.63	26525.46	11401.64	3138.31
17-Jun-16	11359.06	26625.91	11435.16	3148.47
20-Jun-16	11404.15	26866.92	11477.85	3177.25
21-Jun-16	11418.31	26812.78	11519.53	3170.24
22-Jun-16	11405.01	26765.65	11450.59	3163.49
23-Jun-16	11436.17	27002.22	11446.26	3187.76
24-Jun-16	11313.41	26397.71	11278.63	3117.57
27-Jun-16	11404.05	26402.96	11449.75	3124.02
28-Jun-16	11459.21	26524.55	11540.15	3138.52
29-Jun-16	11571.94	26740.39	11691.57	3165.87
30-Jun-16	11717.22	26999.72	11801.32	3198.88
1-Jul-16	11857.56	27144.91	11885.43	3218.03
4-Jul-16	11926.63	27278.76	12005.84	3234.64
5-Jul-16	11916.69	27166.87	11992.51	3222.86
7-Jul-16	11867.39	27201.49	11997.28	3225.91
8-Jul-16	11880.37	27126.9	11976.74	3218.79
11-Jul-16	12057.27	27626.69	12071.35	3275.33
12-Jul-16	12116.53	27808.14	12080.86	3295.27
13-Jul-16	12049.52	27815.18	11981.3	3295.03
14-Jul-16	12114.78	27942.11	12068.57	3313.89
15-Jul-16	12125.21	27836.5	11979.69	3303.97
18-Jul-16	12050.05	27746.66	11922.35	3292.76
19-Jul-16	12071.97	27787.62	11909.59	3299.26
20-Jul-16	12181.19	27915.89	12027.46	3317.6
21-Jul-16	12157.8	27710.52	12010.36	3296.27
22-Jul-16	12277.25	27803.24	12107.31	3312.35
25-Jul-16	12400.2	28095.34	12234.49	3347.41
26-Jul-16	12421.23	27976.52	12149.74	3330.43
27-Jul-16	12495.88	28024.33	12208.8	3340.2
28-Jul-16	12573.28	28208.62	12281.68	3358.41
29-Jul-16	12661.06	28051.86	12309.95	3346.18
1-Aug-16	12708.73	28003.12	12321.74	3344.19
2-Aug-16	12629.97	27981.71	12219.79	3337.57
3-Aug-16	12440.63	27697.51	12080.49	3306.62
4-Aug-16	12487.58	27714.37	12127.78	3310.68
5-Aug-16	12698.44	28078.35	12306.59	3360.03
8-Aug-16	12824.32	28182.57	12393.81	3372.86
9-Aug-16	12779.97	28085.16	12338.22	3358.12
10-Aug-16	12644.36	27774.88	12192.06	3314.97

11-Aug-16	12648.01	27859.6	12189.23	3320.73
12-Aug-16	12753.41	28152.4	12214.23	3350.37
16-Aug-16	12823.7	28064.61	12212.88	3343.29
17-Aug-16	12911.61	28005.37	12280.2	3337.17
18-Aug-16	12967.71	28123.44	12403.69	3357.18
19-Aug-16	13035.17	28077	12459.46	3355.84
22-Aug-16	12981.03	27985.54	12442.47	3341.16
23-Aug-16	12945.3	27990.21	12433.78	3339.82
24-Aug-16	13023.88	28059.94	12515.13	3350.02
25-Aug-16	12977.94	27835.91	12501.7	3327.46
26-Aug-16	13000.15	27782.25	12487.12	3320.02
29-Aug-16	13064.33	27902.66	12498.81	3329.47
30-Aug-16	13168.39	28343.01	12626.09	3381.83
31-Aug-16	13217.31	28452.17	12648.79	3395.37
1-Sep-16	13166.87	28423.48	12598.98	3388.82
2-Sep-16	13230.94	28532.11	12644.06	3401.71
6-Sep-16	13474.12	28978.02	12764.34	3453.13
7-Sep-16	13459.47	28926.36	12816.46	3448.85
8-Sep-16	13479.37	29045.28	12922.41	3463.26
9-Sep-16	13345.32	28797.25	12861.39	3433.1
12-Sep-16	12951.89	28353.54	12559.7	3372.09
14-Sep-16	13125.13	28372.23	12711.56	3378.53
15-Sep-16	13092.11	28412.89	12745.83	3380.28
16-Sep-16	13050.51	28599.03	12764.87	3401.02
19-Sep-16	13132.37	28634.5	12831.06	3407.83
20-Sep-16	13120.6	28523.2	12797.66	3396.83
21-Sep-16	13111.77	28507.42	12821.36	3396.4
22-Sep-16	13294.56	28773.13	12948.98	3432.5
23-Sep-16	13331.97	28668.22	12958.9	3421.01
26-Sep-16	13260.82	28294.28	12887.38	3382.9
27-Sep-16	13275.62	28223.7	12904.32	3374.5
28-Sep-16	13397	28292.81	13039.04	3390.23
29-Sep-16	12914.71	27827.53	12514.5	3325.65
30-Sep-16	13166.68	27865.96	12780.8	3339.17
3-Oct-16	13482.76	28243.29	13122.21	3392.09
4-Oct-16	13549.51	28334.55	13208.73	3405.83
5-Oct-16	13617.36	28220.98	13290.03	3398.45
6-Oct-16	13540.98	28106.21	13225.58	3388.96
7-Oct-16	13542.62	28061.14	13222.4	3383.19
10-Oct-16	13515.05	28082.34	13255.93	3386.65
13-Oct-16	13311.96	27643.11	13068.37	3334.05
14-Oct-16	13419.62	27673.6	13176.76	3339.95
17-Oct-16	13292.24	27529.97	13107.91	3314.6
18-Oct-16	13543.99	28050.88	13278.83	3373.59
19-Oct-16	13552.71	27984.37	13351.89	3368.55
20-Oct-16	13560.19	28129.84	13418.93	3384.37
21-Oct-16	13602.38	28077.18	13432.21	3382.78
24-Oct-16	13584.93	28179.08	13501.46	3389.86
25-Oct-16	13543.7	28091.42	13518.83	3382.13
26-Oct-16	13421.34	27836.51	13428.98	3353.83

27-Oct-16	13282.17	27915.9	13325.57	3350.47
28-Oct-16	13408.27	27941.51	13454.03	3360.18
30-Oct-16	13473.11	27930.21	13583.14	3361
1-Nov-16	13441.43	27876.61	13556.89	3358.08
2-Nov-16	13194	27527.22	13307.38	3314.79
3-Nov-16	13014.56	27430.28	13167.23	3301.34
4-Nov-16	12839.53	27274.15	12877.48	3278.59
7-Nov-16	12914.89	27458.99	13030.48	3303.86
8-Nov-16	12961.42	27591.14	13051.76	3320.01
9-Nov-16	12721.66	27252.53	12704.1	3276.35
10-Nov-16	12931.58	27517.68	12926.78	3315.97
11-Nov-16	12464.02	26818.82	12485.07	3225.53
15-Nov-16	11977.02	26304.63	11902.01	3143.53
16-Nov-16	12044.47	26298.69	11908.11	3143.85
17-Nov-16	11999.25	26227.62	11839.79	3137.15
18-Nov-16	12072.43	26150.24	11868.94	3132.94
21-Nov-16	11734.33	25765.14	11493.81	3075.84
22-Nov-16	11897.52	25960.78	11626.8	3106.3
23-Nov-16	12042.45	26051.81	11805.55	3121.23
24-Nov-16	12026.26	25860.17	11792.28	3100.93
25-Nov-16	12183.02	26316.34	12027.7	3154.7
28-Nov-16	12301.29	26350.17	12106.77	3160.44
29-Nov-16	12366.86	26394.01	12173.66	3167.45
30-Nov-16	12498.62	26652.81	12329.65	3200.7
1-Dec-16	12355.03	26559.92	12250.42	3186.16
2-Dec-16	12199.18	26230.66	12083.2	3145.98
5-Dec-16	12280.06	26349.1	12114.72	3164.08
6-Dec-16	12344.34	26392.76	12164.11	3169.38
7-Dec-16	12324.54	26236.87	12101.77	3154.83
8-Dec-16	12508.34	26694.28	12256.25	3209.29
9-Dec-16	12535.22	26747.18	12320.08	3214
12-Dec-16	12395.65	26515.24	12230.63	3178.95
13-Dec-16	12341.89	26697.82	12222.52	3195.17
14-Dec-16	12241.19	26602.84	12118.38	3180.71
15-Dec-16	12240.89	26519.07	12143.41	3170.13
16-Dec-16	12236.57	26489.56	12113.52	3161.96
19-Dec-16	12174.04	26374.7	12057.69	3148.75
20-Dec-16	12004.16	26307.98	11947.14	3138.2
21-Dec-16	11984.64	26242.38	11950.88	3132.67
22-Dec-16	11808.57	25979.6	11801.82	3098.35
23-Dec-16	11760.78	26040.7	11796.94	3100.8
26-Dec-16	11505.83	25807.1	11548.74	3067.09
27-Dec-16	11702.83	26213.44	11720.83	3115.48
28-Dec-16	11764.82	26210.68	11823.11	3118.26
29-Dec-16	11904.55	26366.15	11954.52	3144.75
30-Dec-16	12031.34	26626.46	12046.13	3176.06
2-Jan-17	12131.4	26595.45	12190.15	3178.77
3-Jan-17	12205.13	26643.24	12315.16	3187.63
4-Jan-17	12194.63	26633.13	12372.7	3185.42
5-Jan-17	12355.63	26878.24	12493.47	3218.73

6-Jan-17	12321.72	26759.23	12440.33	3208.38
9-Jan-17	12349.8	26726.55	12495.71	3205.84
10-Jan-17	12448.56	26899.56	12583.35	3225.06
11-Jan-17	12618.58	27140.41	12706.75	3261.14
12-Jan-17	12642.49	27247.16	12686.59	3271.62
13-Jan-17	12639.03	27238.06	12689.85	3269.18
16-Jan-17	12673	27288.17	12762.09	3277.11
17-Jan-17	12672.79	27235.66	12804.76	3271.11
18-Jan-17	12729.41	27257.64	12883.38	3280.8
19-Jan-17	12781.17	27308.6	12925.58	3287.19
20-Jan-17	12583.89	27034.5	12761.01	3253.27
23-Jan-17	12644.75	27117.34	12821.07	3271.43
24-Jan-17	12766.72	27375.58	12930.37	3305.49
25-Jan-17	12881.66	27708.14	13042.86	3353.46
27-Jan-17	12964.73	27882.46	13112.12	3371.57
30-Jan-17	13000.95	27849.56	13069.85	3368.65
31-Jan-17	12857.47	27655.96	12935.66	3337.21
1-Feb-17	13085.24	28141.64	13153.14	3399.78
2-Feb-17	13205.36	28226.61	13278.62	3407.09
3-Feb-17	13285.41	28240.52	13422.1	3409.08
6-Feb-17	13430.94	28439.28	13539.72	3432.9
7-Feb-17	13406.98	28335.16	13528.05	3419.89
8-Feb-17	13474.98	28289.92	13557.6	3422.05
9-Feb-17	13506.61	28329.7	13582.89	3426.13
10-Feb-17	13468.41	28334.25	13601.31	3428.94
13-Feb-17	13417.95	28351.62	13523.65	3433.51
14-Feb-17	13342.59	28339.31	13438.83	3429.29
15-Feb-17	13187.82	28155.56	13234.82	3399.04
16-Feb-17	13352.59	28301.27	13413.95	3425.18
17-Feb-17	13422.89	28468.75	13467.64	3443.41
20-Feb-17	13514.49	28661.58	13589.63	3466.54
21-Feb-17	13585.33	28761.59	13651.91	3481.4
22-Feb-17	13506.93	28864.71	13573.03	3486.73
23-Feb-17	13532.11	28892.97	13587.78	3488.22
27-Feb-17	13533.78	28812.88	13609.88	3472.47
28-Feb-17	13552.22	28743.32	13690.81	3467.61
1-Mar-17	13569.56	28984.49	13752.82	3492.85
2-Mar-17	13377.78	28839.79	13574.48	3469.83
3-Mar-17	13409.04	28832.45	13620.17	3471.07
6-Mar-17	13485.27	29048.19	13670.73	3495.27
7-Mar-17	13503.84	28999.56	13675.18	3488.7
8-Mar-17	13428.27	28901.94	13632.9	3477.51
9-Mar-17	13399.68	28929.13	13620.79	3479.07
10-Mar-17	13365.59	28946.23	13604.96	3480.44
14-Mar-17	13557.2	29442.63	13767.48	3539.76
15-Mar-17	13700.59	29398.11	13858.52	3540.71
16-Mar-17	13912.35	29585.85	14006.4	3567.85
17-Mar-17	13893.14	29648.99	14012.63	3571.64
20-Mar-17	13916.79	29518.74	14054.99	3561.54
21-Mar-17	13853.52	29485.45	14027.93	3558.09

22-Mar-17	13721.45	29167.68	13901.92	3523.17
23-Mar-17	13853.4	29332.16	14027.94	3545.47
24-Mar-17	13849.18	29421.4	14077.61	3554.16
27-Mar-17	13812.08	29237.15	14071.28	3533.62
28-Mar-17	13911.65	29409.52	14153.37	3553.97
29-Mar-17	13930.6	29531.43	14196.72	3568.24
30-Mar-17	13985.52	29647.42	14331.25	3582.3
31-Mar-17	14096.65	29620.5	14433.86	3582.29
3-Apr-17	14189.69	29910.22	14620.23	3606.77
5-Apr-17	14255.55	29974.24	14784.68	3621.3
6-Apr-17	14276.54	29927.34	14750.97	3620.93
7-Apr-17	14233.16	29706.61	14681.42	3597.72
10-Apr-17	14322.29	29575.74	14776.03	3594.29
11-Apr-17	14378.72	29788.35	14924.87	3617.3
12-Apr-17	14346.87	29643.48	14852.27	3605.48
13-Apr-17	14350.96	29461.45	14881.16	3581.64
17-Apr-17	14387.07	29413.66	14954.16	3574.33
18-Apr-17	14296.13	29319.1	14844.11	3558.98
19-Apr-17	14390.26	29336.57	14957.3	3561.32
20-Apr-17	14485.49	29422.39	15128.08	3574.26
21-Apr-17	14487.92	29365.3	15166.31	3567.17
24-Apr-17	14625.73	29655.84	15291.26	3603.4
25-Apr-17	14780.58	29943.24	15379.89	3641.88
26-Apr-17	14762.73	30133.35	15282.66	3657.17
27-Apr-17	14772.45	30029.74	15279.49	3652.52
28-Apr-17	14798.45	29918.4	15372.51	3639.87
2-May-17	14855.34	29921.18	15420.8	3644.88
3-May-17	14810.21	29894.8	15430.96	3643.15
4-May-17	14880.86	30126.21	15485.75	3662.76
5-May-17	14718.48	29858.8	15355.84	3630.44
8-May-17	14792.6	29926.15	15462.58	3643.69
9-May-17	14821.13	29933.25	15544.63	3649.02
10-May-17	14949.54	30248.17	15661.65	3686.18
11-May-17	14957.13	30250.98	15653.4	3691.72
12-May-17	14854.45	30188.15	15528.83	3681.7
15-May-17	15040.47	30322.12	15650.37	3698.91
16-May-17	15080.39	30582.6	15709.59	3724.85
17-May-17	15076.97	30658.77	15680.87	3725.88
18-May-17	14750.85	30434.79	15361.56	3685.47
19-May-17	14644	30464.92	15227.07	3684.6
22-May-17	14467.1	30570.97	15054.14	3687.01
23-May-17	14240.88	30365.25	14769.86	3663.2
24-May-17	14037.7	30301.64	14556.57	3650.21
25-May-17	14227.01	30750.03	14848.73	3704.25
26-May-17	14519.9	31028.21	15086.26	3740.59
29-May-17	14369.9	31109.28	14855.13	3739.33
30-May-17	14489.76	31159.4	14924.04	3746.78
31-May-17	14625.29	31145.8	15080.21	3746.84
1-Jun-17	14696.19	31137.59	15234.24	3743.89
2-Jun-17	14801.48	31273.29	15311.17	3761.93

5-Jun-17	14824.06	31309.49	15409.95	3772.25
6-Jun-17	14732.39	31190.56	15310.53	3756.85
7-Jun-17	14800.85	31271.28	15425.86	3767.84
8-Jun-17	14834.42	31213.36	15472.55	3761.66
9-Jun-17	14875.36	31262.06	15549.17	3769.91
12-Jun-17	14796.09	31095.7	15454.06	3751.52
13-Jun-17	14798.2	31103.49	15517.93	3749.29
14-Jun-17	14799.41	31155.91	15588.68	3751.09
15-Jun-17	14781.77	31075.73	15645.89	3739.66
16-Jun-17	14807.33	31056.4	15667.24	3741.73
19-Jun-17	14817.74	31311.57	15653.97	3768.6
20-Jun-17	14845.29	31297.53	15679.72	3769.06
21-Jun-17	14850.74	31283.64	15696.27	3761.2
22-Jun-17	14763.07	31290.74	15609.49	3759.29
23-Jun-17	14583.81	31138.21	15381.9	3736.72
27-Jun-17	14468.88	30958.25	15141.08	3713.08
28-Jun-17	14502.69	30834.32	15161.32	3706.02
29-Jun-17	14552.49	30857.52	15310.21	3711.42
30-Jun-17	14644.48	30921.61	15410.52	3720.62
3-Jul-17	14809.37	31221.62	15572.66	3759.11
4-Jul-17	14758.84	31209.79	15566.93	3757.78
5-Jul-17	14901.99	31245.56	15740.6	3767.66
6-Jul-17	14947.35	31369.34	15789.67	3781.06
7-Jul-17	14941.77	31360.63	15830.76	3778.91
10-Jul-17	15041.54	31715.64	15899.12	3821.47
11-Jul-17	14923.06	31747.09	15806.43	3823.54
12-Jul-17	15084.34	31804.82	15897.01	3836.11
13-Jul-17	15153.54	32037.38	15963.57	3864.02
14-Jul-17	15187.41	32020.75	15908.01	3863.14
17-Jul-17	15197.45	32074.78	15910.08	3875.21
18-Jul-17	15106.85	31710.99	15817.6	3840.19
19-Jul-17	15258.83	31955.35	15974.57	3871.65
20-Jul-17	15179.27	31904.4	15999.88	3861.9
21-Jul-17	15185.53	32028.89	15992.63	3877.24
24-Jul-17	15226.41	32245.87	16035.76	3897.08
25-Jul-17	15312.6	32228.27	16054.25	3896.85
26-Jul-17	15339.76	32382.46	16098.64	3918.05
27-Jul-17	15255.66	32383.3	16015.47	3920.1
28-Jul-17	15329.56	32309.88	16071.22	3915.99
31-Jul-17	15389.57	32514.94	16093.56	3939.17
1-Aug-17	15458.31	32575.17	16074.83	3948.77
2-Aug-17	15411.96	32476.74	16063.47	3938.01
3-Aug-17	15335.12	32237.88	15911.34	3915.58
4-Aug-17	15436.95	32325.41	15926.63	3938.37
7-Aug-17	15600.27	32273.67	16109.21	3940.64
8-Aug-17	15413.15	32014.19	15904.04	3907.62
9-Aug-17	15156.67	31797.84	15634.5	3878.84
10-Aug-17	14755.85	31531.33	15071.08	3837.7
11-Aug-17	14726.27	31213.59	15036.33	3799.34
14-Aug-17	15092.62	31449.03	15409.2	3832.38

16-Aug-17	15282.34	31770.89	15611.68	3870.69
17-Aug-17	15228.52	31795.46	15694.53	3873.89
18-Aug-17	15208.46	31524.68	15617.95	3849.08
21-Aug-17	14987.43	31258.85	15467.87	3814.74
22-Aug-17	14925.89	31291.85	15388.62	3817.07
23-Aug-17	15131.38	31568.01	15575.51	3850.65
24-Aug-17	15252.1	31596.06	15646.6	3854.07
28-Aug-17	15407.92	31750.82	15817.55	3879.11
29-Aug-17	15277.65	31388.39	15656.02	3833.24
30-Aug-17	15505.84	31646.46	15867.74	3870.03
31-Aug-17	15539.79	31730.49	15991.63	3880.53
1-Sep-17	15686.66	31892.23	16130.12	3904.68
4-Sep-17	15580.42	31702.25	16030.15	3878.09
5-Sep-17	15678.15	31809.55	16193.18	3895.28
6-Sep-17	15705	31661.97	16255.17	3882.06
7-Sep-17	15823.86	31662.74	16338.63	3890.62
8-Sep-17	15754.75	31687.52	16325.2	3888.74
11-Sep-17	15865.88	31882.16	16451.7	3918.03
12-Sep-17	16037.09	32158.66	16617.84	3949.47
13-Sep-17	15926.7	32186.41	16519.56	3945.17
14-Sep-17	16017.12	32241.93	16625.3	3950.25
15-Sep-17	15972.74	32272.61	16687.76	3949.71
18-Sep-17	16089.94	32423.76	16833.58	3972.51
19-Sep-17	16110.83	32402.37	16893.67	3973.53
20-Sep-17	16099.28	32400.51	16870.84	3968.58
21-Sep-17	16044.21	32370.04	16784.82	3956.29
22-Sep-17	15609.89	31922.44	16293.03	3890.82
25-Sep-17	15432.53	31626.63	15963.13	3850.79
26-Sep-17	15500.05	31599.76	16136.28	3850.26
27-Sep-17	15191.97	31159.81	15797.37	3796.73
28-Sep-17	15309.29	31282.48	15939.52	3809.92
29-Sep-17	15436.01	31283.72	16113.68	3819.58
3-Oct-17	15554.67	31497.38	16192.58	3851.89
4-Oct-17	15614.56	31671.71	16320.23	3871.34
5-Oct-17	15691.81	31592.03	16449.18	3863.68
6-Oct-17	15840.15	31814.22	16629.23	3896.46
9-Oct-17	15834.13	31846.89	16733.03	3901.28
10-Oct-17	15935.68	31924.41	16892.5	3911.77
11-Oct-17	15804.59	31833.99	16710.76	3899.23
12-Oct-17	15959.53	32182.22	16903.65	3941.34
13-Oct-17	15966.69	32432.69	16925.66	3967.84
16-Oct-17	16050.23	32633.64	16976.17	3989.7
17-Oct-17	16114.5	32609.16	17066.15	3992.61
18-Oct-17	16115.98	32584.35	17063.39	3983.55
19-Oct-17	16076.42	32389.96	17081.44	3960.08
23-Oct-17	16147.97	32506.72	17096.55	3973.39
24-Oct-17	16181.73	32607.34	17191.68	3982.51
25-Oct-17	16249.36	33042.5	17159.3	4024.59
26-Oct-17	16334.36	33147.13	17256.76	4041.42
27-Oct-17	16379.58	33157.22	17303.66	4033.95

30-Oct-17	16565.32	33266.16	17519.75	4051.1
31-Oct-17	16587.98	33213.13	17600.49	4043.84
1-Nov-17	16646.61	33600.27	17697.18	4083.57
2-Nov-17	16725.35	33573.22	17768.87	4081.67
3-Nov-17	16713.11	33685.56	17856.03	4092.95
6-Nov-17	16789.79	33731.19	17910.9	4097.33
7-Nov-17	16543.46	33370.76	17668.37	4055.4
8-Nov-17	16416.61	33218.81	17497.99	4036.36
9-Nov-17	16577.92	33250.93	17631.37	4041.49
10-Nov-17	16562.69	33314.56	17643.82	4042.01
13-Nov-17	16530.97	33033.56	17570.77	4006.5
14-Nov-17	16494.72	32941.87	17539.6	3990.73
15-Nov-17	16328.64	32760.44	17273.4	3959.9
16-Nov-17	16504.06	33106.82	17462.86	3998.02
17-Nov-17	16673.33	33342.8	17605.13	4026.56
20-Nov-17	16777.79	33359.9	17747.21	4032.02
21-Nov-17	16794.23	33478.35	17813.07	4043.9
22-Nov-17	16785.41	33561.55	17853.48	4048.25
23-Nov-17	16836.18	33588.08	17943.86	4051.25
24-Nov-17	16934.32	33679.24	18024.55	4064.37
27-Nov-17	17022.21	33724.44	18163.92	4068.35
28-Nov-17	17038.75	33618.59	18213.65	4058.08
29-Nov-17	17010.51	33602.76	18211.07	4054.26
30-Nov-17	16917.44	33149.35	18228.87	4006.41
1-Dec-17	16757.27	32832.94	18017.48	3964.36
4-Dec-17	16742.6	32869.72	17924.37	3968.33
5-Dec-17	16812.07	32802.44	17918.71	3961.62
6-Dec-17	16662.88	32597.18	17800.83	3931.1
7-Dec-17	16893.61	32949.21	18031.24	3981.27
8-Dec-17	17044.36	33250.3	18211.88	4018.66
11-Dec-17	17106.29	33455.79	18251.77	4039.88
12-Dec-17	16933.29	33227.99	18127.92	4009.45
13-Dec-17	16790.64	33053.04	17981.85	3987.56
14-Dec-17	16806.4	33246.7	17923.45	4009.82
15-Dec-17	16974.72	33462.97	18170.65	4041.98
18-Dec-17	17104.4	33601.68	18252.68	4061.34
19-Dec-17	17356.19	33836.74	18527.85	4093.9
20-Dec-17	17418.72	33777.38	18674.53	4088.38
21-Dec-17	17553.71	33756.28	18881.04	4088.05
22-Dec-17	17573.78	33940.3	18991.2	4106.92
26-Dec-17	17706.94	34010.61	19111.8	4118.6
27-Dec-17	17673.64	33911.81	19048.28	4106.15
28-Dec-17	17691.93	33848.03	19109.23	4100.77
29-Dec-17	17822.4	34056.83	19230.72	4122.99
1-Jan-18	17835.83	33812.75	19279.96	4095.5
2-Jan-18	17725.47	33812.26	19158.24	4090.29
3-Jan-18	17819.32	33793.38	19345.46	4093.22
4-Jan-18	17945.62	33969.64	19515.64	4119.74
5-Jan-18	18070.03	34153.85	19704.92	4145.93
8-Jan-18	18247.55	34352.79	19895.77	4171.15

9-Jan-18	18173.91	34443.19	19911.17	4175.63
10-Jan-18	18118.24	34433.07	19903.31	4172.63
11-Jan-18	18167.77	34503.49	19983.93	4179.68
12-Jan-18	18137.03	34592.39	19993.19	4187.13
15-Jan-18	18128.88	34843.51	20046.9	4208.22
16-Jan-18	17813.94	34771.05	19602.95	4189.19
17-Jan-18	17932.37	35081.82	19687.57	4224.21
18-Jan-18	17629.45	35260.29	19285.84	4226.37
19-Jan-18	17765	35511.58	19456.16	4257.1
22-Jan-18	17876.5	35798.01	19608.01	4285.84
23-Jan-18	18078.73	36139.98	19651.16	4327.02
24-Jan-18	17975.83	36161.64	19474.99	4327.89
25-Jan-18	17841.19	36050.44	19342.18	4310.3
29-Jan-18	17710.3	36283.25	19129.14	4331.36
30-Jan-18	17591.39	36033.73	18873.58	4303.13
31-Jan-18	17364.2	35965.02	18716.77	4292.97
1-Feb-18	17270.9	35906.66	18717.4	4289.9
2-Feb-18	16574.7	35066.75	17847.53	4187.81
5-Feb-18	16559.55	34757.16	17781.79	4155.67
6-Feb-18	16281.09	34195.94	17392.07	4088.08
7-Feb-18	16350.74	34082.71	17731.63	4079.56
8-Feb-18	16649.07	34413.16	18131.19	4123.78
9-Feb-18	16634.91	34005.76	18172.98	4083.43
12-Feb-18	16852.46	34300.47	18463.38	4118.44
14-Feb-18	16881.48	34155.95	18492.69	4102.32
15-Feb-18	16803.24	34297.47	18258.16	4112.48
16-Feb-18	16602.35	34010.76	18035.75	4075.74
19-Feb-18	16428.66	33774.66	17857.08	4044.48
20-Feb-18	16419.51	33703.59	17831.04	4041.57
21-Feb-18	16411.46	33844.86	17800.14	4053.07
22-Feb-18	16322.14	33819.5	17723.73	4044.04
23-Feb-18	16562.03	34142.15	17996.22	4087.46
26-Feb-18	16684.87	34445.75	18154.12	4126.2
27-Feb-18	16601.05	34346.39	18090.13	4112.91
28-Feb-18	16562.59	34184.04	18127.93	4092.05
1-Mar-18	16461.27	34046.94	18084.94	4075.69

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The Institute of Cost Accountants of India (ICAI) is a statutory body set up under an Act of Parliament in the year 1959. The Institute as a part of its obligation, regulates the profession of Cost and Management Accountancy, enrols students for its courses, provides coaching facilities to the students, organizes professional development programmes for the members and undertakes research programmes in the field of Cost and Management Accountancy. The Institute pursues the vision of cost competitiveness, cost management, efficient use of resources and structured approach to cost accounting as the key drivers of the profession. In today's world, the profession of conventional accounting and auditing has taken a back seat and cost and management accountants increasingly contributing towards the management of scarce resources like funds, land and apply strategic decisions. This has opened up further scope and tremendous opportunities for cost accountants in India and abroad.

After an amendment passed by Parliament of India, the Institute is now renamed as "The Institute of Cost Accountants of India" from "The Institute of Cost and Works Accountants of India". This step is aimed towards synergizing with the global management accounting bodies, sharing the best practices and it will be useful to large number of trans-national Indian companies operating from India and abroad to remain competitive. With the current emphasis on management of resources, the specialized knowledge of evaluating operating efficiency and strategic management the professionals are known as "Cost and Management Accountants (CMAs)". The Institute is the 2nd largest Cost & Management Accounting body in the world and the largest in Asia, having approximately 5,00,000 students and 75,000 members all over the globe. The Institution operates through four regional councils at Kolkata, Delhi, Mumbai and Chennai and 98 Chapters situated at important cities in the country as well as 9 Overseas Centre headquartered at Kolkata. It is under the administrative control of Ministry of Corporate Affairs, Government of India.

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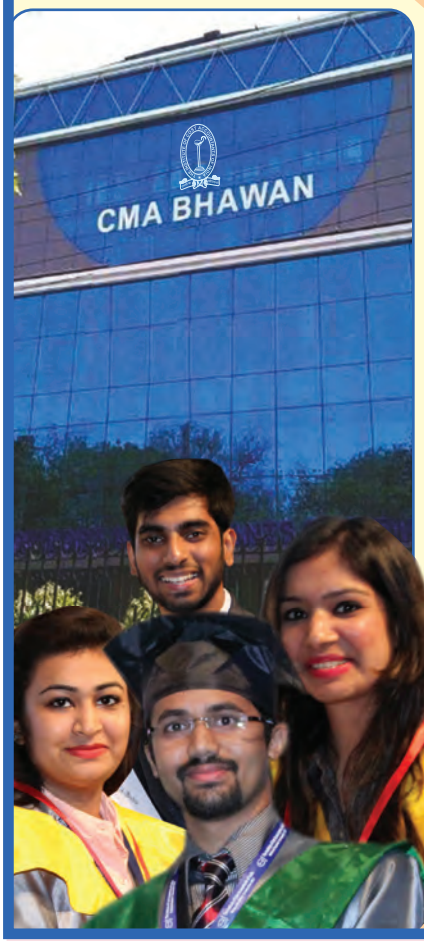

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